Ghana LEAP 1000 Programme: Endline Evaluation Report

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Acknowledgements

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Abbreviations

ADL	Activities of daily living
ARI	Acute respiratory infection
AE	Adult equivalent
ANC	Antenatal care
BCG	Bacille Calmette-Guuérin (anti-tuberculosis vaccine)
CAPI	Computer assisted personal interviewing
DHS	Demographic and Health Survey
DSW	Department of Social Welfare
DTP-HepB-Hib	Diphtheria, Tetanus Toxoid, Pertussis - Hepatitis B - *Haemophilus Influenza* Type B
GLSS	Ghana Living Standards Survey
GH₵	Ghanaian cedi
GPS	Global positioning system
HFIAS	Household Food Insecurity Access Scale
IYCF	Infant and young child feeding
ISSER	Institute of Statistical, Social and Economic Research
ILO	International Labour Organization
IPV	Intimate partner violence
HAZ	Length/Height-for-age z-score
LEAP	Livelihood Empowerment Against Poverty
LMS	LEAP Management Secretariat
MOS	Medical Outcomes Scores
MoGCSP	Ministry of Gender, Children and Social Protection
MICS	Multiple Indicator Cluster Survey
NHIS	National Health Insurance Scheme

NHRC	Navrongo Health Research Centre
NGO	Non-governmental organization
NR	Northern region
OoR	Office of Research (UNICEF)
ORS	Oral rehydration salts
ORT	Oral rehydration therapy
OVC	Orphans and vulnerable children
PSS	Perceived Stress Scale
PWD	Person with a disability
PMT	Proxy means test
RDD	Regression discontinuity design
SD	Standard deviations
SPRING	Strengthening Partnerships, Results and Innovations in Nutrition Globally
TZ	Tuo zaafi
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UNC-CH	University of North Carolina at Chapel Hill
UER	Upper East region
WAZ	Weight-for-age z-score
WHZ	Weight-for-length/height z-score
WHO	World Health Organization

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Executive Summary

Background

The Livelihood Empowerment Against Poverty (LEAP) Programme is Ghana's flagship social protection programme that began in 2008. It is implemented by the LEAP Management Secretariat (LMS) and the Department of Social Welfare (DSW), under the Ministry of Gender, Children and Social Protection (MoGCSP). The LEAP Programme, designed to fight poverty among extremely vulnerable populations, provides bimonthly cash payments to extremely poor households with orphans and vulnerable children, elderly with no productive capacity, persons with acute disability, and, in 2015, a pilot called **'LEAP 1000' was launched to include a new category – pregnant women and children under the age of 12 months.** The LEAP 1000 pilot was launched in 10 districts in the Northern and Upper East regions, reaching 6,124 households. Since then, this additional category has been mainstreamed into the larger LEAP Programme. As of December 2017, LEAP reaches more than 213,000 poor families in all 216 districts of Ghana (8 per cent of which have beneficiaries from the pregnant women or infant category).

In order to assess the impacts of the programme on a range of child and household indicators, UNICEF Ghana, working closely with LMS and the MoGCSP, commissioned an independent 2-year impact evaluation study. **This report presents impact results from the 2- year 'endline' evaluation of the LEAP 1000 Pilot.** The UNICEF Office of Research (OoR), the Institute for Statistical, Social and Economic Research (ISSER) at the University of Ghana, the University of North Carolina (UNC), and Navrongo Health Research Centre (NHRC) designed a rigorous mixed-methods impact evaluation to estimate the impacts of LEAP 1000. The quantitative methodology uses a regression discontinuity design (RDD) and compares households which are just below a proxy means test (PMT) cut-off score (thus, those who are eligible for LEAP) to those just above the cut-off score (and thus not eligible for LEAP). **Households just above and just below the cut-off are very similar as they have nearly identical proxy means test scores, and thus the group of households above the cut-off can serve as a valid comparison group for households below the cut-off who receive the cash transfers**. **As the sample only includes households close to the cut off, the results of this evaluation are not representative of poorer households that had significantly lower PMT scores. The findings of this evaluation are therefore likely to under-estimate the impacts that may be experienced by the average LEAP household.** The panel sample of households for the quantitative analysis (that is, those interviewed at both baseline (2015) and endline (2017)) consists of 1,185 households below the PMT cut-off (treatment) and 1,146 above the PMT cut-off (comparison), for a total of 2,331 households. A sub-sample of 20 women from beneficiary households participated in in-depth interviews three times (baseline (2015), midline (2016), endline (2017); their male partners were interviewed twice (n=13 at midline and n=15 at endline).

Key findings

At the time of the endline data collection, LEAP 1000 households had **received 13 payments and had been in the programme for approximately two years**. The evaluation found that LEAP 1000 households were making investments to improve their lives, including those of their children. As can be seen in the table below, after two years, LEAP 1000 had several positive impacts on beneficiary households.

Overall, the programme had positive impacts on a number of intermediate steps to child and household wellbeing – including consumption, food security and diversity, investments in economic activities and savings, health insurance and some use of health services, and increased social support. **Many impacts show that LEAP had a protective effect for beneficiary households, meaning, even where both treatment and comparison households saw a decline in wellbeing, LEAP 1000 households experienced a smaller decline than comparison households**. At the same time, the size of many of these impacts was modest and the evaluation did not find impact after two years on one of the key programme objectives – child health and nutrition.

These results should be understood in the broader context of the programme and the poverty and vulnerability context of the people included in the sample. **The modest impacts across domains and on poverty reduction may be due to several factors. Firstly,** the **purchasing power of the transfer had eroded over the two-year period by approximately 20%.** Additionally, the transfer amount represented approximately 13.9 per cent of households' consumption at baseline, which is low compared to other cash transfer programmes in sub-Saharan Africa. The relatively low real value of the transfer limits the range and size of impacts we may expect to see across the spectrum of domains, particularly in achieving more transformative impacts. Secondly, **modest impacts may be reflective of overall trends of increasing poverty and repeated shocks** experienced in the sample over the time period studied. In qualitative interviews, women reflected multiple ways in which shocks limited the impact of the transfer or how the transfer could help to buffer the impact of shocks. Thirdly, the impact evaluation design only looks at the 'best off' of LEAP 1000 recipients, or those closest to the PMT cut-off. Generally poorer households – those furthest away from the targeting cut-off – may experience larger impacts as a result of the transfer, as their baseline consumption level is much lower and the transfer therefore represents a larger share of their overall consumption. Lastly, **the 2- year time horizon for this evaluation is a relatively short timeframe to measure sizeable impacts in all domains, especially given the factors mentioned above**.

We briefly highlight some of the main findings across dimensions in the text below.

Operations: Targeting performed very well with 90 per cent of LEAP 1000 beneficiaries falling under the poverty line, and respondents gave the programme good ratings in terms of transparency of programme criteria (though, to a lesser extent among comparison households). Payment intervals were consistent, and coverage was high. Respondents rated the LEAP 1000 Programme high in terms of satisfaction of payment method (there was a switch to e-payments over the course of the evaluation). This reflects good operational functioning and delivery of the LEAP Programme. Programme communications with beneficiaries could be improved in terms of increasing transparency, and communicating entitlements (i.e., free NHIS).

Consumption, food security and wellbeing: LEAP 1000 had positive, protective impacts on total household consumption of GH₵ 8.47 per adult equivalent per month and on the poverty headcount (2.1 percentage points) and poverty gap index (2.6 percentage points). While the overall trend shows that poverty increased and household expenditures decreased in both treatment and control households over time, LEAP 1000 households experienced less of a decline than comparison households. Further, LEAP 1000 had a protective effect on spending on food items (GH₵ 6.65 per adult equivalent per month). Despite the overall decrease in food spending, LEAP 1000 households were **better able to maintain baseline levels of consumption of cereals, dairy products, eggs, vegetables, oils /fats, and spices than**

comparison households. Also critical to child wellbeing, **the food basket is more diversified** in both treatment and comparison households, but LEAP 1000 households showed greater shifts towards dietary improvements with an increase in consumption of oils and fats and reduction in starches. Households showed some improvements in food security, as there was a **positive impact in the share of households eating at least 3 meals per day (6.4 percentage points)**, and qualitative interviews echoed the fact that mothers feel better able to procure food to feed their families and experienced less stress related to food. **Yet, at the two year mark, households are still in a precarious place**, reflected in the lack of impacts on the share of respondents' reporting worrying about having enough food in the last four weeks. With regards to wellbeing, there were strong positive impacts on children's material wellbeing, with an increase in the share of children ages five to 17 that have shoes and a change of clothes.

Economic productivity and asset accumulation: With respect to economic productivity, we find that treatment households were **5.6 percentage points more likely to report raising any livestock** than comparison households, and there was a positive impact of **GH₵ 35 on spending by households on agricultural inputs** during the last agricultural season, driven mainly by spending on agro-chemicals. There were no programme impacts though on the share of households reporting any spending on agricultural inputs. LEAP 1000 households were also **8.3 percentage points more likely to have taken out a loan for productive investments** as compared to comparison households. Further, while there was no impact on the share of households with a household enterprise, the average number of household enterprises per household increased slightly (by 0.041 enterprises) showing some **intensification of non-farm activity as a result of the programme**. Impact on productivity varied by community context in qualitative interviews, with women in communities closer to markets reflecting much more non-farm entrepreneurship.

Housing conditions and WASH: As a result of LEAP 1000, treatment households were **2.7 percentage points more likely to report having an improved lighting source and 4.9 percentage points more likely to report having an improved floor**, as compared to comparison households. Further, when combining all WASH and housing condition domains, households receiving LEAP 1000 were 14 percentage points more likely than comparison households to report having acceptable housing condition indicators across all items combined. Nevertheless, the programme had **no impact on improved sanitation and drinking water, both of which are important determinants of nutrition**.

Health access and health-seeking: Through LEAP 1000, beneficiaries are granted free access to the National Health Insurance Scheme (NHIS). As a result, adults and children in LEAP 1000 households were 14.1 and 12.7 percentage points more likely to possess a valid NHIS card than adults and children in the comparison group, despite experience several challenges with time and travel costs of renewal. Although the programme had no overall effect on morbidity, adults from beneficiary households who reported being sick in the previous two weeks were 10.4 percentage points more likely to seek care than those in comparison households.

Health and nutrition of young children: Though LEAP 1000 is targeted at families with pregnant women and infants with an aim to improve their wellbeing in the first 1,000 days of life, we found no programme impacts on children's health and nutrition, including outcomes such as having received all basic vaccinations (coverage was already quite high, so likely a plateau effect), morbidity, stunting and wasting. In fact, there were slightly negative impacts on 24-59 month olds. This is not surprising, as no

impacts were found on several outcomes along the pathways to improved nutrition. There were, however, significant positive impacts on rates of exclusive breast feeding among infants under 6 months old.

Reproductive health: As a result of LEAP 1000, women aged 12-49 in treatment households reported lower fertility rates on average (0.12 fewer live births). There were no impacts on modern contraceptive use. The programme did increase the likelihood of currently pregnant women receiving antenatal care (a programme co-responsibility) by 11.4 percentage points.

Schooling: Despite decreasing enrolment rates in pre-school in our overall sample, LEAP 1000 increased the likelihood that children aged 36-59 months were enrolled in pre-school by 7.2 percentage points. However there were no impacts on school enrolment for children aged 5-17 years in LEAP 1000 households, except for a 7.0 percentage point impact on the subgroup of children 9 – 12 years old. Nonetheless, LEAP 1000 did not reduce the probability of dropping out of school nor increase educational expenditure for any age group or gender.

Women's agency and experience of violence: We found no programme impacts on women's self-reported power to make decisions, but we did find positive impacts on female beneficiaries' reports of savings (treatment women were 12 percentage points more likely to report having any savings as compared to comparison women). While there were no protective impacts of the programme on self-perceived levels of stress, the programme did have large, positive impacts on social support and women reflected more engagement with and participation in their communities. We find little evidence of a reduction in overall experiences of intimate partner violence, but we do find that LEAP 1000 had a protective effect on the severity of violence, particularly emotional and physical violence, that women experienced from their partners.

Conclusion: Results from this impact evaluation demonstrate that LEAP 1000 improved well-being of households in terms of consumption, had protective impacts against poverty despite a trend of increased poverty in the sample, positively impacted some areas of economic productivity and savings, increased use of health services for adults, and increased social support. Furthermore, we found no increases in fertility as a result of the programme. Nevertheless, we found no impacts on one of LEAP 1000's primary objectives, namely child stunting and nutrition. Given that child nutrition and stunting are determined by a complex set of inputs, this result, combined with the lack of programme impacts on drinking water and sanitation (a few such determinants), suggest that while cash and health insurance are important components to improving child welfare, more linkages with health and social services and complementary WASH interventions are needed to reduce child stunting.

Table 1. Summary of Impacts Across Domains

Consumption, food security and poverty	Baseline T mean	Endline T mean	Change EL-BL	Baseline C mean	Endline C mean	Change EL-BL	Program Impact
AE hhld expenditure p month constant Greater Accra Aug-17 prices (GH₵)	113.160	82.295	-30.945***	120.581	81.194	-39.407***	8.466***
AE food expenditure p month constant Greater Accra Aug-17 prices (GH₵)	83.925	61.158	-22.850***	89.780	60.307	-29.483***	6.645***
Number of meals per day	2.613	2.714	0.100***	2.642	2.651	0.009	0.091***
Never worry about food (last 4 weeks) (pp)	0.116	0.059	-0.057***	0.124	0.065	-0.059***	0.001
Poverty headcount (pp)	0.929	0.989	0.062***	0.910	0.991	0.084***	-0.021**
Poverty gap index (pp)	0.514	0.638	0.128***	0.492	0.642	0.154***	-0.026**
Happy with life in general (pp)	0.767	0.883	0.116***	0.804	0.876	0.072***	0.044**
Economic productivity	Baseline T mean	Endline T mean	Change EL-BL	Baseline C mean	Endline C mean	Change EL-BL	Program Impact
Raised any livestock (pp)	0.404	0.519	0.115***	0.383	0.443	0.059**	0.056**
HH with spending on agricultural inputs (pp)	0.785	0.911	0.126***	0.795	0.910	0.116***	0.011
Total expenditure on agricultural inputs (GH₵)	197.113	211.857	14.745	218.457	197.798	-20.659	35.403**
Borrowed in last 12 months (pp)	0.371	0.395	0.023	0.351	0.410	0.059**	-0.036
Loan for productive investment (pp)	0.286	0.284	0.001	0.317	0.223	-0.088***	0.083**
Loan for routine consumption purchases (pp)	0.513	0.444	-0.058	0.448	0.460	-0.003	-0.073
Number of enterprises	0.226	0.317	0.091***	0.244	0.293	0.050*	0.041*
Housing conditions and WASH	Baseline T mean	Endline T mean	Change EL-BL	Baseline C mean	Endline C mean	Change EL-BL	Program Impact
Improved lighting source (pp)	0.262	0.375	0.113***	0.311	0.396	0.086***	0.027*
Improved floor (pp)	0.746	0.764	0.018	0.748	0.717	-0.031	0.049*
Improved drinking water (pp)	0.629	0.721	0.092***	0.603	0.693	0.090***	0.002
Improved sanitation (pp)	0.101	0.233	0.132***	0.097	0.234	0.137***	-0.006
Appropriate handwashing facility (pp)	0.070	0.126	0.056***	0.072	0.105	0.034**	0.022
Number of acceptable domains	3.266	3.871	0.605***	3.328	3.792	0.465***	0.140**

NHIS, morbidity and health seeking behaviour	Baseline T mean	Endline T mean	Change EL-BL	Baseline C mean	Endline C mean	Change EL-BL	Program Impact
Valid NHIS insurance for current year (individuals aged 5-17) (pp)	0.423	0.489	0.055*	0.436	0.375	-0.080***	0.127***
Valid NHIS insurance for current year (individuals aged 18+) (pp)	0.343	0.422	0.075***	0.350	0.291	-0.061***	0.136***
Illness last 2 weeks (individuals aged 5-17) (pp)	0.210	0.137	-0.077***	0.204	0.147	-0.063***	-0.015
Illness last 2 weeks (individuals aged 18+) (pp)	0.216	0.159	-0.059***	0.227	0.164	-0.066***	0.007
Sought care for illness last 2 weeks (individuals aged 5-17) (pp)	0.548	0.701	0.140***	0.520	0.741	0.189***	-0.064
Sought care for illness last 2 weeks (individuals aged 18+) (pp)	0.540	0.720	0.191***	0.550	0.675	0.127***	0.061
Child health and nutrition	Baseline T mean	Endline T mean	Change EL-BL	Baseline C mean	Endline C mean	Change EL-BL	Program Impact
All basic vaccinations (12 - 23 months) (pp)	0.848	0.858	0.002	0.792	0.856	0.032	-0.042
Length/height-for-age z-score (sd)	-1.110	-1.275	-0.159**	-1.111	-1.323	-0.207***	0.044
Stunted (HAZ < -2 SD) (pp)	0.282	0.262	-0.020	0.284	0.275	-0.010	-0.009
Weight-for-length/height z-score (sd)	-0.469	-0.573	-0.102*	-0.436	-0.476	-0.035	-0.062
Wasted (WHZ < -2 SD) (pp)	0.152	0.083	-0.068***	0.149	0.073	-0.076***	0.008
Weight-for-age z-score (sd)	-1.019	-1.141	-0.114**	-0.972	-1.104	-0.126***	0.010
Underweight (WAZ < -2 SD) (pp)	0.194	0.179	-0.017	0.182	0.162	-0.020	0.004
Child development and schooling	Baseline T mean	Endline T mean	Change EL-BL	Baseline C mean	Endline C mean	Change EL-BL	Program Impact
Birth registered (pp)	0.413	0.524	0.113***	0.410	0.520	0.115***	-0.002
Has a pair of shoes (pp)	0.216	0.593	0.377***	0.270	0.548	0.280***	0.100***
Has two sets of clothes (pp)	0.625	0.899	0.270***	0.663	0.841	0.177***	0.095***
Enrolled in pre-school (pp)	0.152	0.117	-0.033***	0.148	0.088	-0.059***	0.025
Currently enrolled, all children 5-17 years (pp)	0.732	0.732	0.002	0.725	0.708	-0.014	0.013
Correct grade-for-age, all children 5-17 years (pp)	0.438	0.408	-0.038***	0.439	0.400	-0.048***	0.008

Reproductive health, contraception (all women aged 12-49 years)	Baseline T mean	Endline T mean	Change EL-BL	Baseline C mean	Endline C mean	Change EL-BL	Program Impact
# of total live births	3.086	3.284	0.209***	2.904	3.228	0.328***	-0.116*
Ever had child die (pp)	0.176	0.250	0.076***	0.192	0.257	0.065***	0.009
Currently pregnant (pp)	0.090	0.102	0.010	0.111	0.107	-0.006	0.015
ANC from skilled provider during current pregnancy (pp)	0.882	0.700	-0.163***	0.949	0.651	-0.290***	0.114*
Number of antenatal care visits (including zeros) - current pregnancy	3.339	2.217	-0.953***	3.407	2.212	-1.058***	0.026
First month of antenatal care - current pregnancy (pp)	2.811	2.813	-0.116	2.963	2.810	-0.205	0.093
Women's empowerment, stress, social support, and intimate partner violence (IPV), main respondent	Baseline T mean	Endline T mean	Change EL-BL	Baseline C mean	Endline C mean	Change EL-BL	Program Impact
Agency score	2.760	4.119	1.359***	2.755	3.912	1.157***	0.202
Satisfied with life some/most/all of time (pp)	0.567	0.686	0.119***	0.569	0.686	0.118***	0.001
Believes life will be better in 1 year (pp)	0.792	0.887	0.095***	0.808	0.873	0.065***	0.030
Saving money (pp)	0.070	0.370	0.300***	0.091	0.271	0.180***	0.120***
Amount of money saved last month (real) (GH₵)	3.801	10.874	7.074***	5.065	6.181	1.116	5.958***
Cohen perceived stress scale	31.818	30.653	-1.165***	31.717	30.825	-0.891***	-0.274
Fair/poor self-rated health (pp)	0.243	0.140	-0.103***	0.230	0.137	-0.093***	-0.010
Believes health is better than a year ago (pp)	0.464	0.510	0.045*	0.438	0.527	0.089**	-0.043
Has difficulty with ADL (pp)	0.511	0.408	-0.103***	0.508	0.381	-0.127***	0.024
Knows diarrhoea treatments (pp)	0.542	0.698	0.156***	0.540	0.639	0.099***	0.057*
MOS-Social Support score(standardized)	52.059	54.562	2.503**	53.526	52.715	-0.811	3.314***
Experienced emotional/physical/sexual IPV-12 months (pp)	0.673	0.623	-0.049**	0.641	0.624	-0.017	-0.033
Partner often drunk (pp)	0.042	0.046	0.005	0.027	0.040	0.014**	-0.009

Notes: * 10% significance ** 5% significance; *** 1% significance; pp = percentage points; sd = standard deviation

1. Introduction

The LEAP (Livelihood Empowerment Against Poverty) Programme began in 2008 and is Ghana's flagship poverty alleviation programme. It is implemented by the LEAP Management Secretariat (LMS) and the Department of Social Welfare (DSW) under the guidance of the Ministry of Gender, Children and Social Protection (MoGCSP). Designed to fight poverty among extremely vulnerable populations, the LEAP Programme provides bimonthly cash payments to extremely poor households with orphans and vulnerable children, the elderly with no productive capacity, persons with acute disability, and, in 2015, a pilot called **'LEAP 1000' was launched to include a new category – pregnant women and children under the age of 12 months.** Since then, the 'LEAP 1000' category has been mainstreamed into the larger LEAP Programme. As of December 2017, LEAP reaches more than 213,000 poor families in all 216 districts of Ghana **This report presents impact results from the 2- year 'endline' evaluation of the LEAP 1000 Pilot.**

This mixed methods evaluation is led by UNICEF's Office of Research, in collaboration with the University of North Carolina at Chapel Hill and two local counterparts, the Institute of Statistical, Social and Economic Research (ISSER) at the University of Ghana for the quantitative evaluation and the Navrongo Health Research Centre (NHRC) for the qualitative study.

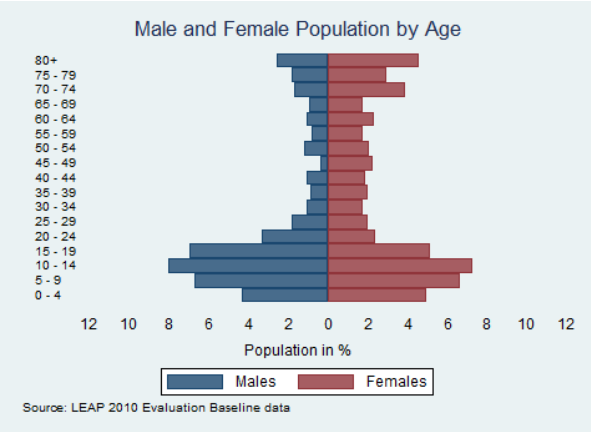
2. The LEAP 1000 Pilot Programme

The traditional targeting approach of mainstream LEAP (until 2015) focused on poor households with orphans and vulnerable children, elderly and disabled. These vulnerability categories led to LEAP serving households with a unique demographic profile – the average age of the typical LEAP beneficiary was 61, over 60 per cent were females and 39 per cent were widowed. Very few LEAP families had young children. In contrast, among all rural poor families in Ghana[1], the mean age of the household head is only 48, 83 per cent are male-headed, there are fewer orphans (who tend to be older) and a higher proportion of children under five years (see Figure 2.1.1 below). **So, while LEAP was capturing several vulnerable segments of the poor in Ghana, it was not serving other types of vulnerable households which also need support, particularly households with young children.** This was concerning as evidence shows that almost all stunting takes place before a child's second birthday – a period commonly referred to as the first 1,000 days (from conception to 24 months).

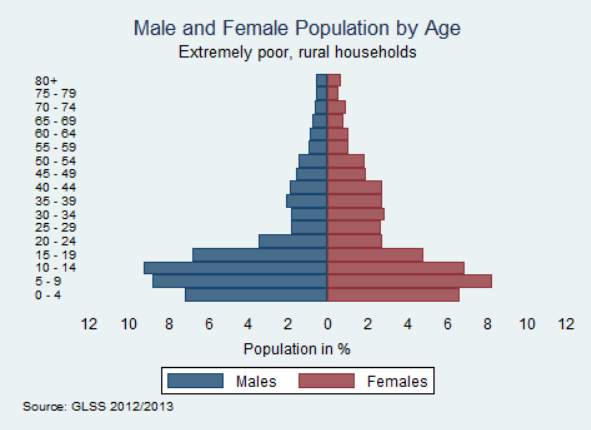
Recognizing that early childhood is a key development window with long-term implications for health and well-being, the government of Ghana (GoG) sought to address these gaps in targeting by launching a pilot programme in 2015 called 'LEAP 1000'**. LEAP 1000 used the mainstream LEAP implementation structure to target a new category of eligible beneficiaries, namely poor households with pregnant women and infants under 12 months of age**.[2] By providing support during this early,

[1] Rural poor figures presented here are based on GLSS6.
[2] Due to difficulty establishing exact ages of young children, children up to 15 months were accepted into the programme at the time of targeting.

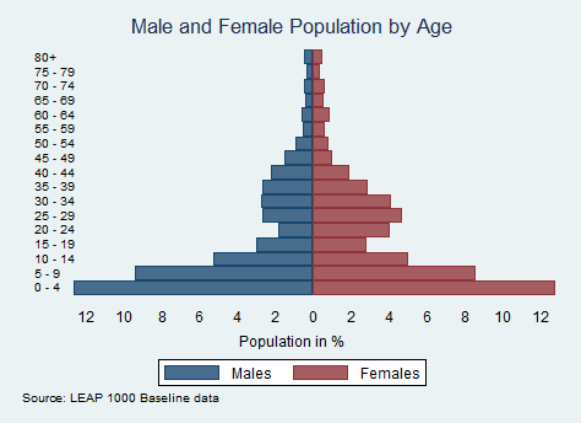
critical child development window, the programme aimed to reduce stunting and improve welfare of young children in Ghana.



Mainstream LEAP



Extremely poor, rural



LEAP 1000

Figure 2.1.1: Population pyramids for mainstream LEAP (top), extremely poor, rural households (centre) and LEAP 1000 (bottom)

The LEAP 1000 pilot initially targeted a total of ten districts in Northern Ghana (three districts in Upper East region and seven districts in Northern region). These districts were selected by applying criteria based on the high proportion of poor people within a district, combined with a high incidence of poor nutrition. However, the LEAP 1000 category was quickly mainstreamed into the larger LEAP Programme and since the end of 2015 has been included alongside the other categories in the nationwide expansion of LEAP. This demographic group now makes up about 8% of all LEAP beneficiaries. The description below refers to the initial roll-out in ten districts.

Communities within the first ten LEAP 1000 districts were targeted using official poverty rankings established at district level. Poverty rankings of communities in Ghana are based on a validation of census data by district assembly members (District Social Welfare Officers, District Health Officials, and District Chief Executives). Once the poorest communities were identified using the district ranking, priority was given to the poorest communities which were not already covered by mainstream LEAP.

Targeting of beneficiaries occurred between March 2015 and July 2015 using a demand-driven approach. In the ten selected districts, mobile units were deployed to advertise the programme and encourage potentially eligible women to apply to enter the programme. To be eligible to apply, pregnant women and households with infants under 15 months had to present proof of either: (a) antenatal cards, if pregnant; or (b) birth certificates and weighing cards, if they have an infant below 15 months. Women unable to present either document during the targeting process were advised that if selected, the necessary documentation should be provided during enrolment**. All those who applied were then administered the standard LEAP proxy means test (PMT) and assigned a score to ensure they met the poverty criterion.** Those that met the poverty criterion (households with a PMT score below the designated threshold), were enrolled into the programme from August 2015 onwards, receiving their first payment during the September 2015 payment cycle of LEAP. In total, LEAP 1000 enrolled 6,124 poor households with pregnant women and infants in 2015.

2.1 LEAP 1000 Entitlements

Women enrolled in the programme receive bi-monthly payments of cash in alignment with the mainstream LEAP. The amount of the cash transfer depends on the number of eligible household members as follows:[3]

- One eligible household member: GH₵ 64
- Two eligible household members: GH₵ 76
- Three eligible household members: GH₵ 88
- Four or more eligible household members: GH₵ 106

Further, LEAP beneficiaries are entitled to free health insurance through the National Health Insurance Scheme (NHIS), giving them access to free out-patient and in-patient services, dental services, and maternal health services. This reflects a step towards better integration of social protection programming and is the result of a collaboration between the National Health Insurance Agency (NHIA) and the DSW starting in 2011 to enrol beneficiaries of LEAP into the NHIS. LEAP beneficiaries qualify for the NHIA "indigent" exemption which waives all fees for NHIS including card processing fees, premiums and renewals. All members of LEAP households are entitled to a complete waiver of NHIS enrolment fees and premiums In 2016, LEAP conducted a nation-wide exercise to enrol 97,536 LEAP beneficiaries on NHIS. However, it is important to note registration in NHIS must be formally renewed each year, and this national exercise is not a routine occurrence.

3. Conceptual Framework and study design

3.1 Conceptual framework[4]

This section describes the conceptual framework for the LEAP 1000 impact evaluation. It identifies the relevant household and individual level indicators examined, presents them in a framework and hypothesizes potential pathways of impact.

As in most cash transfers targeted to extremely poor households, the immediate impacts of cash programmes are typically improved food security and an increase in consumption, particularly on items such as food, clothing, and shelter which influence children's health, nutrition, and material well-being. Once immediate basic needs are met, the cash may then trigger further responses within the household, for example, such as using available resources for investment and other productive activity or accessing services, and changes in time use, including influencing children's participation in chores, productive activities and school attendance.

[3] Note that the demographic groups of the wider LEAP programme also count as eligible household members for this calculation. A pregnant woman and a caregiver with a child under 1 year both count for 2 beneficiaries, one mother/caregiver and one infant. The minimum amount a LEAP 1000 household receives is therefore by definition GH¢ 76.

[4] This section is adapted from the baseline report.

These ideas are brought together in the conceptual framework in Figure 3.1.1 showing how LEAP 1000 may affect household activity, the causal pathways involved, and the potential moderating and mediating factors. The figure is read from left to right.

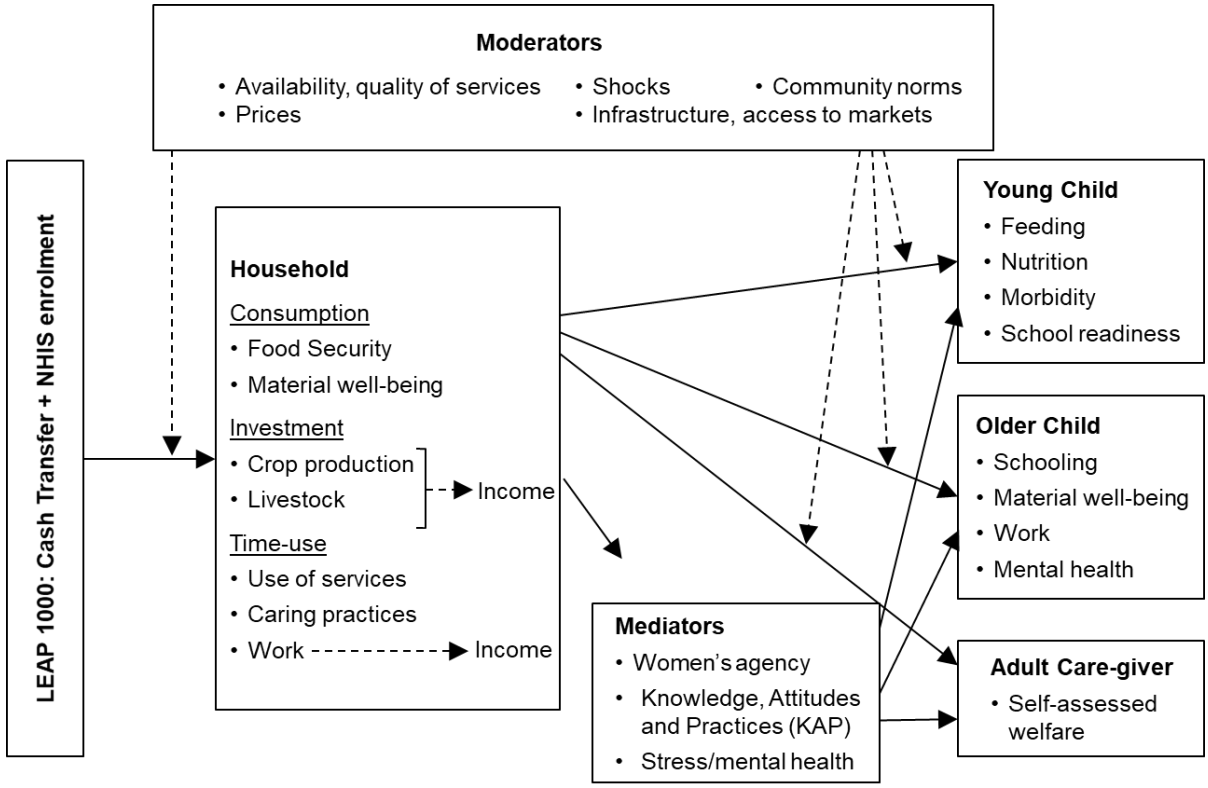


Figure 3.1.1: Conceptual framework LEAP 1000 programme evaluation

We first expect direct effects of the cash transfer on household consumption (food security, diet diversity, basic needs, improvements to dwelling) and the use of services (health care). Subsequently, there may even be impacts on time use allocation and productive activities, with further implications for increased income. As free access to NHIS is an entitlement for beneficiary households, enrolment in NHIS may induce households to use health services, and this increased use of services is a potential mediator, or mechanism through which LEAP impacts other outcomes of interest (feeding, nutrition, morbidity) moving to the right of the diagram. Sociological and economic theory suggest that the impact of the cash may work through several additional pathways (mediators), including intrahousehold resource allocation, women's agency, levels of stress, and caregivers' knowledge, attitudes, and practices. Similarly, the impact of the cash transfer may be weaker or stronger depending on local conditions in the community (these conditions are referred to as moderators). These moderators include infrastructure and access to markets, service availability and quality, prices, shocks, and community norms. Moderating effects are shown with dotted lines that intersect with the solid lines to indicate that they can influence the strength of the LEAP 1000 impacts.

Moving to the right, the next step in the causal chain is the effect on children, which we separate into older and younger children because of the programme's focus on very young children and because the

key indicators of welfare are different for the two age groups. It is important to recognize that any potential impact of the programme on children must work through the household and caregiver pathways including spending or time allocation decisions (including use of services). The link between household and child-level outcomes can also be moderated by community-level factors, such as distance to schools or health facilities and other complementary services available or household-level characteristics such as the mother's literacy, and shocks. In Figure 3.1.1 we list some of the key indicators along the causal chain that are analysed in this evaluation. Finally, as the beneficiary women are the main adult caregivers of the children, we also examine woman-level outcomes, including self-perceived health and well-being, both to understand impacts on women's wellbeing as a result of LEAP 1000, and because caregiver wellbeing can have a direct influence on child wellbeing.

3.2 Impact evaluation design

The Ghana LEAP 1000 impact evaluation comprised quantitative surveys (community, health facility and household) and an embedded qualitative study with beneficiaries.

3.2.1. Quantitative design and sampling

The key issue in any impact evaluation is the 'what if' question: what would have happened if our treatment group had not received the LEAP 1000 programme? To make a valid statement about the impact of LEAP 1000, we need a counterfactual, or comparison group, which can accurately represent this 'what if' scenario. The gold standard of creating a comparison group is through randomized assignment, whereby some households are randomly selected to receive LEAP 1000, while others are randomly allocated to a control group. Through randomization, the treatment and comparison group would be highly similar in terms of their characteristics, except for the fact that one group would receive LEAP 1000 while the other would not. Comparing these two groups over time would yield an unbiased estimate of the impact of the programme. However, in the case of the LEAP 1000 evaluation, randomization was not an option, and an alternative strategy was required to construct an appropriate comparison group. **In the current evaluation, we used a regression discontinuity design (RDD). The RDD works in situations where treatment is determined by whether a value on a continuous numerical score falls below or above a predetermined threshold or cutoff**. The main idea of this approach is that households in the close vicinity of the eligibility threshold are 'as good as randomly' assigned to the treatment and comparison group. In the case of LEAP 1000, the numerical score is the PMT score, and the cutoff for eligibility was determined by the LEAP Management Secretariat (LMS), placing the score between the extreme poverty and poverty lines. This score would also be relatively close to the lowest wealth quintile of GLSS6, a group often used as a comparison for LEAP households.

There are two main assumptions for the RDD strategy to work. First, eligible households should not able to manipulate their PMT score to ensure they qualified for the programme. Appendix B provides a detailed test which concludes that **no manipulation was found**. A second key assumption of the RDD is that there are no discontinuities in outcomes at baseline. The baseline report conducted a large number of tests on a wide variety of outcomes and found that only in less than five per cent of the tests, a significant difference was found. These results are within the expected number of statistically significant findings due to chance, and thus the baseline report concluded that the **treatment and comparison group generated by the RDD were well-balanced**.

Sample selection

The selection of the quantitative sample has been described in the baseline report and is briefly summarized below. **The evaluation was conducted in five of the 10 districts in which LEAP 1000 operates: Yendi, Karaga and East Mamprusi in the Northern Region and Bongo and Garu Tempane in the Upper East Region.**

Because the key idea behind RDD is that households just below and above the cutoff are highly similar, the sampling strategy sought to select those households that were closest to the cutoff. **Out of the 8,058 households in 189 communities who applied for LEAP 1000, a sample of 1,250 households below the cutoff and 1,250 households above the cutoff were selected.** This number was chosen based on power calculation around key outcomes. Based on their PMT score, households were sorted in ascending order for the comparison group and in descending order for the treatment group, and the first 1,250 top ranked households for each group were selected as the initial sample. Since it was deemed inefficient to visit communities with fewer than three selected households, the sample was restricted to communities in which at least three households were selected. An additional sample of 125 households on either side of the cutoff was added to serve as replacements in the case of refusals or inability to locate sampled households during fieldwork. At baseline, the number of successfully completed interviews was 2,497, of which 1,262 had a PMT score lower than the threshold (treatment) and 1,235 had a score above the threshold (comparison).

The baseline analysis found that the two groups were balanced at baseline, with fewer than five per cent of indicators (based on more than 500 statistical tests) showing a statistical difference between the two groups. At endline, 2,331 households were successfully re-interviewed (see section 3.4 below) and retained in the panel, indicating an attrition rate of 6.65 per cent. Section 4.1 provides a detailed analysis of attrition in the sample.

It is important to note that the RDD evaluation design estimates impacts among treatment households who are close to the PMT cut-off and thus relatively better off than the remaining distribution of LEAP 1000 eligible households. **This means that the estimates presented in this report are likely lower bound estimates of the impacts of LEAP 1000 (that is, poorer LEAP 1000 households may have benefited even more from the programme).**

3.2.2 Qualitative design and sampling

For the qualitative sample, in October 2015 we purposively selected 20 beneficiary households from the baseline targeting sample, 10 in the Karaga district in Northern Region (NR) and 10 in the Bongo district in Upper East Region (UER).[5] The districts were selected to show two distinct contexts. **In Karaga, the communities are rural and located far from larger markets. In contrast, the communities in Bongo are closer to an active market town and economic centre.** These strata ended up being important in the analysis with several notable differences in the impact of LEAP 1000, especially in terms of investment in non-farm enterprise (described below). During the two years of follow up in the study areas, the research

[5] Two of the women included in the qualitative sample were cash transfer recipients but did not participate in the quantitative survey.

team observed that the roads in Karaga greatly improved and made travel much easier. In Bongo, there was noticeable increase in the amount of construction, including among beneficiaries.

Within each district, we selected 10 households across five communities (Figure 3.3.1). Within each community, we selected **one woman who was pregnant with her first child at targeting or who had just one child under 12 months old, and another woman who had three or more children**, including one child under 12 months old. The use of parity as a stratum for sampling was based on the assumption that the target outcomes of LEAP 1000 could be different based on the level of experience of the mother and number of children under her care. However, in the final analysis, we did not find that parity was a useful stratum as it was confounded by the overall size of the household and age of the woman. The sample is illustrated in Figure 3.2.1 below.

Based on a review of the LEAP 1000 targeting data, we identified 97 women in Bongo and Karaga who met our sampling criteria: 23 first time mothers and 74 women with three or more children. Due to the small number of first-time mothers in the sample, the final selection of study communities was based on the presence of at least one first-time mother in the community. In addition to conducting individual interviews, the team also conducted observations of the context of the communities that were documented in an observation guide.

In selecting the beneficiaries to be interviewed, we consulted with the LEAP community focal person in the communities. Participation in LEAP 1000 was confirmed through self-reporting by the women, visual confirmation of a related LEAP 1000 quantitative survey or informed consent form left by the quantitative survey team and/or confirmation of the first LEAP 1000 payment, which had been made shortly before qualitative data collection in September 2015.

The evaluation included a baseline interview, a midline and endline interview. This longitudinal approach was designed to build rapport with the participants to allow for in-depth and contextualized exploration of processes and mechanisms of impact over time. The midline interviews with beneficiary women were complemented with four focus group discussions with non-participants (two in each district) to observe community perceptions, and interviews with women's male partners. The male partner interviews were repeated at endline to obtain detailed knowledge on intra-household dynamics and to create more context on important changes and life events.

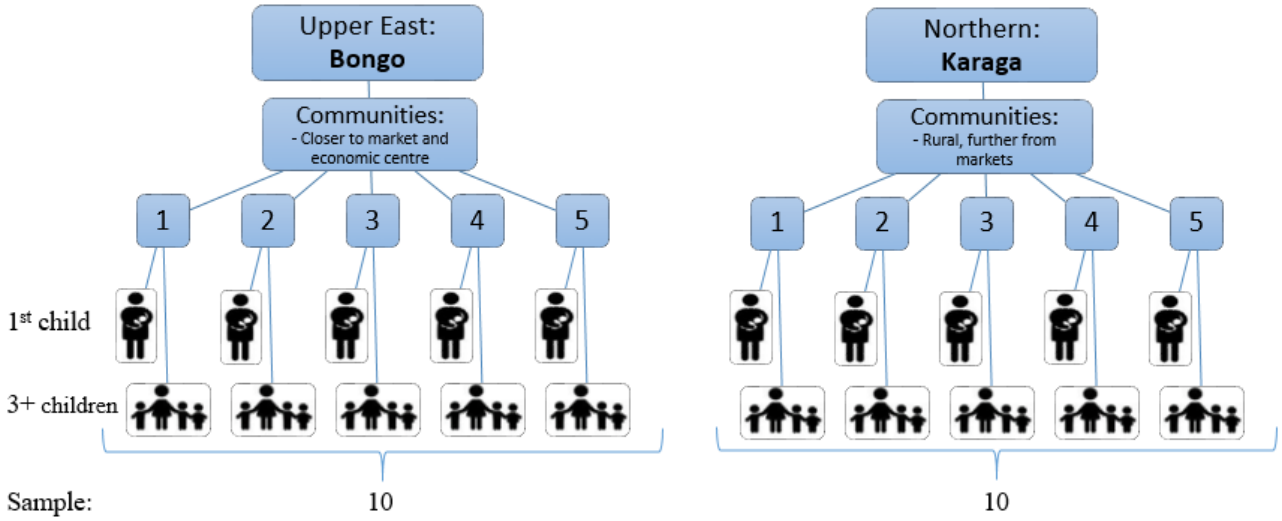


Figure 3.2.1: Description of the sampling scheme for qualitative evaluation (N=20)

3.3 Data collection

3.3.1 Quantitative data collection

Quantitative data collection was led by ISSER. Data was collected using Computer Assisted Personal Interviewing (CAPI). For endline, after two weeks of training with participation from UNICEF Office of Research - Innocenti, field work started on the 28th of June and ended on 22nd of August, 2017 with six teams. Each team was comprised of a team leader, three interviewers and a data editor to perform data quality checks while in the field and assist with anthropometric measurements. The six teams were spread across the study regions based on knowledge of spoken languages. The fieldwork was organized around data collection teams, with ISSER field monitoring visits and in-office quality review and callback checks. The second and third activities were coordinated in such a way that it gave field enumeration teams' prompt feedback to make corrections while still working in study communities.

Rigorous strategies were implemented for monitoring the field data collection, including on-site field visitations and in-office quality review and callback checks. Subsequently, three additional steps were taken to check and achieve high-quality data. The first phase was the quick review of raw data periodically received through ISSER's servers. The second was cleaning of the data and consistency checks (accompanied by callback to respondents to clarify data as needed). The third was data processing and data management, which prepares the data for use in analysis.

The research team adhered to the Ethical Principles and Guidelines for the Protection of Human Subjects of Research as outlined in the Belmont Report. Enumerators received instruction on ethnical data collection and informed consent at data collection trainings. Informed consent was obtained from all respondents. Following WHO guidelines[6], we provided anonymized referral information to survey respondents who were asked questions on experiences of violence. This referral information included

[6] WHO and Path. (2005). Researching violence against women: a practical guide for researchers and activists. WHO and PATH: Geneva. http://www.who.int/reproductivehealth/publications/violence/9241546476/en/

contact numbers for district social welfare officers. Social welfare officers in the districts were contacted in advance to ensure they were aware of these referrals and to verify the services available. Ethics approval for the quantitative data collection was granted by the Ethics Review Board at the University of Ghana, and for the qualitative data collection by Navrongo Health Research Centre and University of North Carolina at Chapel Hill Ethics Review Boards.

Table 3.4.1 shows the completion of household interviews by district and treatment status. It shows that 93.4% of household interviews were completed across the five districts, including 92.8% among the comparison group and 93.9 per cent among the treatment group. Information from the data collection teams shows that all missing households had moved to new locations outside the five districts selected for the study. About 53 per cent of such households had moved for reasons not known to their neighbours even though their locations were known, while 38 per cent were known to have moved for work.

Table 3.4.1: Completion of household interviews, by district and treatment status (%)

	Treatment Status					
	Comparison		Treatment		Total	
District	Number of Households at Baseline	Percent Interviewed at Endline	Number of Households at Baseline	Percent Interviewed at Endline	Number of Households at Baseline	Percent Interviewed at Endline
East Mamprusi	411	95.1	399	95.7	810	95.4
Karaga	254	96.5	229	95.6	483	96.1
Yendi	184	94	204	93.1	388	93.6
Bongo	194	90.7	225	92	419	91.4
Garu-Tempane	192	83.9	205	91.2	397	87.7
Total	1,235	92.8	1,262	93.9	2,497	93.4

3.3.2 Qualitative data collection

The qualitative fieldwork was led by the Navrongo Health Research Center (NHRC). Following a 4-day training from July 8-11 at NHRC with participation from UNC and UNICEF Ghana, simultaneous fieldwork was conducted in Karaga and Bongo from July 13th to 20th. Field teams included a study lead who supervised, coordinated and conducted observations, a male interviewer and a female interviewer. A graduate researcher from UNC accompanied the team in Karaga during fieldwork.

Interviewers were the same sex as the participants. The same female interviewer conducted interviews for all three waves of data collection with women in Bongo, which facilitated rapport and trust with participants. In Karaga, the same female interviewer conducted the interviews at midline and endline. The male interviewers in Bongo and Karaga were different at midline and endline. In Karaga, however, the endline interviewer had transcribed data from midline providing greater familiarity with the interviews and the study. Interviewers reviewed summaries of the baseline and midline interviews prior to conducting endline interviews to facilitate personalization and depth of probing.

Locations of study participants were verified through volunteers in the community. As was done at baseline and midline, the contact persons were provided with phone credit to keep the team informed on any changes in the location of the participants during the fieldwork period. In Karaga, some women had moved between their parental and husband's household due to local practices regarding where women live post-partum between baseline and midline. Therefore, midline and endline fieldwork was conducted in 7 rather than 5 communities. Additionally, during the midline fieldwork, the team discovered that one participant interviewed at baseline was not the prime beneficiary but rather the co-wife of a beneficiary. As they were sharing the transfer, we conducted the follow-up interview with the same participant for continuity. This beneficiary was one of the two women from Karaga who had migrated to Southern Ghana for economic reasons at endline and therefore did not participate in the endline interview. Not all of the female participants had partners who could be interviewed. One female interviewee in Bongo was unmarried, and two women in Karaga were widowed. The partner of one of the female participants in Karaga was not interviewed because he was working in another community at the time of the fieldwork. See Table 3.4.2 for an overview of the number of interviews completed at each wave.

All of the qualitative interviews were audio recorded, transcribed verbatim and translated to English. The field team in each region met after each day of fieldwork to review key themes, address questions and concerns and identify any topics for further probing. Interviewers wrote detailed field notes immediately following each interview using a structured template.

Table 3.4.2: Number of completed in-depth interviews, by wave and gender

	In-depth Interviews: Female			**In-depth Interviews: Male**		
District	**Baseline**	**Midline**	**Endline**	**Baseline**	**Midline**	**Endline**
BONGO (UER)	10	9	9	0	5	8
KARAGA (NR)	10	10	8	0	8	7
Total	**20**	**19**	**17**	**0**	**13**	**15**

3.5 Instruments

Qualitative Instruments

The baseline instrument collected information on the composition and dynamics of the household, and a description of the household's situation in terms of the key outcomes targeted by LEAP 1000, including food security, child nutrition, economic well-being, access to health care, and gender dynamics. In addition, an inventory of sources of social support and social capital, as well as stresses on the household, was elicited.

At the midline follow-up, the in-depth interviews with female beneficiaries focused on the changes in the previously mentioned topics that had taken place in the household since the baseline interview including specific questions on the changes that the LEAP 1000 support had brought about in terms of income, nutrition, health and intra-household relationships, and other topics. Moreover, the interviews captured the experiences of the participants with collecting the cash transfer and enrolling in and using NHIS. The interview guides for male partners followed a similar structure.

The endline guide for both men and women again probed on overall changes as well as specific changes to the economic situation, health, and subjective wellbeing. We also probed on intra-household dynamics and decision making around use of the transfer, family planning and fertility intentions, and social capital.

3.6 Estimation methods

3.6.1 Quantitative analysis

Given the use of the RDD design to construct a treatment and comparison group with similar characteristics and outcomes at baseline, our estimation strategy employs a difference-in-differences (DID) design to compare the two groups. This design estimates programme impact by comparing changes in the treatment group between the baseline (2015) and endline (2017) to changes in

the comparison group over the same time period, controlling for household- and district-level differences between the two groups. This methodology nets out changes that may have occurred over time due to other factors (e.g., floods, recession, inflation, rapid economic development) as the comparison group would have experienced these as well, thus resulting in more accurate estimates of programme impact, as seen in Figure 3.5.1.

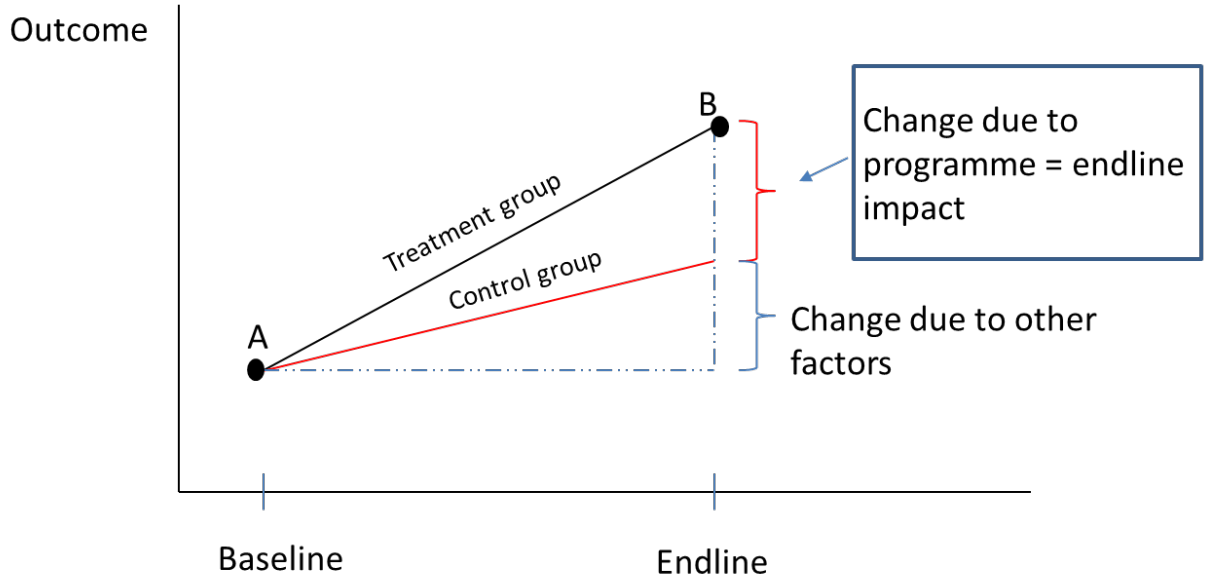


Figure 3.5.1. Difference-in-Differences Design

The validity of the impact estimates obtained by this design depends on what is called "the parallel trends assumption", which assumes that the change in the comparison group provides a good approximation of the change that would have occurred to LEAP 1000 households had they not received the programme. The RDD design in combination with the fact that treatment and comparison households are drawn from the same communities (i.e. in one community, we could have interviewed both comparison and treatment households) increases our confidence in this assumption, but we also include several household characteristics that are not expected to be influenced by the programme in the impact estimation models to control for differences between treatment and the comparison groups and improve the precision of our estimates. These include the household's PMT score, household size, sex of the household head, age of the household head, and education level of the household head. All these variables are measured at baseline, that is, prior to programme commencement. We also include district fixed effects.

To assess the impacts of LEAP 1000, we use the following DID model:

$$Y_{ijt} = \beta_0 + \beta_1 P_{ij} + \beta_2 T_t + \beta_3 P_{ij} \cdot T_t + \beta_4 \boldsymbol{X}_{ijt} + \lambda_j + \varepsilon_{ijt} \quad (1)$$

Where Y_{ijt} is the outcome of interest for individual or household i who lives in community j at time t. P_{ij} is a binary variable set to 1 if household i in community j is in the LEAP 1000 programme, and to 0 if it

is not. T_t is a dummy (binary) variable for time of the observation, set to 1 if the observation is from the endline survey, and to 0 if it is from the baseline. $P_{ij} \cdot T_t$ is the interaction terms of the programme and the time dummy. $\boldsymbol{X}_{ijt}$ represents a set of observed individual and household characteristics described above. λ_j represents a full set of district dummies included in the model to control for unobserved characteristics of the communities that do not change in the evaluation interval (these are the controls for fixed-effects). Finally, ε_{ijt} is the usual error term. In this model there is one particular coefficient of interest: β_3, the coefficient of the interaction term is the DID programme impact at endline. Its estimated value ($\hat{\beta}_3$) is interpreted as the additional change in the outcome achieved between baseline and endline as a result of receiving LEAP 1000, controlling for differences in the observed characteristics, $\boldsymbol{X}_{ijt}$, and for fixed unobserved differences. Model (1) is estimated with regression analysis methods applied on pooled data from the panel of households included in both the baseline and endline surveys. Standard errors were adjusted for clustering at the community level and we used weights in the estimation to correct for general attrition.

The aforementioned estimation strategy gives the intention-to-treat (ITT) estimates, which are the difference in outcomes between households assigned to the programme and households assigned to the comparison group, irrespective of whether households complied with this treatment assignment. These are the estimates presented and described in the report below. However, as in many programs, there is not always perfect compliance to the treatment and comparison assignments. In case of imperfect compliance (that is, some assigned to the comparison group received LEAP 1000 payments or some assigned to the treatment did not receive any payments), it is sometimes of interest to estimate the impact for the group who actually received treatment (referred to as "treatment on the treated"). This can be done through an instrumental variable approach, whereby assignment to treatment or comparison groups is used as the instrument to predict observed treatment status (that is, actual receipt of the programme). In the case where non-compliance is only from the treatment group, then the estimated coefficient identifies the ATT. In the case where non-compliance occurs in both treatment and comparison groups, then the estimated coefficient represents the local average treatment effect (LATE). In the LEAP 1000 case, the non-compliance mostly is found in the treatment group (14.7 per cent from treatment group reported receiving no payments and only 2.5 per cent from the comparison group reported receiving payments) and therefore the coefficient in this case, while formally being a LATE, is close enough to identify the ATT. While the ITT is widely used and mostly relevant for policy purposes, we report in an online annex the ATT estimates. In general, it is expected that ATT impacts are larger than the ITT ones, although the former might be less precise than the ITT, as is generally the case with an instrumental variables approach.

3.6.2 Qualitative analysis

During the baseline and midline analysis, the research team developed analytic summaries for all participants. These summaries were organized around key themes and evaluation questions, which allowed us to simultaneously code the data to identify patterns in the key areas of interest to the programme while also tracking change and narratives over time. We updated and expanded these summaries following detailed review of field notes and transcripts of the endline interviews with a focus on overall impact. We integrated male data into their partner's summaries to facilitate dyadic analysis. Finally, we identified illustrative quotes in the transcripts to reflect key themes.

4. Evaluation results

4.1 Sample characteristics and attrition

Attrition

Attrition occurs when households from the baseline sample are missing in the follow-up sample. Death, migration or dissolution of households are examples of events that could prevent locating a household during the endline survey. It is important to examine attrition for estimating programme impact because it not only decreases the sample size, leading to less precise impact estimates, but it could also introduce bias into the evaluation sample. If attrition is selective, that is, that those leaving the sample are different than those who remain, it could lead to incorrect programme impact estimates, or it might affect the representativeness of the sample.

We examined both overall and differential attrition between baseline endline surveys. Overall attrition refers to households from the original baseline sample that were not interviewed at endline. Overall attrition can change the characteristics of the sample in the panel, making it non-representative of the population that it originally represented (i.e., those households close to the PMT cut-off who were among the first districts to which the LEAP 1000 category was rolled out). Differential attrition occurs when treatment and comparison households leave the sample at different rates, which could threaten the internal validity of the study design. We examined whether differential attrition affected the balance between the treatment and comparison groups obtained at baseline.

Table 4.4.1 presents the number of households in the baseline sample, the panel (those also interviewed in the endline survey), and attrition. Overall attrition was low at 6.6%, with small variation between the treatment (6.1%) and the comparison groups (7.2%). There were only relatively small differences in attrition between districts and between treatment and comparison groups within districts, with the exception of Bongo and Garu-Tempane.

Table 4.1.1: Households in the Baseline survey, Panel, and Attrition

Groups		2015 Baseline	In the Panel	Retained in Panel (%)	Attrition Rate (%)
Treatment		1,262	1,185	93.9	6.1
Comparison		1,235	1,146	92.8	7.2
Total		2,497	2,331	93.4	6.6
Districts	Evaluation Group				
East Mamprusi	Treatment	399	382	95.7	4.3
	Comparison	411	391	95.1	4.9
Karaga	Treatment	229	219	95.6	4.4
	Comparison	254	245	96.5	3.5
Yendi	Treatment	204	190	93.1	6.9
	Comparison	184	173	94.0	6.0
Bongo	Treatment	225	207	92.0	8.0
	Comparison	194	176	90.7	9.3
Garu-Tempane	Treatment	205	187	91.2	8.8

	Comparison	192	161	83.9	6.1

We examined overall attrition by comparing baseline characteristics of those in the panel to those lost to follow-up (attritors) on 175 indicators (Appendix A.1). We found that 34 out of 175 indicators (19.4%) were statistically different at the 5% level. These results indicate that overall attrition was selective in the analysis sample. In order to deal with selective attrition, we used an inverse probability weighting (IPW) procedure to obtain adjustment factors of the sampling weights.[7] To implement the IPW, we estimated a model of being in the panel using baseline household-level background characteristics and outcomes as explanatory variables, and then adjusted the sampling weights using the predicted probabilities of being in the panel obtained from the model. We also included control variables in the impact estimation models to control for persistent differences between the treatment and comparison groups. Therefore, the estimates in this report are corrected for selective attrition.

Next we examined if differential attrition affected the balance between the treatment and comparison groups using baseline values among households in the panel. We found that there were imbalances significant at the 5% level in only 12 out of 175 (6.8%) indicators. These results indicate that attrition has largely not affected the balance between the treatment and comparison groups (Appendix A.2).

4.2 Community characteristics

The LEAP 1000 study took place in 131 communities across five of 10 districts targeted by the initial programme roll-out in the northern part of Ghana. Three districts (East Mamprusi, Karaga and Yendi) are in the Northern region and two (Bongo and Garu-Tempane) in the Upper East region. These regions exhibit the highest levels of vulnerability in the country. The Upper West region has the highest proportion of households in the lowest quintile of the consumption distribution and the Northern region exhibits the lowest proportion in the highest quintile of consumption compared to the other regions.[8] Additionally, the levels of malnutrition are the highest in the country. In the Northern region, one in three children is stunted compared to a national rate of one in five.[9]

In this section we provide some context of the area studied based on a community questionnaire that was administered at endline to key informants, such as assembly members, unit committee members, community chairmen, traditional leaders, opinion leaders, youth and women's groups members or chairs. Supervisors administered the community questionnaire, which elicited information on the provision of basic services, including access to roads, schooling and health facilities; on events that happened in the community since 2015, both negative and positive; and information on other development programmes in the community. This information on services and events in the communities studied helps contextualize and interpret findings.

4.2.1 Access to services and facilities

[7] Because the evaluation sample included all households close to the PMT cut-off, the original sampling weights for the baseline observation is 1 for all households.
[8] Ghana Living Standard Survey Round 6 (GLSS 6), 2012/2013. Main Report.
[9] Ghana Demographic and Health Survey (GDHS), 2014.

Table 4.2.1 reports the access of communities to roads and other basic services, including electricity, water, Village Savings and Loans (VSL) programmes and post offices. Only 8 per cent of the communities in our study have access to a bitumen/asphalt road, while 16 per cent report the nearest bitumen road between 1 and 5 kilometres away. Further, half of them have the nearest bitumen road between 6 and 30 kilometres away and 19 per cent between 31 and 70 kilometres away, reflecting the remoteness of most of these communities. In addition, transportation is challenging during certain times of the year for nearly half of the communities (44 per cent), when main roads cannot be passed by vehicles. Further, among these a quarter (28 per cent) are motorable only for six months or less. While almost half of communities have access to electricity through public grid, only a quarter have access to public piped water.

Table 4.2.1: Access to basic services

	Mean
Roads	
Has bitumen/asphalt road	0.08
Distance from nearest bitumen road	
In the community	0.08
1-5 km	0.16
6-10 km	0.20
11-30 km	0.37
31-70 km	0.19
Main road motorable throughout year	0.56
Road passable by mini-bus 6 months per year or less	0.28
Other services	
Has access to electricity through public grid	0.45
Has access to public piped water	0.24
Travel time to nearest Village Savings & Loans Programme	
In the community	0.43
1-30 minutes	0.15
31-90 minutes	0.22
1.5-4.5 hours	0.21
Travel time to nearest Post Office	
In the community	0.01
1-30 minutes	0.17
31-90 minutes	0.41
1.5-4.5 hours	0.41
# of communities	131

With LEAP 1000's strong focus on children's nutrition, access to health services and facilities is an important characteristic which may moderate programme impacts. Table 4.2.2 reports a number of indicators which reflect access to health facilities and the main issues faced by communities in relation to health services. While only 14 per cent of communities have a health facility in the community, half of them can reach the nearest facility within 30 minutes. The remaining half of communities have more difficulty accessing health care, with 11 per cent of communities having to travel between 1.5 and 4.5 hours to reach the nearest health facility. We also asked about the level of satisfaction with health services by community members and the main issues associated with health services. Key informants reported that slightly more than half of community members are satisfied with the quality of services provided by the nearest health facility and, as reflected by the distance to the nearest health facility, the most commonly

reported problem on health service delivery is lack of health facilities. The second most reported issue concerned the financial constraints of community members to seek health services. Lack of medicines, medical supplies and lack of qualified personnel were also issues frequently reported by key informants.

In addition to the cash transfer, LEAP 1000 offers free enrolment into NHIS, both of which can address demand-side barriers to health seeking. Simultaneously, it is also important to assess the supply side of services associated with NHIS. All health facilities are reported to admit people with NHIS, although distances to the nearest office or facility where community members can register for NHIS are on average quite far, with 40 per cent having to travel long distances (between 1.5 and 4.5 hours). The main reasons for not registering with NHIS were financial constraints (92 per cent), distance (20 per cent) and dissatisfaction or preference for traditional medicine (14 per cent). Key informants reported that the vast majority (82 per cent) of women in their communities give birth in hospitals, clinics, health posts or Community-Based Health Planning and Services (CHPS). Immunization campaigns in the previous 6 months and provision of insecticide-treated mosquito nets were present in almost all communities (91 per cent).

Table 4.2.2: Access to health services

	Mean
Travel time to nearest government health clinic	
In the community	0.14
1-30 minutes	0.40
31-90 minutes	0.35
1.5-4.5 hours	0.11
Community members satisfied with quality of nearest health facility	0.55
Most common problems with health service delivery in the community	
Lack of health facilities	0.69
Lack of qualified personnel	0.21
Inability to pay for health services	0.45
Health centre too far	0.27
Lack of medicine and medical supplies	0.23
Lack of accommodation for health personnel	0.04
Inadequate health facilities	0.08
Health facility admit people with NHIS	1.00
Travel time to nearest office/clinic where one can register for NHIS	
In the community	0.01
1-30 minutes	0.18
31-90 minutes	0.40
1.5-4.5 hours	0.40
Main reason for not having valid NHIS	
Financial constraints	0.92
Distance from NHIS registration facility	0.20
Dissatisfaction with service/prefer traditional medicine	0.14
Most women give birth in Hospital/Clinic/Health post/CHPS	0.82
Immunization campaign last 6 months	0.91
Provision of insecticide-treated mosquito nets free or low cost	0.92
# of communities	131

Schooling is important input to human capital development and a key pathway for inter-generational poverty reduction In Tables 4.2.3, 4.2.4 and 4.2.5 we report access to pre-school, primary and secondary

education schools. Four out of five communities have a primary school in the community. Of the remaining communities, 8 per cent are up to 30 minutes away from the nearest primary school, 7 per cent between 31 and 90 minutes and 5 per cent reporting up to 4.5 hours. A similar distribution of distances is found for pre-schools, with only a slightly lower proportion of facilities within the community (70 per cent). Overall, the vast majority (82 per cent) of communities do not have any private or religious school within the community, and key informants in slightly more than half of community report that community members are satisfied with the quality of the nearest primary school. School feeding programmes are reported to be implemented in half of the communities.

Table 4.2.3: Access to Pre and Primary school

	Mean
Travel time to nearest government pre-school	
In the community	0.69
1-30 minutes	0.09
31-90 minutes	0.11
1.5-4.5 hours	0.11
Travel time to nearest government primary school	
In the community	0.80
1-30 minutes	0.08
31-90 minutes	0.07
1.5-4.5 hours	0.05
Community has no private/religious primary school	0.82
Community members satisfied with quality of nearest government primary school	0.59
Primary school has a school feeding programme	0.47
# of communities	131

As expected, the proportion of communities that have junior high schools (JHSs) in the community is lower than the number with primary schools. A third of communities have a JHS within the community, and 20 per cent have to travel up to 30 minutes to reach the nearest JHS. Another third of communities are situated between 31 and 90 minutes of travel from the nearest JHS, and the remaining 10 per cent are between 1.5 and 4.5 hours and very few have any private or religious JHSs. Costs associated with schooling can be an important factor in preventing children from attending school, particularly for financial constrained households. We asked informants to provide some estimates of the fees to attend one term of JHS. In half of the communities fees ranged from zero to GH¢ 10. This is reflected by the fact that education in Ghana is, in principle, free up to JHS. However, the remaining half of communities report substantial costs that households incur to send their children to school (32 per cent spend between GH¢ 11 and 50 and 14 per cent spend more than GH¢ 50)[10].

The reported proportion of children of JHS age who are currently enrolled in school varies quite substantially across communities. In 40 per cent of communities, respondents estimated that the percentage of children aged 12-15 years enrolled in any type of school is between 51 and 80 per cent. In 33 per cent of communities the proportion is lower (between 11 and 50 per cent), followed by 19 per cent of communities where between 81 and 100 per cent of children in this age range are enrolled in schools. A lower proportion of communities (8 per cent) instead report a very low proportion (0-10 per cent) of

[10] The costs refer to fees for one year to attend a government JHS in the area. This includes tuition, boarding and lodging and any other fees (e.g., parent teacher association fees).

children aged 12-15 years being enrolled in school. The main reasons for not being enrolled in junior secondary education are financial constraints and lack of parents' or children's interest. Few schools allow students to attend without a uniform (17 per cent) or without shoes (26 per cent), creating additional barriers for children from poor households.

Table 4.2.4: Access to junior high school

	Mean
Travel time to nearest government junior high school	
In the community	0.33
1-30 minutes	0.22
31-90 minutes	0.32
1.5-4.5 hours	0.13
Estimated fees to attend one term of a government junior high school	
0-10 cedis	0.53
11-50 cedis	0.33
50+ cedis	0.14
No private/religious junior high school in the community	0.93
Proportion of enrolled 12-15 years old	
0-10%	0.08
11-50%	0.33
51-80%	0.40
81-100%	0.19
Main reasons for children not attending junior high school	
Inability of parents to fund child's education	0.72
Lack of parental interest	0.69
Lack of interest in schooling by children	0.65
School far away	0.35
Inadequate schools/classrooms	0.09
Inadequate teachers and learning materials	0.14
Dangers faced by children on their way to school	0.08
Possible to go to junior high school without uniform	0.17
Possible to go to junior high school without shoes	0.26
# of communities	131

Access to senior high schools (SHS) or technical/vocational/commercial schools is even more limited. In the majority (40 per cent) of communities, students have to travel between 1.5 and 4.5 hours to reach the nearest senior high or technical school. The second highest share of communities (37 per cent) report a travel time of 31-90 minutes to the nearest high school, while 22 per cent are closer (up to 30 minutes). There are no senior high schools in any of the study communities, with the exception of one. The proportion of children of senior high school age (16-19 years) attending any type of school is uneven across communities, with half of communities reporting enrolment rates between 11 and 50 per cent. Only in 7 per cent of communities is the proportion very high (81-100 per cent). The remaining 40 per cent of communities are split between very low proportions of children enrolled in school (0-10 per cent) and higher proportions (51-80 per cent). The main reasons reported for adolescents aged 16-19 years not being enrolled in school is financial constraints, but also, as with the younger cohort, lack of interest by parents or adolescents themselves.

Table 4.2.5: Access to senior high or technical/vocational/commercial school

	Mean

Travel time to nearest government senior high or technical/vocational/commercial school	
In the community	0.01
1-30 minutes	0.22
31-90 minutes	0.37
1.5-4.5 hours	0.40
Proportion of enrolled 16-19 years old	
0-10%	0.21
11-50%	0.51
51-80%	0.21
81-100%	0.07
Main reasons for children not attending senior high school	
Inability of parents to fund child's education	0.98
Lack of parental interest	0.67
Lack of interest in schooling by children	0.53
School far away	0.47
Inadequate schools/classrooms	0.04
Inadequate teachers and learning materials	0.05
Dangers faced by children on their way to school	0.05
# of communities	131

4.2.2 Development programmes

We examined non-LEAP development programmes available in study communities. In 38 per cent of communities, there are programmes that provide information on nutrition. Non-LEAP cash grants to households and programmes in support of farming are present in 19 per cent of communities, and support for education in 11 per cent of communities (Table 4.2.6).

Table 4.2.6: LEAP 1000 and other development programmes

	Mean
Services provided by other organizations	
Provision of information on nutrition	0.38
Cash grants to households	0.19
In-kind to households	0.02
Medical care	0.08
Youths specific interventions	0.04
Programmes in support of farming	0.19
Programmes in support of education	0.11
# of communities	131

4.2.3 Shocks

Table 4.2.7 reports the prevalence of shocks, both negative and positive, that the communities faced each year since 2015. Shocks are reported only for those events estimated to have had an impact on at least half of the community members (so a zero in Table 4.2.6 may indicate that either the community did not experience such a shock or that they did, but it affected fewer than half of the community and is thus not reported here). Negative shocks, such as crop disease or droughts, can have detrimental effects on households' and individuals' well-being. Positive shocks, such as improved transportation or access to services, instead can contribute to the improvement of well-being. The negative shock with the highest incidence across survey communities was livestock diseases, which affected between 70 and 78 per cent of communities in a given year and nearly all communities (93 per cent) were affected at sometime between 2015 and 2017. The second most common shock was crop diseases or pests, which affected three quarters of all communities in 2017, and affected 89 per cent of all communities at some time between 2015 and 2017. Drought has also affected large proportions of communities, with the highest incidence registered in 2015 (69 per cent). Overall, three quarters of all communities at any time since 2015 were severely affected by a drought. Other frequently reported shocks were floods (57 per cent at any time since 2015), interruption in water supply and sharp changes in prices (both faced by 32 per cent of communities at least once since 2015). New roads or improved transportation and improved electricity were the most commonly reported positive shocks (17 and 16 per cent, respectively, since 2015). Overall, positive shocks were much less frequent than negative ones.

Table 4.2.7: Shocks in the community

	2015	2016	2017	Any time
Any negative shocks	0.92	0.95	0.89	0.99
Drought	0.69	0.36	0.15	0.74
Flood	0.21	0.47	0.11	0.57
Crop disease/pest	0.39	0.54	0.75	0.89
Livestock disease	0.70	0.78	0.69	0.93
Human epidemic disease	0.05	0.08	0.05	0.09
Interruption water supply	0.26	0.27	0.19	0.32
Sharp change in prices	0.26	0.30	0.22	0.32
Massive job lay-offs	0.01	0.01	0.02	0.02
Loss key social service	0.01	0.02	0.01	0.02
Religious/ethnic conflict	0.00	0.00	0.00	0.00
Any positive shocks	0.21	0.32	0.25	0.42
New employment opportunity	0.02	0.04	0.03	0.06
New health facility	0.02	0.02	0.02	0.04
New road/transportation	0.05	0.12	0.09	0.17
New school	0.01	0.02	0.00	0.03
Improved electricity	0.11	0.11	0.08	0.16
Development programme	0.05	0.08	0.07	0.08
# of communities	131	131	131	131

Environmental shocks, both drought and floods, came up across qualitative interviews in both Karaga and Bongo. These shocks mostly affected crops but also came up as having threatened the viability of household structures. Male partners often reported on the impacts of shocks on agricultural productivity. Several women discussed agricultural productivity or a death in the family affected household wellbeing.

A mother of 3+ children in Karaga who was one of the most highly impacted participants described how she used LEAP money to cope with the loss of their roof during a storm,

> ***INTERVIEWER:*** *You mentioned earlier that there was a storm that took off a roof*
> ***PARTICIPANT:*** *Yes, that is true. The storm took off our roofing materials and we had to roof it again but the other room without roofing is left so because there is no thatch to roof it yet. So the storm is the only disaster we encountered.*
> ***INTERVIEWER:*** *So has the government supported you in roofing your rooms or not?*
> ***PARTICIPANT:*** *It has helped us because we used part of the money to buy roofing sheets for reroofing the rooms. (3+ children, Karaga)*

In one community in Karaga, a very good crop between the midline and endline interviews was noted as a positive shock that allowed the transfer to have greater impact.

The shock of layoffs related to seasonal labour was salient in the endline qualitative interviews, especially in Bongo where several male participants had recently returned from working in gold mines in Kumasi. While they hoped to return to this work, at the time of the interview were home and struggling with their limited ability to play the provider role for the household, especially since they had missed the farming season. Therefore, the shock of layoffs challenged their roles as men and providers. A male participant in Bongo expressed a sense of regret related to having been away,

> *'The job I lost is also a problem, if not because I went to that place I would have being farming and I was thinking that when I go there and it's fine for me I will come back and take care of my wife and siblings.' (husband, 1st child, Bongo)*

Another husband who had lost his job at the mining site expressed his concern about not being able to make money to improve his family 's living conditions and worry over debts,

> *'As I am sitting now if not because of my wife and my mother, last year I didn't farm here if not because of them I will not get food to eat. When I came back to build these rooms it's their food they used to cook for the workers. The money I brought for us to use and buy food is what am using so if they didn't farm and we were to buy till date how much is the money..... If I was still working I wouldn't have a problem hmm. If they are lying down in this house it's still my debt, there are days I have money and there are some days I don't have so how will I send them to the hospital or buy drugs for them or buy something for them. With all of them if someone falls down and dies it's still my debt.' (husband, 1st child, Bongo)*

This quote again reflects the gendered nature of roles and expectations with regard to supporting the household whereby the man refers to the debts that are incurred as his debts. The shock of layoff created stress and tensions related to men's roles.

Another salient shock across qualitative interviews was the death of spouses, children and elder relatives. A noticeable number of households in both communities discussed the emotional and financial impact of having lost family members. In the two households where the woman's spouse died (one between baseline and midline and the other between midline and endline), the shock of losing their husband created stress and concern about how they would survive. This again reflects the roles and expectations of men as financial providers. The transfer was referenced as enabling participants to meet social

expectations and obligations of contributing the funeral costs, which both eased the burden on the family as well as provided social satisfaction to the participants. However, these costs also consumed a substantial amount of the transfer in certain households and diminished the impact on productive activities.

4.3 Operational performance

At the time of the follow-up evaluation presented in the current report, women who were enrolled onto the programme should have received 13 bi-monthly payments over the two-year period in alignment with mainstream LEAP. Until March 2016, payments were made in cash by Ghana Post at community paypoints. From March 2016 onwards, a version of 'epayment' was employed where payments are electronically transferred through the GhIPPS payment platform into beneficiary accounts, and payment service providers are dispatched to community pay points to make payments during the payment period. Beneficiaries are issued biometrically encoded cards and their fingerprints are scanned to access their account information. Payments are made primarily in the field, though some beneficiaries collect payment at local banks. At endline a set of questions was included in the survey to assess operational performance of the LEAP 1000 pilot.[11] These questions were asked of the LEAP 1000 applicant woman in each household.

Awareness of LEAP 1000 among study was high (Table 4.3.1), both among treatment households (97.5 per cent) as well as among comparison households (92.5 per cent). Among those who reported having heard about LEAP 1000, we then asked about ever receiving payments from LEAP 1000. Among the treatment group, 88.3 per cent of households reported ever receiving payments from LEAP and among comparison households 2.6 per cent reported having received payments from LEAP 1000, indicating a small level of contamination in the comparison group. In terms of currently receiving the programme transfer, 87.2 per cent of the treatment group and only 2.5 per cent of the comparison group reported currently receiving LEAP 1000 payments at the time of the survey.[12]

Table 4.3.1: Awareness of and beneficiary status of the LEAP 1000 programme

	Treatment	Comparison
Ever heard of LEAP 1000	97.5	92.5
Ever received payment from LEAP 1000	88.3	2.6
Current beneficiary of LEAP 1000	87.2	2.5
Number of households	1,183	1,146

The operation module focused primarily on elements related to the programme implementation, thus the majority of this section reports the analysis for the restricted sample of those treated households who reported being current beneficiaries (1,031 households, or 87 per cent of treatment households).

[11] While LEAP 1000 employed a different targeting method than previous LEAP expansions, the other operational procedures used for LEAP 1000 mirror exactly the processes of the mainstream LEAP programme, especially the payment processes.

[12] Though 11.7 per cent of treatment households claimed to have never received any LEAP 1000 payments, an examination of the administrative data from LEAP shows that these households' accounts were credited.

4.3.1 LEAP targeting

Another set of questions examined the perception of targeting among those who had ever heard of the programme. While the respondents in the treatment group provided largely positive feedback of LEAP 1000 fairness and clarity around the selection process, the feedback provided by the households in the comparison group was much less positive. Among treatment respondents, the percentages agreeing with the statements that the LEAP 1000 selection process was clear and that the process for being included in the programme was fair were 88.8 per cent and 85.2 per cent, respectively. In contrast, among respondents in the comparison group, almost 30 per cent disagreed or strongly disagreed with the statements about fairness and clarity of the programme selection process (Table 4.3.2).

Table 4.3.2: Perceptions of the LEAP 1000 selection process

	Treatment		Comparison	
	LEAP 1000 is clear	LEAP 1000 is fair	LEAP 1000 is clear	LEAP 1000 is fair
Strongly agree	79.4	75.0	29.2	24.5
Agree	9.4	10.2	17.9	16.8
Neutral	6.9	10.5	20.7	24.9
Disagree	3.4	3.6	23.8	25.3
Strongly disagree	0.9	0.8	8.5	8.5
Total	100	100	100	100
Number of households	1,154	1,154	1,060	1,060

The clarity of the programme eligibility is underscored by the perceived reasons for programme eligibility. As shown in Table 4.3.3, similar answers are given by treatment and comparison respondents regarding criteria used for eligibility. Most respondents correctly identify as main criteria pregnant women, women with a child under one year of age, and poverty. Despite understanding of the criteria among the comparison group, the fact that a substantial proportion of them reported that the selection process is not clear suggests that **communication on the reasons for households not being included in the programme could be improved**.

Table 4.3.3: Perceived reasons for programme eligibility

	Treatment	Comparison
Pregnant women	67.4	64.0
Women with child under 1year	63.2	55.8
Very poor	33.1	32.3
Caring for many orphans/children	19.9	19.8
Sick	14.7	13.8
Widowed	15.3	15.2
Disability	9.2	9.0
Elderly	6.9	7.2
Unable to work	3.6	4.0
Don't know	0.2	2.3
Number of households	1,154	1,060

Several participants in the qualitative sample, all of whom were beneficiaries, mentioned some tensions within their communities around the targeting process and their participation in the program. For the most

part, however, by endline most participants said their communities were happy for them and just wished that more people could benefit. One household in Bongo was observed to potentially be living in much better conditions than other beneficiaries. This house was one of only two in the compound that was connected to the national electricity grid and the family was constructing new block rooms and owned a motorbike. While the female participant in this household described getting no support from her husband, he was observed engaging in preparation of fish to take to market for sale, an activity he had been involved with for years and he described himself as a provider in the household. They were also observed to own three donkeys and a couple of pigs. The inclusion of this household raised questions among community members about the accuracy of the targeting process.

Regarding clearness of eligibility criteria the majority of participants in the qualitative interviews mentioned that they received the transfer because of their child, and most also connected it to poverty. The interviews did not go into detail on understanding of eligibility criteria in more detail, so the quantitative findings on knowledge of criteria of the child's age, for instance, could not be further verified.

4.3.2 Use of transfers

In the operational module, we also asked about how the LEAP 1000 grant was used, allowing respondents to provide up to three answers (Table 4.3.4). Not surprisingly the vast majority (almost 93 per cent) report using the transfer for food and nutrition. The second largest category is health care, with 71 per cent of beneficiary respondents reporting spending part of the transfer on health care. The money from the LEAP 1000 transfer is also widely used for education, either for formal government education (39 per cent) or for other education (13 per cent). Nineteen per cent of respondents report using the money from the transfer for clothing and shoes. Money is spent on other items by lower proportions of respondents, with five per cent investing or spending on small businesses and two per cent using the money for accommodation and savings.

Table 4.3.4: Main use of the transfer

	Per cent
Food and nutrition	92.9
Health care	71.3
Formal government education	38.8
Clothing/Shoes	18.9
Other education	13.4
Investment/Small business	4.6
Shelter/Accommodation/Rent	1.9
Savings/Susu	1.9
Formal social occasions	0.6
Number of households	1,031

The main uses of the transfer as found in the quantitative analysis resonated with the stories from the participants in the qualitative sample. Another notable finding from the qualitative interviews was the practice of sharing the transfer, a phenomenon that occurred both formally and informally. Formal sharing was common in polygamous households in Karaga where participation in the programme was viewed as a benefit for the entire household. While one woman was designated as the official beneficiary, in these

households, all co-wives were viewed as beneficiaries. This was observed in one household in Karaga where the initial participant in the qualitative interviews was not the official beneficiary but her two co-wives were official beneficiaries and shared with her. Another woman in Karaga described the formal sharing system managed by her husband,

> ***'INTERVIEWER:*** *You said you share the money with your co-wife, how do you share it?*
> ***PARTICPANT:*** *When I receive the money, I give the money to my husband to share it among us so that people outside will not insult me because I spend the money alone. We are all poor and therefore I shouldn't spend the money alone and leave the rest. I take my share and then share with my mother-in-law.*
> ***INTERVIEWER:*** *I still don't understand, how much do you share with your co-wife?*
> ***PARTICIPANT:*** *The money is usually GHC 106 and I will use GHC 6 for food ingredients and tell my husband that I have used the GHC 6 for ingredients and now tell him to share the GHC 100 for the two of us.*
> ***INTERVIEWER:*** *How much do you each receive?*
> ***PARTICIPANT:*** *GHC 50 each.*
> ***INTERVIEWER:*** *Who decided that you should share the money?*
> ***RESPONDENT:*** *Those who came and registered us for the support, they said that the money is for a household and not individuals that is why I share with them. This brought a lot of confusion in some households because others did not understand why they should receive the money and share with other people in their households.' (3+ children, Karaga)*

This example reflects the normative pressure to share the benefit since *"we are all poor"* as well as the perception that the programme expects and encourages sharing;

In contrast, another participant in Karaga described resisting social pressure to share in order to use the money for her personal benefit,

> *When I receive the money and I am not able to share with everyone, then it becomes a problem in the house…They talk and insult me that I don't want to share the money with them.'*
> *(1st child, Karaga)*

This participant felt that sharing could dilute the effects of her transfer and endured ridicule and tension to preserve the money for her needs and those of her child.

Participants in Bongo also described sharing their transfer but in a more informal way. Rather than establishing set amounts to give to different members of the household, they tended to share as needed with family members. There was a similar sense of social pressure and expectation that they should share the transfer but the approach to sharing in Bongo households was less structured. A first-time mother in Bongo described informal sharing whereby she would give small amounts of the transfer to family and household members including her mother, grandmother and mother-in-law. While not a formal sharing system, this participant also described the social expectation in her collective household to distribute even small amounts of funds to others. Notably, she also appreciated that with the transfer she had autonomy in the use of the funds, "*I might want something and he [her husband] will not have to give me so when the LEAP people come and help us I will use it to do what I want to do*." *(1st child, Bongo)*

4.3.3 Payments

Timeliness and coverage of payments (as reported in LEAP MIS)

In addition to self-reports by study participants, we were able to access LEAP 1000 administrative data to assess frequency and coverage of payments. Payments were very regular with high coverage; in the LEAP management information system (MIS), only 1.8 per cent of beneficiaries were missing data on number of payments made. A similar figure received only 12 payments instead of 13 since the beginning of the programme, and in all cases, it was the first payment in September 2015 that was not delivered, likely due to delays in registration or not being present at the time of the cash payment. The first payment had a coverage of 96.5% and after that coverage was 98.2% of beneficiaries in the panel data, according to the MIS (Figure 4.3.1).

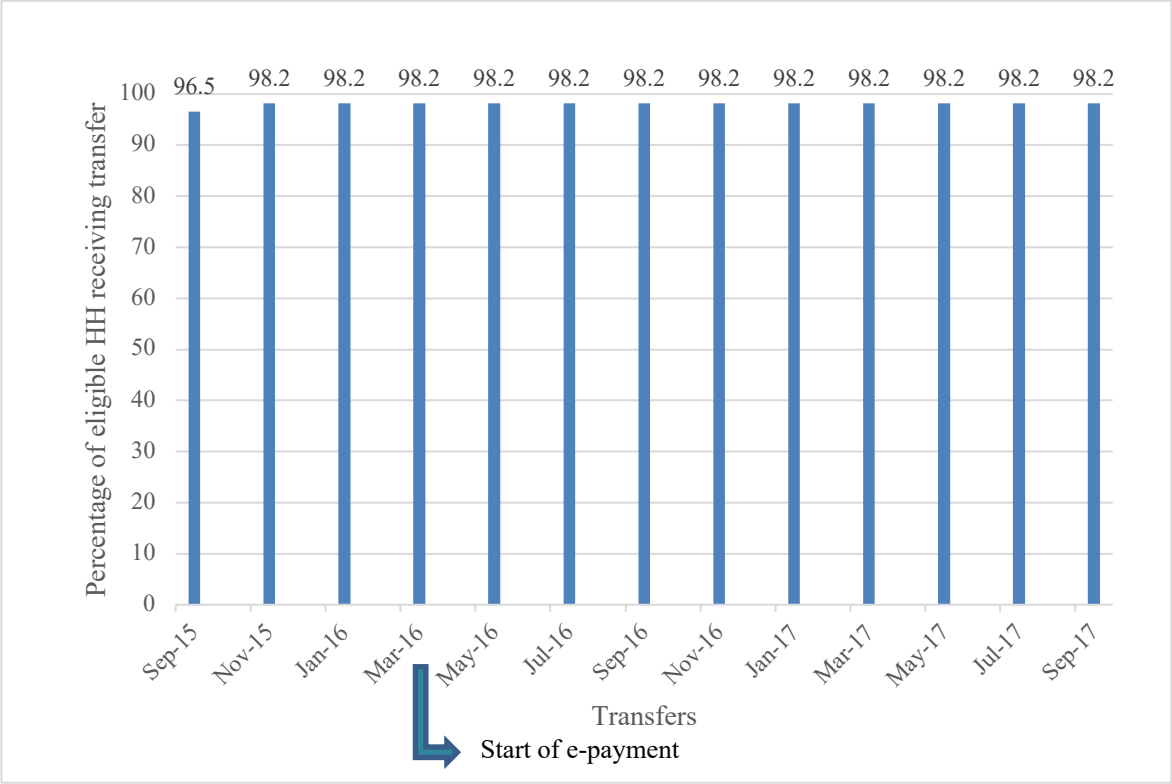


Figure 4.3.1: Per cent of eligible treatment households receiving transfers, by payment date

Payment expectations among beneficiaries

As LEAP 1000 payments are scheduled to be issued on a bi-monthly basis, we would expect beneficiary households to report the number of months since last payment to be within two months. The vast majority of beneficiaries (91.1 per cent) reported having received the last payments in the past 2 months (Table 4.3.5). Only 6.1 per cent reported having received the last payment in the previous 3 to 4 months, while only a very small proportion (around 2 per cent) reported a longer time period.

Table 4.3.5: Number of months since last payment

	Per cent
0-2 months	91.1
3-4 months	6.1
5-9 months	1.6
10+ months	1.2
Don't know	0.1
Total	100
Number of households	1,031

The extremely high rates of programme compliance with payment schedules are reflected in the beneficiaries' expectations for the next payments. As shown in Table 4.3.6, 92.2 per cent of respondents expect the next payment within 2 months. In relation to how long respondents expect payments to continue, the vast majority (94.9 per cent) reported to expect payments to continue for longer than five years, while 4 per cent expect payments to continue for another 3 to 5 years. Beneficiaries seem to have aligned their expectations with programme standard operating procedures due to the continued regularity of programme payments.

Table 4.3.6: Expectations for future payments

	Per cent
When expect next payment	
In the next 2 months	92.2
In the next 6 months	7.6
Never	0.2
Total	100
How long in the future you expect to continue receiving this money	
0-6 months	0.6
1-2 years	0.4
3-5 years	4.2
> 5 years/rest of my life	94.9
Total	100
Number of households	1,031

In the qualitative interviews, participants described planning their expenditures and borrowing patterns around this payment schedule and indicated feeling more confident about borrowing knowing that they would receive the LEAP money. While most participants described feeling less worry since they were in the program, there were a few who expressed concern about the program stopping. One woman who felt less stress and worry about food and medicine said she now worried about *"people abandoning"* them, referring to the LEAP 1000 programme.

Travel time costs

Between this study's baseline and endline surveys, LEAP 1000 (and the larger LEAP programme) switched from cash to e-payments. The main aim is not only to increase security and accountability of payment procedures, but also to reduce time and travel costs associated with collection of payments. Despite this switch, time to travel to the collection point remains, on average, quite high. While half of beneficiaries report less than 30 minutes of travel to reach payment points, the remaining half must travel

for longer times in order to collect the payment. About 19.8 per cent have to travel up to one hour, 17.9 per cent up to two hours and 12.4 per cent over two hours. Travelling to collection points not only entails high time costs, but 23.3 per cent of households incur considerable financial costs to reach the payment points (17.3 per cent spend between GH¢ 1 and 9 and 6 per cent up to GH¢ 30; Table 4.3.7).

Table 4.3.7: Transportation time and cost of collecting most recent LEAP 1000 payment

	Per cent
Time to travel	
30 minutes or less	49.9
31-60 minutes	19.8
61-120 minutes	17.9
Over 2 hours	12.4
Total	100
Cost of transportation	
Nothing	76.7
1-9 GHS	17.3
10-30 GHS	6.0
Total	100
Number of households	1,031

Table 4.3.8: Community LEAP 1000 focal point and collection point

	Mean
Community has LEAP 1000 focal point	0.88
LEAP 1000 focal point is female	0.17
Travel time to nearest LEAP 1000 collection point	
In the community	0.39
1-5 km	0.39
6-10 km	0.10
11-30 km	0.07
31-70 km	0.05
# of communities	131

From the community level analysis, we find that, in most cases, the LEAP 1000 collection point is either in the community (39 per cent) or within 5 kilometres (39 per cent). In the remaining 22 per cent of the communities, the collection point is situated far from the community.[13] In 10 per cent of the communities the nearest LEAP 1000 collection point is situated between 6 and 10 kilometres away, in 7 per cent of the cases it is situated between 11 and 30 kilometres, and in the remaining 5 per cent of the communities between 31 and 70 kilometres away (Table 4.3.8).

For LEAP 1000 at the community level, we assessed whether communities have a LEAP 1000 Community Focal Person (CFP), the gender of this person, and travel time to payment points. Table 4.3.8 shows that the vast majority (88 per cent) of communities have a LEAP 1000 focal point. However, only 17 per cent of LEAP 1000 focal points are female.

[13] LEAP's agreement with payment providers is that pay points should be within 3km of a community, so these long distances do not meet service standard targets.

Table 4.3.9: Satisfaction with payment method

	Per cent
Feel safe collecting money	93.5
Feel happy with payment method	95.8
Number of households	1,031

Beneficiary perception of payment collection

In terms of satisfaction, the vast majority of beneficiaries (95.8 per cent) are happy with the payment method and a similarly high proportion (93.5 per cent) report feeling safe collecting the money (Table 4.3.9). The high level of satisfaction with payment is probably also a reflection of the low incidence of beneficiaries being asked to share the transfer at the time of payment (see Table 4.3.10). The vast majority (90 per cent) were never asked to give or voluntarily gave any money in relation to payments received. Only a small proportion of the sample was asked and gave money or voluntarily gave (around 1 per cent each category). In terms of expected payment amount, 17.2 per cent of respondents reported they had ever received a lower than expected payment amount (Table 4.3.10), however this is self-reported and not verified with LEAP payment information, so does not likely refer to the programme distributing incorrect amounts.

Table 4.3.10: Reported leakages and expected amount of payment

	Per cent
Ever asked to/voluntarily given money	
Never happened	90.0
Asked to give and did so	1.0
Asked to give and refused	0.3
Voluntarily offered, person accepted	1.2
Voluntarily offered, person refused	0.2
DK/Refused	7.3
Total	100
Number of households	1,031
Ever received lower payment	
Yes	17.2
No	75.4
DK/Refused	7.5
Total	100
Number of households	1,031

Beneficiaries are typically notified when it is time for payment. In the survey, we asked who informed the beneficiary and whether the communication happened in public or in private. The majority of beneficiaries (87.6 per cent) were informed about the last payment in public, while 12 per cent were notified in private. The communications in public were mostly given by CFPs, followed by community leaders, and other beneficiaries. Information delivered in private, instead, were mostly provided by CFP members with very few receiving the information from other beneficiaries (Table 4.3.11).

Table 4.3.11: Notification of last payment

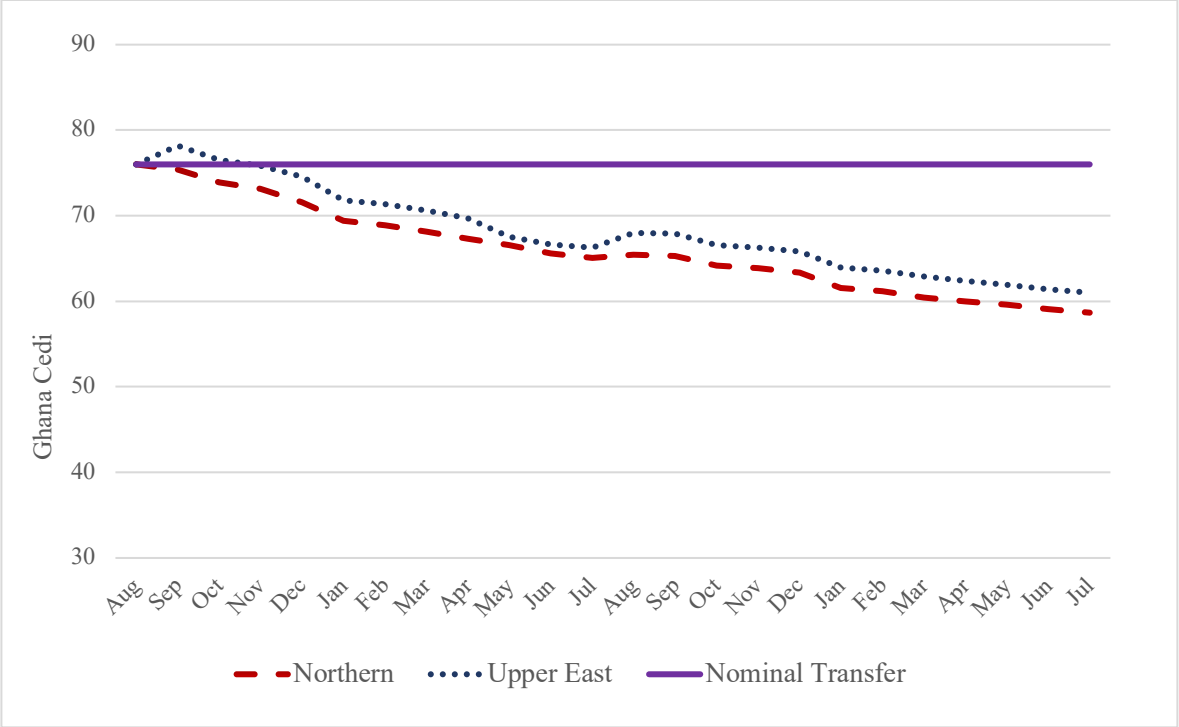
Method	In Public	In Private	In Total
CFP member	39.1	11.1	50.2
Community leader	29.3	0.2	29.5
Another beneficiary	14.5	0.9	15.4
Other community member	2.9	0.1	3.0
Family member	0.9	0.1	1.0
Payment point staff	0.9	0.0	0.9
Total	87.6	12.4	100
Number of households	903	128	1,031

4.3.4 Transfer size

Transfer amount (nominal vs. real value)

Since the implementation of LEAP 1000 in 2015, the transfer amount has not changed in nominal terms. However, the real value, or purchasing power of the transfer amount, has declined significantly due to inflation. Below we examine real and nominal trends among households with two beneficiaries (the most common transfer amount among LEAP 1000 beneficiary households), which corresponds to GH¢ 76 every two months, or GH¢ 38 per month.

Figure 4.3.2 shows the trend of the real and nominal values of the transfer over time since the implementation of LEAP 1000. The real value of the transfer, which corrects the nominal value for inflation, has steadily decreased over time. **Between September 2015 and July 2017, the transfer lost about 20 per cent of its initial value, in real terms**.



Notes: Inflation Aug 2015 - July 2017: Northern region: 29.5%; Upper East region: 24.6%. Reference: Ghana Statistical Service (GSS). CPI Statistical Bulletin, October 2017. Annexes. http://www.statsghana.gov.gh/cpi_bulletin.html downloaded on November 20, 2017.

Figure 4.3.2: Transfer amounts for households with two beneficiaries 2015-2017, real and nominal

When asked their opinion about the amount of the transfer in the qualitative interviews, many women commented that they did not have an opinion and appreciated any amount they could get. Some participants in the qualitative interviews, more men than women, commented that the transfer was not enough on its own to help with covering more than basic needs, such as saving, investing, and improving farming production. One woman from Bongo described,

> *The program is good but the money is not enough for us, to help us in our farming activities so that when you collect you can use some to take laborers to farm and buy food. As the crops are now it would have been nice to get laborers to go in and till the soil for the weeds to die and allow the crops to grow. But as they are now there is nothing in it, last year when you came we had planted maize but the crops didn't produce well. But this year because of lack of means, we haven't been able to farm to the back, we have to farm and still go and harvest groundnut. So this is what we could farm and that is a parcel of land over there we couldn't farm on because there is no money to buy groundnut and plant the whole area.' (3+ children, Bongo)*

Some commented that they had not been able to invest or achieve other goals beyond securing food and basic needs with the amount of the transfer. In contrast, other participants, especially in Bongo where they are closer to markets and there is more economic activity, specifically mentioned that they had wanted to start small businesses or expand their farming in the past but had only been able to do so once they received the payment from the LEAP programme.

Transfer as a share of consumption

To assess the size of the transfer received by LEAP 1000 beneficiaries, the transfer amount is compared to the consumption they had at baseline (therefore not affected by the transfer). Figure 4.3.3 reports the distribution of the value of transfer as a share of study households' consumption at baseline which is on average 13.9 per cent. This is low compared to the benchmark target of 20 per cent share of pre-programme expenditures, a threshold at which broader impacts have been demonstrated in other impact evaluations across the sub-Saharan African region[14]. In fact, 80 per cent of beneficiary households in the study receive a value below 20 per cent of baseline expenditures. The median value is even lower (10.7 per cent). It is worth noticing that while the low value of the transfer as share of consumption might constrain the impacts of the programme, the households included in the study are those that are close to the PMT cut-off score, and thus are not the worse-off among all LEAP 1000 beneficiaries. As a consequence, the value of transfer as a share of these households' consumption is not representative of the entire beneficiary population and is lower than the average share among the entire distribution of LEAP 1000 beneficiaries. This is because our study sample is somewhat better off than the entire distribution, given their proximity to the PMT cut-off. Those receiving LEAP 1000 who are further from the cut-off are likely poorer, and thus the transfer share of their baseline consumption would be expected to be a higher proportion. Using administrative data, and therefore the entire beneficiary population, we were able to simulate the level of transfer as share of baseline consumption for the entire beneficiary population. The simulation results for all LEAP 1000 beneficiaries indicate that the **transfer level as a share of consumption would be close to 15 per cent, slightly higher than the figure that we reported for the better off beneficiaries included in the study, but still below the ideal minimum of 20 per cent.**

[14] Davis, B., & Handa, S. (2015). How much do programmes pay? Transfer size in selected national cash transfer programmes in Africa. Transfer Project Research Brief 2015-09. Chapel Hill, NC: Carolina Population Center, UNC-Chapel Hill.

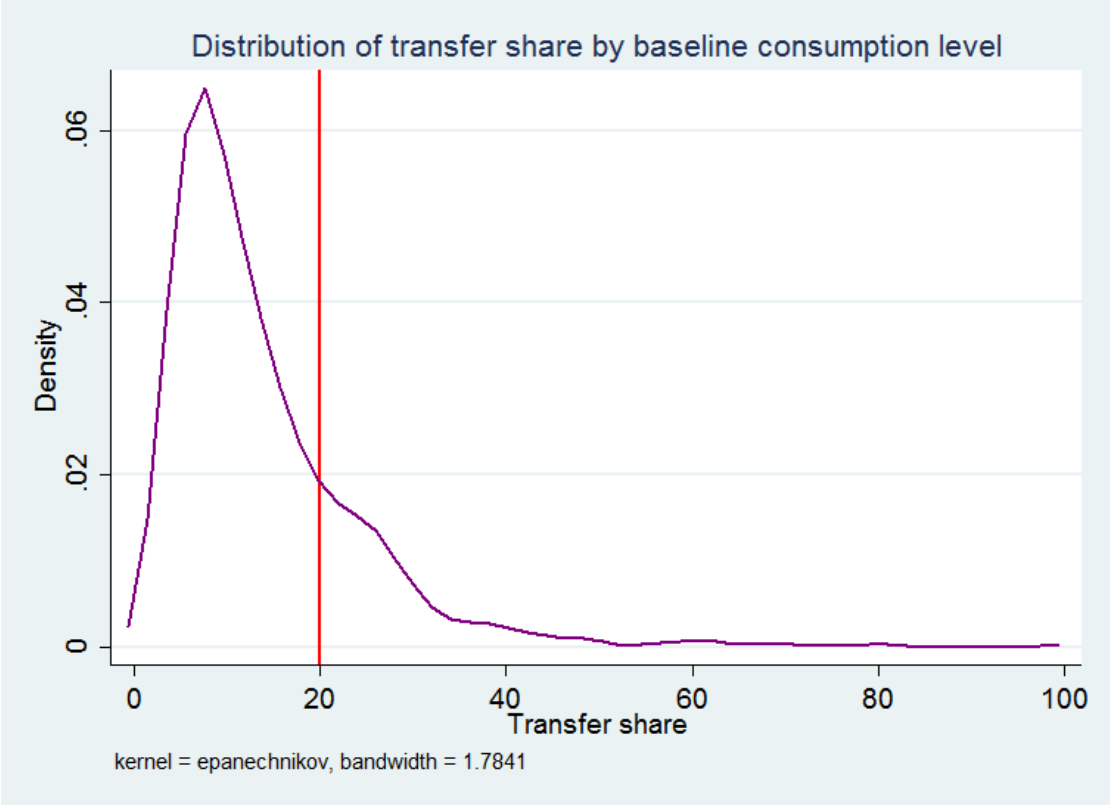


Figure 4.3.3: LEAP 1000 transfer as a share of baseline consumption levels, MIS data for impact evaluation sample households

When we look at the proportion of baseline consumption that the transfer represents stratified by the poorest and top 50 per cent of the distribution, we see that the average share for the two sub-populations is quite different: for the bottom 50 per cent the transfer share is 21.4 per cent of consumption, while for the top 50 per cent the share is 6.9 per cent (Figure 4.3.4). While the whole distribution of the top 50 per cent still lies below the 20 per cent target, for 58 per cent of those in poorest sub-sample (blue in the figure), the value of the transfer is less than 20 per cent of their consumption at baseline.

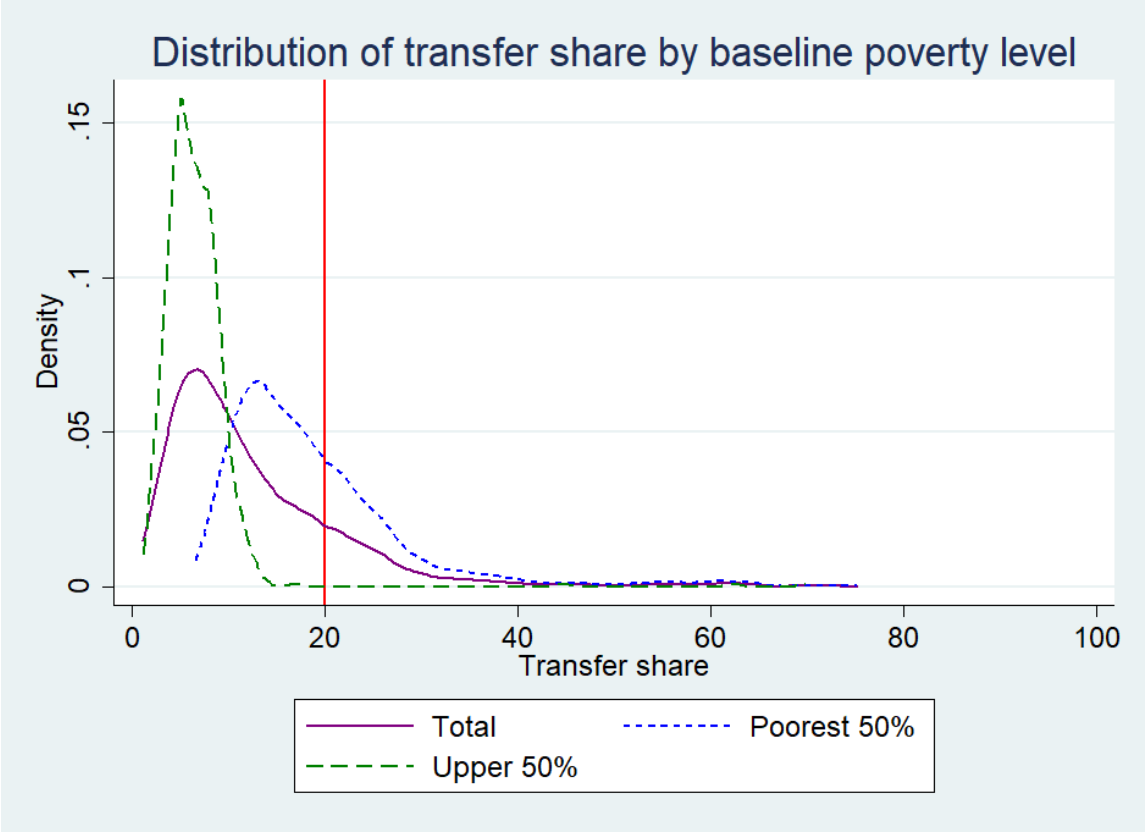


Figure 4.3.4: LEAP 1000 transfer as a share of baseline consumption levels

4.3.5 Summary of operational performance

Overall the operational performance of LEAP 1000 is good. Awareness of the programme is quite high, both among treatment and comparison households. The perception of targeting is positive, particularly among treatment households while it is perceived not as fair and clear by households in the comparison group. Both treatment and comparison households correctly report the criteria used for targeting, showing good knowledge of the programme selection rules. However, despite understanding of the criteria among the comparison group, the fact that a substantial proportion of them reported that the selection process is not clear suggests that **communication on the reasons for households not being included in the programme could be improved**. From the qualitative sample, instances of tensions around the targeting process within the community were reported highlighting once more the importance of communication of the reasons for programme selection.

The regularity and high coverage of payments are reflected in beneficiaries' expectations for next payments (within two months), in line with programme schedule. The introduction of e-payments contributed to the high satisfaction about payment collection and to the feeling of security during money collection. However, despite the switch to e-payment, which also aimed at reducing time and travel costs associated with collection of payments, time to travel to the collection point remains, on average, quite

high with 30 per cent of treatment households having to travel more than one hour to collect the transfer, at times incurring in significant financial costs.

The transfer amount is fairly small and this is reflected in the lack of impacts of the programme on several dimensions, a part from consumption and poverty. Not only the size of the transfer was already small at baseline, with the transfer equal to 14 per cent of the consumption at baseline[15], but it also lost 20 per cent of its initial value due to inflation. It is not surprising, therefore, that the vast majority report using the transfer for food and nutrition, followed by health and, to a lesser extent, education.

4.4 Household consumption, food security and wellbeing

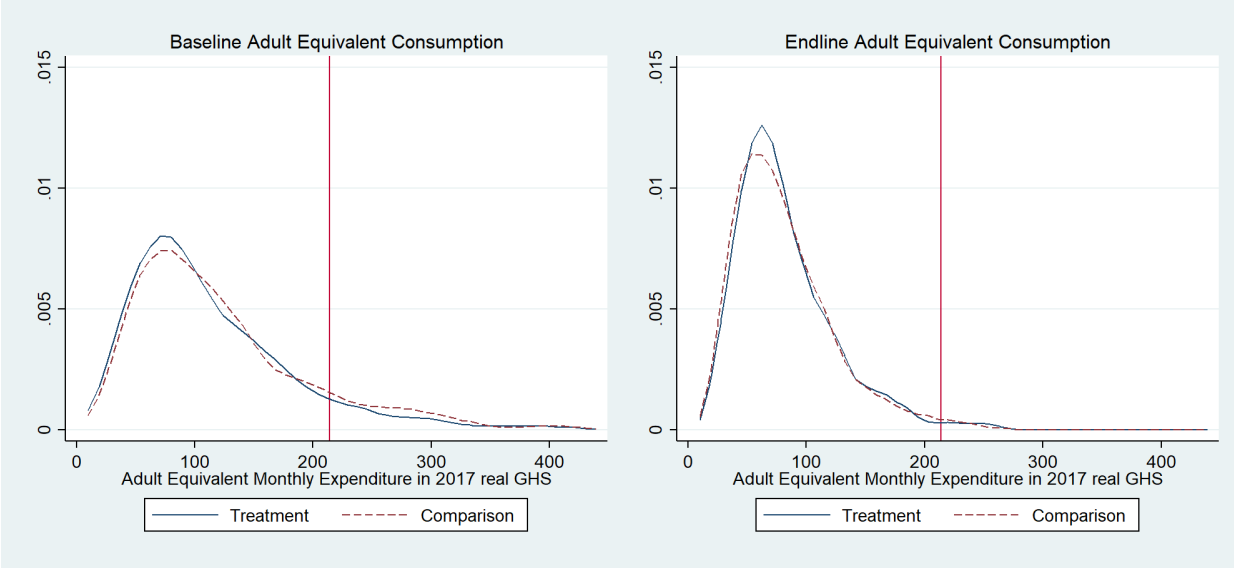
This chapter presents the impacts of LEAP 1000 on consumption, food security, poverty and wellbeing measures. Based on the conceptual framework in Chapter 3.1, this is an area where we would expect to observe early and consistent impacts.

4.4.1 Total consumption, food consumption and non-food consumption

To examine programme impacts on consumption, we sum up all household expenditures into a monthly consumption aggregate (see Appendix D for details) and divide it by the number of adult equivalents (AE).[16] Hence, this measure represents the total consumption of one adult per month. We deflate the consumption at baseline and endline to comparable values, expressed in Greater Accra prices[17] of August 2017, using the official regional consumer price index (CPI) published by the Ghana Statistical Service.

At endline, LEAP 1000 households had slightly higher consumption levels than the comparison households. We start by looking at the distribution of consumption at baseline and endline, for the treatment and comparison group separately. These distributions are presented in Figure 4.4.1. We know from the baseline analysis that the treatment and comparison group had a statistically similar level of consumption before the start of LEAP 1000 (at baseline; left panel). We see this in Figure 4.4.1, where the treatment and comparison lines follow the same pattern. Comparing baseline to endline panels, we see that the distribution of both treatment and comparison plots has shifted to the left, indicating overall lower consumption in both groups. However, at endline, the graph of the treatment group has moved to the right in relation to the comparison group, which indicates that LEAP 1000 households had slightly higher consumption.

[15] An ideal level would be close to the target of 20 per cent, a threshold at which broader impacts have been demonstrated in other impact evaluations across the sub-Saharan African region.
[16] Due to differences in household composition, we divide the total household consumption by the number of adult equivalents. This approach is rooted in the idea that individuals in the household of different age and gender have different needs, and each member of the household counts as some fraction of the basic needs of an adult male. The sum of these fractions is the household's number of adult equivalents and allows for fair comparison between households of different sizes and composition.
[17] Ghana poverty lines are expressed in Greater Accra prices, so we do the same in this report for ease of comparison of the consumption levels of our sample.



Note: the top and bottom 1% of the consumption distribution is excluded. Red line indicates the poverty line expressed in 2017 GH₵.

Figure 4.4.1: Distribution of total AE consumption at baseline and endline, for treatment and comparison groups

While the level of consumption dropped for both treatment and comparison households during the evaluation period, LEAP 1000 had a protective effect for beneficiary households, meaning treatment households experienced a smaller decline than comparison households. As a result, there is a positive and strongly significant impact of LEAP 1000 on total consumption of 8.47 GH₵ per AE, on average. The average total monthly consumption in the treatment grouped dropped from 113 GH₵ at baseline to 82 GH₵ two years later (Table 4.4.1). These figures are adjusted for inflation (referred to as "real" values), which partially explains the decrease over time. For the comparison group, consumption decreased from 120 GH₵ to 81 GH₵. Since the decrease in consumption for the treatment group is less than the decrease in the comparison group, we see a positive programme impact on consumption. This impact is largely driven by increased food consumption, which increased, on average, 6.65 GH₵ per AE as a result of LEAP 1000, while the impact on non-food consumption is on average 1.82 GH₵ per AE and not statistically significant. The average LEAP 1000 household has 4.8 adult equivalents at endline, and this impact therefore translates to 4.8 times 8.47 GH₵ (the monthly impact per AE), or approximately ***40.7 GH₵ per month per household. This figure is slightly higher than the typical transfer amount of approximately 30 GH₵ (in real terms) per month by most LEAP 1000 beneficiary families***.

Table 4.4.1: Impacts on consumption indicators (in 2017 real GH₵)

Dependent Variable	Programme Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Comparison Mean (5)
AE total consumption per month	8.466***	113.160	120.581	82.295	81.194
	(2.90)				
AE food consumption per month	6.645***	83.925	89.780	61.158	60.307
	(2.34)				
AE non-food consumption per month	1.821	29.235	30.800	21.137	20.887
	(1.26)				
N	4,566	1,157	1,127	1,166	1,116

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; bottom and top 1% for each wave excluded; amounts are expressed in constant Greater Accra August 2017 prices

Since the majority of impacts occur in food consumption, we break down food consumption into food categories and present the impact for each category in Table 4.4.2. This breakdown shows that **LEAP 1000 had a protective effect on the consumption of cereals, dairy products and eggs, oil and fats, vegetables, and condiments and spices** by allowing LEAP 1000 families to better maintain spending levels on these categories, while comparison households showed steeper decreases in spending on these food categories. It is also worth noting that there has been no impact on so-called 'temptation goods', such as tobacco and alcohol (Appendix E), in line with existing global evidence demonstrating that cash transfers generally do not increase spending on these items.[18]

Table 4.4.2: Impacts on food consumption groups (in 2017 real GH₵)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Comparison Mean (5)
Cereal	3.667***	43.665	47.218	28.242	28.119
	(1.31)				
Meat	0.584	6.240	6.228	6.454	5.859
	(0.49)				
Dairy products and eggs	0.260*	0.662	0.824	0.509	0.405
	(0.14)				
Oil and fats	0.494**	2.666	2.993	2.475	2.310
	(0.23)				
Fruits	-0.002	0.547	0.535	2.232	2.216
	(0.21)				
Vegetables	0.885*	12.276	13.106	9.171	9.101
	(0.51)				
Condiments and spices	0.571*	7.841	8.689	4.920	5.201
	(0.31)				
Starches	-0.343	4.599	4.548	1.371	1.618

[18] Evans, D. K., & Popova, A. (2017). Cash transfers and temptation goods. *Economic Development and Cultural Change*, *65*(2), 189-221.

	(0.43)				
Pulses and nuts	0.415	4.911	5.103	5.139	4.929
	(0.45)				
Non-alcoholic beverages	0.097	0.366	0.408	0.538	0.486
	(0.14)				
Food outside the home	0.016	0.152	0.128	0.105	0.063
	(0.07)				
N	4,567	1,158	1,126	1,167	1,116

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; bottom and top 1% for each wave excluded

We are also interested in whether LEAP 1000 was able to alter the composition of the food basket for households. For example, the cash received through LEAP 1000 can be used by households to purchase a larger variety of food or food with higher nutritional values. Figure E.1 in Appendix E shows the share of 11 food groups in the food basket of our sample. The left panel of the figure illustrates that in the treatment group, the share devoted to cereals dropped from about 52.7 per cent at baseline to 47.4 per cent at endline. In contrast, the **shares of meat, pulses and nuts, oils and fats and fruits increased, indicating an improved and more diverse diet**. In the comparison group (right panel), similar changes occurred over time, and hence most of the impacts on the food shares are not statistically significant, with the exception of oils and fats (positive impact of 0.5 pp) and starches (negative impact of 0.7 pp).

4.4.2 Food security

LEAP 1000 households eat more meals per day than comparison households. Since we have established that LEAP 1000 had a protective impact on household consumption, particularly through its effect on food consumption, we next examine whether food security has improved among our treatment households. Food security in this context means that "all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life".[19] There are five food security indicators available in both baseline and endline survey, which are presented in Table 4.4.3. First, we observe a positive, significant impact on the average number of meals consumed, as LEAP 1000 increased the number of meals consumed per day by 0.09 meals. Next, we create categories for the number of meals eaten per day. We find that LEAP 1000 increased the share of households eating three meals per day by 6.4 pp, with a corresponding decline in households eating only one or two meals per day. As a result, the share of households eating at least three meals a day increased from 59.2 per cent to 66.6 per cent in the treatment group.

LEAP 1000 positively impacted the number of meals consumed per day, but was not sufficient to reduce worry related to food insecurity and had no impact on a widely-validated food insecurity measure. We assess a selection of questions about household members having insufficient food. The first two questions are at the household level, and the last two are about child food security and are only asked to households with at least one child under five years old. The statements in the table are worded positively, so a higher rate indicates higher levels of food security. The first measure, worrying about food, is a measure of anxiety and uncertainty about the households' food supply. Since the means for this indicator decreased at endline in both the treatment and comparison group, we can surmise that for both

[19] Coates, J., Swindale, A., & Bilinsky, P. (2007). Household Food Insecurity Access Scale (HFIAS) for measurement of food access: indicator guide. Washington, DC: Food and Nutrition Technical Assistance Project, Academy for Educational Development.

groups, households are *more* worried about their food supply than at baseline. This could be related to the high level of food related shocks (livestock diseases, crop diseases and droughts) experienced in the communities in our study. The impact estimate for this indicator is not significant. The second household-level food security measure, whether any household member went without food for a full day, is an indicator of severe food insecurity. This indicator improved since baseline among both treatment and comparison groups, so there was no impact as a result of LEAP 1000. There were also no programme impacts on the two food security indicators for children under five years old, and the means of these indicators remained stable over time.

Table 4.4.3: Impacts on food security indicators

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Comparison Mean (5)
Number of meals per day	0.091***	2.613	2.642	2.714	2.651
	(0.03)				
1 meal per day	-0.012*	0.024	0.017	0.007	0.012
	(0.01)				
2 meals per day	-0.059**	0.384	0.374	0.327	0.376
	(0.03)				
3 meals per day	0.064**	0.547	0.558	0.612	0.560
	(0.03)				
4 or more meals per day	0.007	0.045	0.051	0.054	0.052
	(0.01)				
Never worry about food (last 4 weeks)	0.001	0.116	0.124	0.059	0.065
	(0.02)				
No hhld member went without food (last 4 weeks)	0.032	0.564	0.592	0.647	0.643
	(0.03)				
N	4,662	1,185	1,146	1,185	1,146
Children under 5 always nutritious food (last 4 weeks)	0.021	0.092	0.110	0.114	0.112
	(0.02)				
Children under 5 always given enough food (last 4 weeks)	-0.014	0.247	0.246	0.240	0.254
	(0.03)				
N	4,544	1,154	1,101	1,168	1,121

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

At endline, we expanded the module on food security to better capture impacts on various elements of food insecurity among our sample and included the complete selection of indicators from the Household

Food Insecurity Access Scale (HFIAS).[20] Each indicator represents a statement about food security to which respondents answered how often it occurred in their households during the last four weeks: never, rarely, sometimes or often. For these indicators and for the aggregate HFIAS, we calculate cross-sectional differences at endline (single difference), controlling for the same covariates as in the DD analysis. In line with HFIAS analytic guidelines, we summed up the responses from the nine food security questions resulting in a score ranging between 0 and 27, with *higher scores meaning higher food insecurity*. In Table 4.4.4 below, we summarize impacts on individual items by examining the likelihood of reporting "never" for each item (that, is no food insecurity related to that item). Positive coefficients would indicate protective programme impacts. In contrast, increasing values of the HFIAS scale (the final row in the table) indicate increasing food insecurity, so a *negative coefficient would indicate protective programme impacts*. The severity of the indicators increases as one moves down in the table. The first three indicators are a measure of food preferences. Only between three and 11 per cent of the sample had not resorted to eating less preferred food in the four weeks prior to the endline survey. Skipping meals or eating smaller meals (indicator four and five) occurred less often, but still only about 20 per cent of the sample had never done this in the four weeks before the survey. The last two indicators are a measure of severe food insecurity and refer to occasions when there is not enough food in the household to appropriately feed all members. Two-thirds of the sample experienced a situation of having no food at all in the house, but just over half of the sample did not experience a situation in which one of the members had to go to bed hungry because of a lack of resources. Table 4.4.4 shows that there are no significant differences between the treatment and comparison group for any of these indicators. Finally, the HFIAS score indicates lower food insecurity among treatment group, but the difference is also not statistically significant.

Table 4.4.4: Impacts on food security indicators (endline indicators only)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Comparison Mean (3)
Never not able to eat the kinds of foods you preferred because of lack of resources	-0.004	0.033	0.033
	(0.02)		
Never have to eat a limited variety of foods due to a lack of resources	-0.040	0.098	0.116
	(0.03)		
Never have to eat some foods that you really did not want to eat because of a lack of resources	-0.011	0.046	0.048
	(0.02)		
Never have to eat a smaller meal than you felt you needed because there was not enough food	-0.017	0.180	0.201
	(0.04)		
Never have to eat fewer meals in a day because there was not enough food	-0.011	0.195	0.216
	(0.05)		
Never no food to eat of any kind in your household because of lack of resources	0.014	0.344	0.351
	(0.03)		

[20] Coates, J., Swindale, A., & Bilinsky, P. (2007). Household Food Insecurity Access Scale (HFIAS) for measurement of food access: indicator guide. Washington, DC: Food and Nutrition Technical Assistance Project, Academy for Educational Development.

Never go to sleep at night hungry because there was not enough food	0.018	0.542	0.532
	(0.03)		
Household Food Insecurity Access Scale (HFIAS) Score	-0.524	12.748	13.036
	(0.53)		
N	2,331	1,185	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Finally, there were no significant impacts on food security over the year. We assessed food security over a full year by asking for each month whether households experienced any situation where there was not enough food. Since this question was only included in the endline survey, we present the responses to these questions by treatment and comparison in Figure 4.5.3 and estimated impacts using single differences. Figure 4.5.3 shows that April through August are the most food insecure months for households, while during September through March, there are fewer instances of food insecurity. The bars for the treatment and comparison groups are quite similar, and the analysis confirms that there are no significant differences, except for the month of January (a difference of about 4 percentage points; Appendix E).

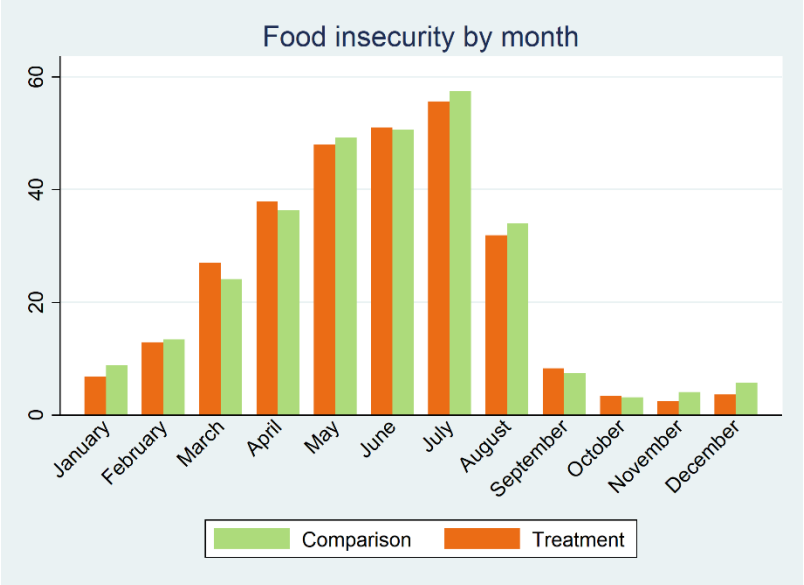


Figure 4.5.3. Share of households indicating not having enough food to feed their household (by treatment arm)

The decline in worry related to food was one of the most consistently salient themes across qualitative interviews starting with the midline interviews and continuing into endline. Despite a lack of quantitative impacts on related indicators, nearly all participants in the qualitative interviews mentioned that they experienced less worry and stress related to food since they started to receive the transfer. For some, this reduction in worry reflected simply having more cash to use to procure basic food items. For others, the transfer allowed them to diversify their diets. For others, the impact of the transfer had allowed the household to expand its economic productivity and, in so doing, experience less stress related to food security. While reduced food worry was common, many participants still referred to the stress and worry of poverty.

One exception was a mother in Bongo with 3+ children who experienced a shock with the death of her grandmother on top of the chronic stressor of her husband not being able to work. This participant continued to feel worry about food,

> *'When we don't get to eat or if we are not able to cook for the children it's a worry and you become emotionally unstable because you are battling with hunger yourself and the children are also going hungry and you can't get food for them to eat. All these things are a problem and it's not pleasant hmm, so it's the food that is a problem, if you get money you will use it to do something but if we don't get this baby will sit like that till evening, this baby. So the food is the problem, how to get money and hire laborers to come and weed for us is a problem and that is a worry, other than that there is no other problem.' (3+ children, Bongo)*

In this household that had experienced fewer impacts and still had limited economic productivity and labour resources, worry about food and farming production continued to affect the mother even with the addition of the LEAP 1000 transfer.

4.4.3 Poverty

The LEAP 1000 programme aims to reduce poverty. Individuals are regarded as poor if the per adult equivalent consumption of the household in which they reside falls below the national poverty line (which is also expressed in per adult equivalents). The Ghanaian poverty lines are updated to the August 2017 price level to determine the poverty level of the sample. Since the analysis of consumption impacts shows that the average level of consumption declined over the past two years for both treatment and comparison groups, it is no surprise that poverty levels increased. However, the DD method nets out any underlying trend in rising poverty rates and the **positive impacts we observe can be interpreted as protective impacts of LEAP 1000 against poverty.**

While overall poverty rates were increasing in both groups, receipt of LEAP 1000 made it less likely that treatment households fell into poverty as compared to comparison households. Table 4.4.5 shows this trend. While the overall poverty rate in our sample starkly increased, **LEAP 1000 had a protective effect of more than 2.1 percentage points on the poverty headcount**. For example, while the poverty rate in the comparison group increased by about 8 percentage points, it only increased by 6 percentage points in the treatment group. Consequently, the other poverty indicators for the treatment group also did not increase to the degree experienced by the comparison group. **LEAP 1000 had a 2.6 percentage point impact on the poverty gap index**, which is the average distance of the poor to the poverty line expressed as a share of the poverty line. The squared poverty gap index is a measure of poverty severity and gives more weight to individuals further from the poverty line. It also declined by 2.5 percentage point as a result of LEAP 1000. LEAP 1000 also had no impact on the prevalence of extreme poverty (headcount measure), but did have protective impacts on the extreme poverty gap (2.8 pp) index and extreme poverty index squared (2.3 pp). This indicates the programme was able to mitigate poverty to some extent.

Table 4.4.5: Impacts on poverty indicators

Dependent Variable	Program Impact	Baseline Treated Mean	Baseline Comparison Mean	Endline Treated Mean	Endline Comparison Mean

	(1)	(2)	(3)	(4)	(5)
Poverty headcount	-0.021**	0.929	0.910	0.989	0.991
	(0.01)				
Poverty gap index	-0.026**	0.514	0.492	0.638	0.642
	(0.01)				
Poverty gap index squared	-0.025**	0.325	0.307	0.439	0.446
	(0.01)				
Extreme poverty headcount	-0.021	0.708	0.686	0.901	0.900
	(0.02)				
Extreme poverty gap index	-0.027**	0.296	0.276	0.426	0.433
	(0.01)				
Extreme poverty gap index squared	-0.023*	0.155	0.142	0.238	0.247
	(0.01)				
N	4,567	1,158	1,126	1,167	1,116

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; bottom and top 1% for each wave excluded; estimates weighted by household size

4.4.4 Child material wellbeing

In addition to household-level measures of consumption, food security and poverty, we are interested to assess the impact of LEAP 1000 on individual-level wellbeing outcomes, particularly for children. We use two indicators of material wellbeing, namely whether a child has a pair of shoes, and has a change of clothes.[21] We estimate the impact on these two indicators individually, and on whether a child has both of these (Table 4.4.6). The results show that LEAP 1000 had a strong impact on material wellbeing of children of about 10 percentage points on all three measured indicators. Disaggregating the impacts by age group and gender shows that these effects are stronger for boys and older children 13 – 17 years old (see Appendix Tables E.8 – E.10).

Table 4.4.6: Impacts on having a pair of shoes and two sets of clothes, children 5-17 years

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Has a pair of shoes	0.100***	0.216	0.270	0.593	0.547
	(0.03)				
Has two sets of clothes	0.095***	0.625	0.663	0.899	0.841
	(0.03)				
Has a pair of shoes and two sets of clothes	0.100***	0.186	0.241	0.581	0.536
	(0.03)				
N	10,567	2,860	2,183	3,084	2,440

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance

4.4.5 Happiness

[21] UNICEF (2005). Guide to monitoring and evaluation of the national response for children orphaned and made vulnerable by HIV/AIDS. New York, NY: Author.

We end this section with self-reported happiness, an important element in overall household wellbeing. At the start of the survey, each respondent was asked the following question, with response option 'Yes' or 'No': 'I would like to ask you a very important question about how you feel about your life. Taking all things into consideration, are you happy with your life?' Table 4.4.7 presents the impact of LEAP 1000 on the responses to this question. While most respondents in our sample reported to be happy in general, with endline figures in the range of 88 per cent, LEAP 1000 had a 4.4 percentage point positive impact on general happiness.

Table 4.4.7: Impacts on Happiness

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Happy with life	0.044**	0.767	0.804	0.883	0.876
	(0.02)				
N	4,662	1,185	1,146	1,185	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In sum, in a context of decreasing overall consumption levels, LEAP 1000 had a significant protective effect of 8.47 GH₵ per AE on household consumption, particularly driven by the protective impact on food consumption of 6.65 GH₵ per AE. The impact on food consumption was driven by cereals, dairy products and eggs, oil and fats, vegetables and condiments and spices, indicating a more diverse food basket for treatment households. In terms of food security, LEAP 1000 positively impacted the number of meals typically eaten by households, but had no impact on widely validated summary scales of food insecurity of self-perceived worry related to food insecurity. The positive protective impact on consumption resulted in a similarly protective impact of LEAP 1000 of 2.1 percentage points against the poverty rate, while poverty rates increased among both treatment and comparison groups, though to a lesser extent among treatment households as a result of the programme. Further, LEAP 1000 had strong positive impacts and children's material wellbeing and general happiness.

4.5 Household economic activity

As discussed in the conceptual framework section, we expect the cash transfer to have an immediate direct effect on consumption. Once basic needs are met, and possibly after a relatively short period of time, we expect the transfer to have further effects on household's economic activities, including investments in assets as well as on household members' time allocation, with implications for participation in productive activities. The LEAP 1000 survey included modules on time use, ownership of animals, expenditures on agricultural inputs, debts and credits, and non-farm enterprises conducted by household members. This section presents the program impacts on these domains.

4.5.1 Time use

The LEAP 1000 survey collected information on the amount of time allocated to different activities by each household member aged six years or older. Because time allocation decisions typically vary for

children and adults and by sex, we present the results disaggregated by these dimensions. Children are here defined as members age 7-14 years to make it possible to identify the existence of children's engagement in work. This is in line with ILO Convention 138 (Minimum age convention, 1973) which stipulates that children under 15 should not be engaged in any form of work. The Children's Act of Ghana which was enacted in 1998 is duly compatible with the ILO Convention 138[22]. The age range of 7 to 14 years is also used by the GLSS6. The other two age groups identified are adults (aged 15-59) and the elderly (aged 60+). Tables 4.5.1-2 and Appendix D show results disaggregated by the three age groups and by sex (six categories for the analysis).

The activities considered can be classified into two broad groups: household chores and economic activities. Household chores include time spent collecting water, collecting firewood or other fuel materials, and taking care of children, cooking or cleaning. Table 4.5.1 shows the impacts on time allocation for female children in terms of the share of household members engaging in each activity and the total amount of time spent on the activity. While there is no impact on the share of female children participating in the collection of water, we find a positive impact (or increase) in the hours spent collecting water by female children in the last 24 hours preceding the survey. On the other hand, we find a significant reduction (at the 10 percent level of significance) on the share of female children and the amount of time spent on taking care of children, cooking or cleaning.

Similar analyses for the other age-sex groups produces the summary results in Table 4.5.2. Analogous tables of Table 4.5.1 for the other age-sex groups are found in Appendix D. We find a significant reduction on the overall time spent on household chores among male children, but the time spent by male adults on taking care of children, cooking and cleaning went up significantly. The impact on the share of adult males who performed any household chores was positive and significant. While this small change in men's contribution to taking care of children and chores is a movement in the direction towards gender equity, women still participate in these activities in much higher levels than men. For example, at baseline, women on average spent 3.8 to 3.9 hours per day taking care of children, and men spent 0.4 to 0.6 hours per day in this activity. For chores, these levels were 6.2 to 6.3 hours per day for women and 0.7 to 0.8 hours for men. There were no impacts on the time allocation to chores by all other age-sex groups.

Table 4.5.1: Impacts on time use for household chores - Female Children

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Spent time collecting water yesterday	0.022	0.561	0.565	0.615	0.601
	(0.03)				
N	3,252	895	660	958	739
Hours spent collecting water yesterday	0.187*	1.589	1.744	1.385	1.346
	(0.10)				
N	1,910	503	374	589	444
Spent time collecting firewood yesterday	0.010	0.215	0.226	0.136	0.141

[22] Ghana Statistical Service (2014) Ghana Living Standards Survey Round 6 (GLSS6) Main Report. Ghana Statistical Service: Accra.

	(0.03)				
N	3,252	895	660	958	739
Hours spent collecting firewood yesterday	-0.001	2.177	2.212	2.154	2.158
	(0.24)				
N	578	193	149	132	104
Spent time taking care of children, cooking or cleaning yesterday	-0.057*	0.605	0.597	0.637	0.693
	(0.03)				
N	3,252	895	660	958	739
Hours spent taking care of children, cooking or cleaning yesterday	-0.233	3.468	3.219	2.969	3.033
	(0.24)				
N	2,057	540	394	611	512
Performed any household chores at all yesterday	-0.010	0.736	0.751	0.779	0.812
	(0.03)				
N	3,252	895	660	958	739
Hours spent on household chores yesterday	-0.222	4.702	4.537	3.898	3.962
	(0.29)				
N	2,500	657	496	747	600

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.5.2: Impacts on time use for household chores by age-sex groups

Dependent Variable	Female Children (7-14) (1)	Male Children (7-14) (2)	Female Adults (15-59) (3)	Male Adults (15-59) (4)	Female Elderly (60+) (5)	Male Elderly (60+) (6)
Spent time collecting water yesterday	0.022	-0.033	-0.003	-0.003	-0.047	-0.003
	(0.64)	(-1.26)	(-0.15)	(-0.23)	(-1.45)	(-0.23)
N	3,252	3,588	6,937	5,611	884	5,611
Hours spent collecting water yesterday	0.144*	-0.060	0.056	-0.021	-0.089	-0.021
	(1.68)	(-1.50)	(0.82)	(-0.74)	(-1.49)	(-0.74)
N	3,252	3,588	6,937	5,611	884	5,611
Spent time collecting firewood yesterday	0.010	-0.022	-0.004	-0.006	-0.025	-0.006
	(0.37)	(-1.37)	(-0.16)	(-0.44)	(-0.80)	(-0.44)
N	3,252	3,588	6,937	5,611	884	5,611
Hours spent collecting firewood yesterday	0.030	-0.075*	0.021	-0.015	-0.085	-0.015
	(0.39)	(-1.81)	(0.22)	(-0.44)	(-1.05)	(-0.44)
N	3,252	3,588	6,937	5,611	884	5,611
Spent time taking care of children, cooking or cleaning yesterday	-0.057*	-0.035	-0.006	0.051**	0.023	0.051**
	(-1.74)	(-1.11)	(-0.32)	(2.56)	(0.41)	(2.56)
N	3,252	3,588	6,937	5,611	884	5,611
Hours spent taking care of children, cooking or cleaning yesterday	-0.392*	-0.242**	0.034	0.189**	0.160	0.189**
	(-1.95)	(-2.02)	(0.17)	(2.19)	(0.34)	(2.19)

N	3,252	3,588	6,937	5,611	884	5,611
Performed any household chores at all yesterday	-0.010	-0.042	0.002	0.046*	0.030	0.046*
	(-0.36)	(-1.09)	(0.15)	(1.87)	(0.53)	(1.87)
N	3,252	3,588	6,937	5,611	884	5,611
Hours spent on household chores yesterday	-0.218	-0.377***	0.105	0.143	-0.014	0.143
	(-0.81)	(-2.67)	(0.38)	(1.31)	(-0.03)	(1.31)
N	3,252	3,588	6,937	5,611	884	5,611

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.5.3 shows the impacts on the time use for economic activities by the same age-sex combinations presented above. The results show an increase in the proportion of male and female adults (4.4 and 4 percentage points, respectively) participating in any farming activity in the past rainy season, although we do not find any impacts on the total number of days spent in farming activities. We also find significant impact on the share of elderly females participating in non-farm household enterprise activities with a corresponding reduction in the share of elderly males who participated in this activity. Time spent collecting fruits and other wild products also decreased among elderly males. We find positive impacts on the number of hours per week that adult females spent in wage labour, but a decline of similar magnitude among adult males.

Table 4.5.3: Impacts on time use for economic activities by age-sex groups

Dependent Variable	Female Children (7-14) (1)	Male Children (7-14) (2)	Female Adults (15-59) (3)	Male Adults (15-59) (4)	Female Elderly (60+) (5)	Male Elderly (60+) (6)
Spent time on household farming activity in past rainy season	-0.011	0.048	0.044**	0.030*	0.065	0.026
	(-0.36)	(1.21)	(2.12)	(1.96)	(1.12)	(0.36)
Days spent on household farming activities in last rainy season	-1.483	-1.617	-1.858	-2.406	-1.172	1.158
	(-1.23)	(-0.97)	(-1.21)	(-1.24)	(-0.28)	(0.24)
Spent time on household NFE in last 7 days	-0.002	0.009	0.015	0.007	0.035*	-0.046**
	(-0.12)	(1.14)	(1.23)	(0.66)	(1.75)	(-2.29)
Hours spent on household NFE in last 7 days	-3.241	-0.085	1.359	-4.386	0.000***	-17.329***
	(-0.67)	(-0.04)	(0.60)	(-0.97)		(-3.53)
Spent time on household livestock activities in last 7 days	0.008	-0.027	0.016	0.033	-0.037*	0.009
	(0.43)	(-0.91)	(1.03)	(1.14)	(-1.79)	(0.12)
Hours spent on household livestock activities in last 7 days	0.403	-0.959	-1.254	-0.816	1.521	0.876
	(0.12)	(-0.46)	(-1.40)	(-1.03)	(1.54)	(0.37)
Spent time collecting nuts or fruits in last 7 days	0.044*	0.005	-0.007	-0.011	0.014	-0.027**
	(1.82)	(0.31)	(-0.36)	(-1.27)	(0.38)	(-2.08)
Hours spent on collecting	-0.752	0.645	-1.120	-12.345*	-3.386	0.000***

nuts or fruits in last 7 days						
	(-0.55)	(0.47)	(-1.12)	(-1.67)	(-0.74)	
Spent time on casual labour last 7 days	-0.026*	-0.023	0.014	-0.012	0.020	0.018
	(-1.79)	(-1.59)	(0.82)	(-0.61)	(1.39)	(0.79)
Hours spent on casual labour in last 7 days	1.853	-1.518	-0.375	0.458	0.000***	0.000***
	(0.68)	(-0.72)	(-0.23)	(0.31)		
Spent time on wage labour in last 7 days	-0.010	-0.005	0.007	-0.026	0.005	0.040*
	(-0.62)	(-0.33)	(0.38)	(-1.20)	(0.51)	(1.72)
Hours spent on wage labour in last 7 days	5.144	-0.847	3.518**	-3.530*	0.000***	-3.189
	(1.56)	(-0.32)	(2.27)	(-1.91)		(-0.57)
N	117	145	718	711	5	20

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.5.2 Livestock and poultry

One of the potential impacts of the LEAP 1000 is for households to invest in income diversification and strengthening by households beginning to own or increasing investments in livestock and poultry. In addition to increasing potential for additional revenues, livestock and poultry can serve as food for the households at a lower price than buying the same from markets. The LEAP 1000 survey accordingly obtained information on the stock and flow of livestock and poultry among the sampled households.

We find a significant increase of approximately six percentage points on the share of household that raised any livestock, and this is driven mainly by the impact on the share of households that raised goats (Table 4.5.4). We, however, do not find impacts on the number of each type of livestock owned (Table 4.5.5).

Table 4.5.4: Impacts on livestock raising

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Raised any livestock	0.056**	0.404	0.383	0.519	0.443
	(0.03)				
Number of different livestock	0.067	0.782	0.746	0.925	0.821
	(0.06)				
Raised drought animal	-0.015	0.059	0.050	0.039	0.045
	(0.01)				
Raised cattle (including calves)	0.021	0.105	0.110	0.107	0.091
	(0.01)				
Raised sheep	-0.003	0.211	0.208	0.232	0.232
	(0.02)				
Raised goats	0.057**	0.313	0.296	0.411	0.336
	(0.03)				
Raised pigs	0.010	0.085	0.078	0.133	0.116
	(0.02)				

Raised rabbits	-0.003	0.009	0.005	0.003	0.002
	(0.00)				
N	4,661	1,185	1,146	1,184	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.5.5: Impacts on number of livestock

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Number of drought animal	-0.053**	0.129	0.086	0.061	0.072
	(0.02)				
Number of cattle (including calves)	0.118	0.760	0.777	0.413	0.312
	(0.23)				
Number of sheep	0.002	0.838	0.947	0.710	0.817
	(0.20)				
Number of goats	0.233	1.058	1.184	1.142	1.034
	(0.20)				
Number of pigs	0.126	0.208	0.316	0.306	0.288
	(0.10)				
Number of rabbits	0.063	0.024	0.092	0.011	0.017
	(0.08)				
N	4,661	1,185	1,146	1,184	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

For poultry, we also find a six-percentage point impact on the share of households raising any poultry, and this is primarily driven by the impact on the share of households raising chicken (Table 4.5.6). We do not find impacts on the number of poultry owned (Table 4.5.7).

Table 4.5.6: Impacts on poultry production

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Has any poultry or fish	0.061**	0.447	0.437	0.545	0.474
	(0.03)				
Number of different poultry or fish	0.070	0.612	0.610	0.688	0.616
	(0.04)				
Raised chicken	0.060**	0.430	0.414	0.535	0.458
	(0.03)				
Raised guinea fowl	0.012	0.140	0.149	0.124	0.121
	(0.02)				
Raised duck	0.004	0.017	0.021	0.011	0.011
	(0.01)				
Raised other poultry	-0.012**	0.007	0.004	0.007	0.016
	(0.01)				
N	4,661	1,185	1,146	1,184	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.5.7: Impacts on number of poultry

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Number of chicken	-0.085	3.017	2.665	3.507	3.237
	(0.45)				
Number of guinea fowl	-0.056	1.395	1.535	1.069	1.264
	(0.35)				
Number of duck	0.016	0.072	0.073	0.041	0.026
	(0.02)				
Number of other poultry	-0.175**	0.080	0.031	0.052	0.178
	(0.08)				
N	4,661	1,185	1,146	1,184	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

At endline, information was collected on purchases and sale of livestock and poultry. The cross-sectional impacts on these indicators are shown in Table 4.5.8. Overall, we do not find any impacts on the combined indicator for of livestock, or on expenditures related to livestock purchases. Nevertheless, there were positive impacts on one sub-category (purchases of poultry).

Table 4.5.8: Impacts on purchases and sale of animals in last 12 months

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Any livestock purchases in last 12 months	0.048	0.238	0.191
	(0.03)		
Expenditure on livestock purchases	1.513	47.532	58.878
	(19.24)		
Any livestock sale	0.014	0.066	0.053
	(0.02)		
Income from livestock sale	-5.797	17.027	16.296
	(10.12)		
Any poultry purchases	0.063**	0.207	0.185
	(0.03)		
Expenditure on poultry purchases	2.265	7.323	4.911
	(1.45)		
Any poultry sale	-0.007	0.065	0.052
	(0.02)		
Income from poultry sale	2.049	5.362	3.788
	(2.79)		
N	2,330	1,184	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In the qualitative interviews, several participants reported investing in animals as a form of insurance. Participants described selling livestock in response to shocks, such as hospital costs and funeral contributions. However, many also described that the animals died or the offspring died, as reflected in the discussion in section 4.2.3 on community shocks, which limited the impact of this investment.

4.5.3 Expenditure on agricultural inputs

Another area where we expect the cash transfer to begin to have an impact is on investment in agricultural inputs. Since farming remains the predominant income generating activity for these households, any potential multiplier effects of the cash would most likely be realized through investment in agriculture inputs. Table 4.5.9 summarizes the impacts on the agricultural inputs for the last agricultural season. We find that, while there are no impacts on the share of household with positive expenditures on agricultural inputs, there is a significant positive impact on total expenditures on agricultural inputs. A closer look at Table 4.5.9 reveals that the increase in spending is driven mainly by the expenditure on agro-chemicals which include fertilizer/manure, pesticides and weedicides/herbicides.

Table 4.5.9: Impacts on agricultural inputs use

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
HH with spending on agricultural inputs (share)	0.011	0.785	0.795	0.911	0.910
	(0.02)				
Total expenditure on agricultural inputs (GHS)	35.403**	197.113	218.457	211.857	197.798
	(17.57)				
Any expenditure of seeds (share)	-0.007	0.616	0.618	0.767	0.777
	(0.02)				
Expenditure on seeds (GHS)	4.173	37.154	38.230	47.577	44.481
	(4.05)				
Any expenditure of equipment (share)	0.005	0.502	0.529	0.537	0.558
	(0.02)				
Expenditure on equipment (GHS)	4.243	33.883	38.784	26.436	27.094
	(5.56)				
Any expenditure of hired labour for production (share)	-0.001	0.232	0.229	0.234	0.231
	(0.02)				
Expenditure on hired labor for production (GHS)	0.708	22.222	22.776	26.961	26.806
	(3.53)				
Any expenditure on agro-chemicals (share)	0.002	0.489	0.495	0.600	0.604
	(0.03)				
Expenditure on agro-chemicals (GHS)	26.266*	101.953	116.858	106.975	95.614
	(13.33)				
Any expenditure of bags, containers, strings, packaging (share)	-0.019	0.110	0.083	0.156	0.148
	(0.02)				
Expenditure on bags, containers, strings, packaging (GHS)	0.013	1.900	1.809	3.908	3.804
	(0.68)				
N	4,662	1,185	1,146	1,185	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Though the quantitative results don't show significant impacts on hired labour, in the qualitative interviews, the most salient agricultural expenditure was hiring labour and/or tractors to increase farming

productivity and capacity. Especially in Bongo, where several men had been away working in the mines, the ability to hire a tractor to prepare land was critical to the success of crops. A very productive participant in Bongo discussed the importance of being able to hire a tractor in order to farm productively as she described the changes in the farming activities in her household,

> *'The change is that when it gets to this time we don't have animals to use and farm, it is a tractor that comes to plough and if you don't have money you can't farm. And the tractor takes seven hundred thousand[23] [70 GH₵], if you don't have money you can't farm. .' (3+ children, Bongo)*

This quote reflects how this participant's household was able to cope with her husband's layoff and have a productive year of farming due to their investment in hiring a tractor.

4.5.4 Loans, credits and exchanges

Paying down debts is another way that we hypothesize the cash could be used. Since many of these rural debt holdings are from informal sources often with high interest payments, paying down debt could have a profound multiplier effect due to savings on interest. Similarly, purchases on credits remain a coping strategy among poor households, and it is expected that the cash transfers would reduce the perennial need for purchases on credit, particularly for consumption. There is also the possibility that the cash transfer could induce increased dependence of friends and family on the beneficiaries for support, and this could result in lowering the impact of the cash on the livelihood of beneficiary households.

For these reasons, our survey collected information on household loans, credits, and exchanges (at endline only; Tables 4.5.10 to 4.5.12). Overall, we do not find impacts on the share of households seeking out loans, or on the amount of loans sought, but we do find positive programme impacts on loans for productive investments (Table 4.6.10). We find that impact on the value of in-transfers was significant at the 10 per cent level but the impact on the value of out-transfers was not significant. The null impact on out-transfers shows that beneficiary households are not been overwhelmed with demands to share their cash benefits which is reassuring. Also, the fact that in-transfers have not significantly reduced suggests that pre-existing social exchanges have not be much disrupted and so there is likely no substitution effect. We also find no significant impacts on the net exchanges (in transfers – out transfers) between beneficiary households and their social network. Borrowing from relatives/friends/neighbours accounted for more than 50 per cent of all borrowing which shows strong informal living arrangements.

Table 4.5.10: Impacts on loans

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Borrowed in last 12 months	-0.036	0.371	0.351	0.395	0.410
	(0.03)				
Total amount of loan	-14.652	202.281	192.393	188.737	195.761
	(28.49)				
Total outstanding loan	-4.361	194.010	173.520	167.543	153.652
	(19.66)				

[23] The participant refers to old Ghanaian cedis, which have been replaced by new cedis in 2007. The conversion with the new currency is 10,000:1

Loan for productive investment	0.083**	0.286	0.317	0.284	0.223
	(0.04)				
Loan for routine consumption purchases	-0.073	0.513	0.448	0.444	0.460
	(0.04)				
Loan for emergency	-0.000	0.242	0.273	0.226	0.262
	(0.04)				
N	1,786	443	402	468	473

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.5.11: Impacts on credits

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Purchased on credit in last 12 months	-0.005	0.256	0.259	0.198	0.206
	(0.02)				
Total purchases on credit	21.806	137.527	159.960	124.950	127.154
	(20.25)				
Total outstanding debt on credit purchases	17.983	111.155	133.332	163.810	166.948
	(29.28)				
Household not credit constrained	-0.015	0.365	0.359	0.637	0.646
	(0.03)				
Credit purchases for consumption	0.006	0.217	0.227	0.182	0.185
	(0.02)				
N	4,660	1,185	1,146	1,183	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.5.12: Impacts on social exchanges

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Any in-transfers	0.017	0.112	0.095
	(0.02)		
Value of in-transfers	5.076*	10.987	9.695
	(2.83)		
Any out-transfers	0.033	0.172	0.102
	(0.02)		
Value of out-transfers	7.274	24.820	12.466
	(5.29)		
Net-transfers (In-Out)	-2.198	-13.833	-2.771
	(6.12)		
N	2,329	1,183	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In the qualitative interviews, participants described being less reliant on borrowing in times of need but more confident and able to get loans for basic needs or investment when necessary. Similar to the quantitative results, most of the borrowing seemed to be informal, coming from people in their direct living environment. Several participants had positive associations of the effect of the transfer on borrowing. They

valued having more financial independence and, for some, it was a relief to no longer having to ask people from outside of the house for financial support, which they considered shameful. A mother of three in Bongo explained that she used to buy food on credit, but that she no long does this. When asked how this made her feel she responded positive: "*I am happy that I no longer borrow money from people again*".

Other participants described a continued need to borrow and an increased ability to borrow since joining the program. A mother of 3+ children in Karaga described how poverty continued to be her main source of worry and explained the central role of borrowing and lending in her survival, especially as the family coped with the shock of her mother-in-law's death,

> ***PARTICIPANT:*** *Yes, the shea nuts we just pick has a lot of debt. When my mother died we had to borrow money to go so that debt is still unpaid.*
>
> ***INTERVIEWER:*** *So, are you going to sell to pay off your debts?*
>
> ***PARTICIPANT:*** *Yes. For instance if you have any expenditure you will have to sell the shea nuts to be able to pay but the best one can even get to sell is about 10 bowls and the money is not even sufficient to solve the issue. (3+ children, Karaga)*

Here she reflects how the family experienced a shock that caused them to borrow, on top of the debt they already had. However, at midline this participant had explained that an impact of the programme was that when she became a beneficiary, people are more willing to lend her money as they trust she can pay it back. This continued at endline, where borrowing money was still a part of her survival,

> *'Yes, when I am in need I get it to borrow from people. For instance, when I needed money to go visit my grandmother, I went to borrow some money and I had it so I went on that visit with that money.' (3+ children, Karaga)*

Additionally, this participant described how people came to her to borrow money, reflecting a cyclical movement of the LEAP 1000 funds in the community,

> *'There are times you receive the money and someone comes to borrow from you and you give it out. The fellow later pays and then you spend your money again.' (3+ children, Karaga)*

Another example of the central role of borrowing came from a mother of 3+ children in Bongo who had a very positive experience in the program and was saving and investing the funds in both farming and producing shea oil. *'But now that we receive money, when our food gets finished and we don't even have money to go and buy and someone has money or if you know where to go and borrow money you can go and borrow knowing that next month you will get money to go and pay.' (3+ children, Bongo)*

For this participant, the money from the program allowed her to be more productive and also worry less knowing that she could borrow. As an example, she had wanted to get involved in producing shea oil before she was in the program but did not have enough money to get started.

> *'A white man always comes and buy the oil so I will get money and go and buy the oil and come and keep and if I sell and make small profit I will add it to my seed money and that is what I am doing small small and using to get something to eat.' (3+ children, Bongo)*

Again, she connects the ability to borrow funds and be more productive to her ability to "*get something to eat"* reflecting the continued salience of food security in the lives of LEAP 1000 beneficiaries. She further explained that beyond food, the ability to borrow against the transfer allowed her to cope with shocks, such as unexpected medical expenses.

4.5.5 Non-Farm Enterprise

Operating a non-farm enterprise (NFE) is one other avenue for diversifying and increasing household income. As shown in Table 4.5.13, there were no impacts on the share of households operating a NFE, but there is a positive impact on the number of NFE owned which is suggestive of intensification of NFE operations. However, we do not find impacts on the months of operation of the NFEs, or on the profit. More than 40 per cent of NFEs are found in one district (Bongo), and NFEs are generally more likely to be located in the larger communities.

Table 4.5.13: Impacts on HH enterprise operations

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Household has any enterprise	0.030	0.206	0.221	0.268	0.254
	(0.02)				
N	4,662	1,185	1,146	1,185	1,146
Number of enterprises	0.041*	0.226	0.244	0.317	0.293
	(0.02)				
N	4,662	1,185	1,146	1,185	1,146
Months of operation	-0.033	8.431	8.408	9.553	9.455
	(0.42)				
N	1,119	247	256	323	293
Enterprise managed by female	0.020	0.640	0.626	0.841	0.801
	(0.05)				
N	1,119	247	256	323	293
Age of person managing enterprise	0.889	36.691	34.913	36.117	33.360
	(0.92)				
N	1,119	247	256	323	293
Enterprise profits in typical month	4.074	37.423	41.366	52.179	52.596
	(7.95)				
N	1,119	247	256	323	293
Annual enterprise profits	35.441	341.985	402.824	501.342	530.699
	(96.90)				
N	1,119	247	256	323	293

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In the analysis of the qualitative data, we noted a regional pattern consistent with the assumptions that informed our design whereby women in Bongo reported more NFE than women in Karaga. Only one woman reported trying to engage in NFE in Karaga; she was not successful in activities related to shea nuts, which caused her stress.

> *'**INTERVIEWER:** Now I want us to talk about the source of income of your household. The last time you said you farm and process and sell shea nut, I want to know about that.*

> ***PARTICIPANT:*** *I like the shea nut (butter) business but of late it has not been profitable so I have stopped.*
> ***INTERVIEWER:*** *When I visited the last time I saw that day you were process(ing) some.*
> ***PARTICIPANT:*** *Yes and that was my last time because I didn't get my money back, I had to add money to be able to pay for the nuts I bought on credit.' (3+ children, Karaga)*

This participant, who shared her transfer with her younger co-wife, refers to the size of her household, approximately 15 people, which she felt was beyond the scope of what they could support. She had some success selling rice, which she planned to do again when the season resumed. However, as reflected in this quote, **rather than NFE, participants in Karaga, both men and women, emphasized the impact of the transfer on improving their agricultural production and acquiring livestock.**

In contrast, several women in Bongo, which is close to a large market, engaged in NFE using transfer funds. Examples of the NFE described in Bongo included using the transfer money to start small businesses including selling foods (bofrot, kuli kuli), goods (birro), and shea oil. A first-time mother in Bongo described how she sought out opportunities to use her money to be productive in NFE,

> *'when we get [the transfer] or when I am doing the susu, I am thinking when I take the money what I will to use it for. So when I took it I used it to buy a goat for my baby and when I started again I wanted to prepare chips in addition but I have not had the person who will teach me how to prepare the chips. And I know that money can't be kept because when I keep it I will misuse it. And there is a certain girl from this area who has graduated and I told her and she asked me to come and register and start learning the work and I went. So am now learning weaving and am preparing the 'bofrot' to sell.' (1st child, Bongo)*

She notes that "*when I keep it I will misuse it*", reflecting the idea that it is better to put the money to use rather than holding onto it. But, she noted that profiting from this business was challenging due to the limited resources in the community,

> *'As for this place business is not good, someone will just say give to me before or if a child is crying they will say give to him before and when you give and they don't pay and it finishes you won't have enough money to go and buy. ' (1st child, Bongo)*

This example is a reminder on the limits of NFE in communities with extreme poverty.

Like this woman, several others in Bongo, especially the younger women, described using the transfer money to learn a trade, such as weaving or tailoring**. Consistent with the quantitative data, these trades were not yet producing a positive economic impact but were viewed as a way to invest the transfer to secure economic productivity in the future.**

4.6 Housing conditions and WASH

This chapter presents the impacts of LEAP 1000 on conditions of the dwelling as well as on access to water, sanitation and hygiene (WASH). According to the conceptual framework, apart from expenditure on food and other basic needs, improving housing conditions is a common area for investing additional disposable income.

4.6.1 Housing conditions

Improvements in housing conditions may be in the form of changing from thatch to iron roofing sheets, improving floor material from mud to concrete/tiles, or constructing or renting additional rooms to reduce congestion (more than three persons per room) in existing rooms.

Table 4.6.1 shows impacts on housing conditions. The person-per-room indicator is the ratio of the household size to the number of rooms that the household occupies. This does not take into account whether the rooms are used exclusively for sleeping or not, and does not also take into account the room sizes. We find no significant impacts on the continuous variable of persons-per-room, nor on the dichotomous variable of improved person-per-room (here conservatively defined as less than three persons-per-room).

Households are classified as having improved lighting source if they rely on electricity or solar for lighting. Improved housing walls are wall constructed of cement blocks, concrete or landcrete (as opposed to walls made of mud/mud bricks/earth). Improved roof refers to roof made of metal sheets, slate/asbestos/roofing tiles (as opposed to roof with palm leaves or other materials), and improved floor refers to floor made of cement/concrete, burnt bricks, vinyl or ceramic tiles (as opposed to floors of earth/mud or other materials). Improved kitchen refers to the case where cooking is done in a separate room or building exclusively designated (as opposed to cooking outdoors or elsewhere in the house). **We found significant impacts (at the 10 per cent significance level) on the lighting source and floor, but not on the other indicators.**

It is worth highlighting that some of these indicators require more than just additional income to influence households to change. Supply side constraints such as in the case of electricity are binding. In addition, engrained environmental and cultural factors continue to act as inhibitions to adoption. For example, the hot weather conditions make thatch room more conducive in keeping rooms at acceptable temperature than iron roofing sheets. Some of these constraints need to be addressed to increase the chances of having impacts on the housing conditions.

Table 4.6.1: Impacts on Housing conditions

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Persons per room	-0.033	2.622	2.466	2.609	2.486
	(0.06)				
Improved person-per-room	0.013	0.650	0.674	0.679	0.689
	(0.02)				
Improved lighting source	0.027*	0.262	0.311	0.375	0.396
	(0.01)				
Improved wall	-0.009	0.032	0.038	0.037	0.052
	(0.01)				
Improved roof	0.018	0.646	0.654	0.672	0.662
	(0.02)				
Improved floor	0.049*	0.746	0.748	0.764	0.717
	(0.03)				
Improved kitchen facility	0.022	0.130	0.131	0.266	0.245
	(0.02)				

N	4,662	1,185	1,146	1,185	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In the community observations conducted as part of the qualitative fieldwork, it was noted that from baseline to endline there had been a sharp increase in the number of new buildings in the participating communities and surrounding areas in Bongo. This may have been connected to the relatively higher income of men from Bongo working in the gold mines, which allowed them to purchase materials for construction and housing improvements. These men, who had been laid off just before the endline fieldwork, expressed that building and maintaining their household structures was part of their role as the man.

> *'Anytime am here I don't farm, I wasn't here so I don't farm and because I was at the site I didn't farm during the farming season hmm. And God willing the money that I got is what I used to put up the rooms over there….So the problem now is to work on the interior, I just roofed but I haven't cemented it yet, I have not floored hmm. And it's the small money that I got that I used to put up those rooms for my mother and father so that when it rains or its windy the rain will not get to them hmm.' (husband, 1st child, Bongo)*

They emphasized that the money earned working in the mines was critical to being able to make these home improvements. However, being away and not attending to the farm was also mentioned as a cost of migrating for work that created a burden on the women in the household to carry the farming load.

The one household that was able to make home improvements in Karaga attributed this to his good rice crop,

> *'Yes. I planted maize last year and floods affected everything on the field. I lost almost everything. Almost everybody in this community was affected. I, in particular, didn't get any maize last year but my rice fields did so well and that is where I got money to support with the house I built. I planted 2 acres for the rice.' (husband, 3+ children, Karaga)*

The participant who experienced perhaps the least impact of LEAP among households in the qualitative sample discussed the poor condition of her house. She had experienced a major shock when her husband died between baseline and midline. At endline she said of her shelter,

> *'Yes, because we don't have good shelter. There are times we get embarrassed if a visitor comes into this house particularly when it rains. It looks better right now because it hasn't rained but very bad when it rains, all the filth carried by the rain is washed into our compound until the rain subsides then it moves to the end of the stretch.' (3+ children, Karaga)*

In addition to the vulnerability of the structure, the shame of not having suitable shelter was a burden and source of stress for this participant.

As reflected in the quantitative analysis, improvements in housing conditions might take more than just additional income. However, the qualitative results highlight the value that both the male and female participants attached to improving their shelter.

4.6.2 Water and sanitation

Similarly, in the area of WASH, households may spend their extra money on improving toilet facilities, improved sources of water for drinking or other household chores, and making provisions for the practice of effective handwashing. Such improvements in housing conditions and WASH may also act as an important pathways for achieving subsequent improvements in health outcomes such as reduction in diarrhoea among children, which also can have a positive influence on reducing stunting and malnutrition.

On the WASH indicators, households are classified as having an improved source of drinking water if their drinking water is from pipe-borne supply, tube well/borehole or protected well/spring, or if the household treats the water from the other sources before drinking. Households with improved sanitation are those with flush toilets, ventilated improved pit latrines or pit latrines with slabs (as opposed to open defecation in bush/fields or other type of toilet facility). Having appropriate handwashing facility entails having a designated place for handwashing which had water, soap or other detergent in view at the time of the visits. As shown in Table 4.6.2, we found no significant impacts on any of these WASH-related indicators.

Table 4.6.2: Impacts on WASH

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Improved drinking water	0.002	0.629	0.603	0.721	0.693
	(0.02)				
Improved sanitation	-0.006	0.101	0.097	0.233	0.234
	(0.02)				
Appropriate handwashing facility	0.023	0.070	0.072	0.126	0.105
	(0.02)				
N	4,662	1,185	1,146	1,185	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

As in the case of housing conditions, some of the WASH indicators require more than just additional income to influence households to change. Supply side constraints such as pipe-borne water are binding. In addition, engrained environmental and cultural factors continue to act as inhibitions to adoption. For example, the relevance of having an appropriate handwashing facility requires more behavioural change commutation to bring about adoption. Some of these constraints need to be addressed to increase the chances of having impacts on WASH conditions.

4.7 NHIS enrolment, morbidity and health seeking behaviour

This section reports the impacts of LEAP 1000 on National Health Insurance Scheme (NHIS) coverage, morbidity and health seeking behaviours. The analysis is conducted separately for adults (individuals aged 18 years and above) and for children (aged between 5 and 17 years). We first focus on impacts of the program on NHIS coverage and then examine morbidity, health seeking behaviour, and health expenditures. Overall, the programme had positive impacts on NHIS current enrolment for children and adults and ever enrolment for adults (but not children). The main reason for not having a current NHIS

card was reported as enrolment fee/premium being too expensive. Further, while there were no impacts on morbidity, LEAP 1000 increased health-seeking behaviours among adults who reported being ill (but not children).

4.7.1 NHIS enrolment

The analysis on NHIS enrolment focuses on two outcomes, having ever been enrolled in NHIS and having a valid NHIS card for the current year. In summary, the programme had a positive impact on NHIS current enrolment of individuals from treatment households, both children and adults, and it had a positive impact on the probability of ever being enrolled for adults (but not children).

We perform the analysis both at the household as well as the individual level. For the analysis at the household level, we look at two different types of indicators for each outcome variable: 1) whether at least one household member has ever been registered with NHIS insurance (or has a valid NHIS card for the current year) and 2) whether all household members have ever been registered with NHIS (or have a valid NHIS card for the current year). While the indicator on valid cards was collected both at baseline and endline allowing us to implement a difference-in-differences estimation strategy, 'ever enrolled' was only collected at endline and thus the impact is estimated as a single difference between treatment and comparison groups at endline.

The results reported in Table 4.7.1 show that the program increased the probability that all household members had a valid NHIS card for the current year by 7.7 percentage points, an important result considering that the baseline proportions of households with all members with a valid NHIS were close to zero (0.2 among treatment and 0.4 among comparison groups). While the proportion of households where all members had a valid NHIS card increased for both the treated and the comparison groups over the study period, the proportion of treated households increased almost twice as much as the comparison group, indicating strong programme impacts. Nevertheless, the program had no statistically significant impact on the probability of at least one household member having a valid NHIS card. The proportion of households with at least one member with a valid NHIS card is, as expected, much higher (77.5 percent of treatment households at endline) compared to the indicator of valid NHIS card for all household members (15.5 percent of treatment households at endline). The program did not have a statistically significant impact on the indicator of all household members ever having been registered with NHIS (regardless of whether holding a current valid NHIS card) (Table 4.7.2).

Table 4.7.1: Impacts on household NHIS enrolment

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
HH has at least one member with valid NHIS insurance card	0.050	0.723	0.686	0.775	0.689
	(0.03)				
HH has all members with valid NHIS insurance card	0.077***	0.002	0.004	0.155	0.080
	(0.01)				
N	4,662	1,185	1,146	1,185	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.7.2: Impacts on household ever being registered with NHIS (Single difference)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
HH has at least one member ever NHIS insurance	0.008	0.982	0.964
	(0.01)		
N	2,331	1,185	1,146
HH with all members ever NHIS insurance	0.036	0.494	0.439
	(0.04)		
N	2,331	1,185	1,146

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Next, we present analysis at the individual level, performed separately for adults (individuals aged 18 years and older) and for children aged 5 to 17 years. The impacts on NHIS enrolment outcomes are positive and statistically significant for both age groups (Tables 4.7.3 – 4.7.6). Tables 4.7.3 and 4.7.5 show that the proportion of children with a valid NHIS card are higher compared to adults, both at baseline and endline. A similar trend is observed for adults and children. The proportions of individuals with a valid NHIS card were similar between treatment and comparison groups at baseline, but by endline, LEAP 1000 increased the probability that adults and children had a valid NHIS card by 14.1 and 12.7 percentage points, respectively. The program also had a positive impact on having ever been enrolled in the NHIS by 6.9 percentage points for adults (but not for children).

Table 4.7.3: Impacts on NHIS coverage, individuals aged 18+

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Has valid NHIS insurance for current year	0.141***	0.305	0.317	0.412	0.283
	(0.02)				
N	12,878	3,346	3,218	3,213	3,101

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.7.4: Impacts on ever being registered with NHIS, individuals aged 18+ (Single difference)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Individual ever enrolment in NHIS	0.069**	0.801	0.745
	(0.03)		
N	6,314	3,213	3,101

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.7.5: Impacts on NHIS coverage, individuals aged 5-17

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Has valid NHIS insurance for current year	0.127***	0.423	0.436	0.489	0.375
	(0.03)				
N	13,985	2,860	2,183	4,842	4,100

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.7.6: Impacts on ever being registered with NHIS, individuals aged 5-17 (Single difference)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Individual ever enrolment in NHIS	0.029	0.863	0.802
	(0.02)		
N	8,942	4,842	4,100

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In Table 4.7.7 we report the **reasons for not renewing annual NHIS subscription** and for never enrolling with the NHIS. The top panel of the table reports the most frequently reported answers[24] among those that enrolled but did not currently hold a valid NHIS card at endline. The **most common reason was related to the cost of the fee**, both for individuals in treated and comparison households, though the frequency for this reason is statistically significantly higher for the comparison group, suggesting that the program partially relieved the financial constraints, or that beneficiaries had come to better understand that they were entitled to free enrolment, due to major national enrolment campaigns in 2016. The second most reported reason for not having a valid NHIS is that individuals did not realise that the card had expired. Long travel time and related travel costs is the third most reported reason, followed by not being aware that the card had to be renewed. The high cost associated with the fees to get the NHIS card is also the most reported reason for never having subscribed to NHIS. The other most frequent reasons are related to long travel time or cost and to waiting time at enrolment site too long.

Table 4.7.7: Differences in reasons for not renewing/never having NHIS by treatment status, all individuals

	All	Comparison	Treatment	P-value of diff.
Ever enrolled but no valid NHIS	41.54	44.65	38.76	0.00
N	15,256	7,201	8,055	
Enrolment fee/premium too expensive	75.32	80.34	70.15	0.00
Did not realised card expired	11.36	10.61	12.14	0.54
Travel time/cost too high	9.28	8.40	10.19	0.38
Not aware had to be renewed annually	6.77	6.22	7.34	0.32

[24] For this question, respondents were instructed to report up to three reasons.

Has not been sick	1.59	1.49	1.70	0.68
Waiting time at renewal too long	3.05	1.15	5.00	0.00
Poor quality care with NHIS - preferred services not covered	0.32	0.19	0.45	0.18
NHIS office closed	0.44	0.19	0.70	0.19
Other (card lost, no time, etc.)	0.25	0.19	0.32	0.22
N	6,337	3,215	3,122	
Never enrolled with NHIS	18.99	22.29	16.04	0.00
N	15,256	7,201	8,055	
Enrolment fee/premium too expensive	65.43	65.28	65.62	0.92
Travel time/cost too high	14.96	17.67	11.62	0.03
Waiting time at enrolment site too long	4.85	4.23	5.62	0.24
Poor quality care with NHIS - preferred services not covered	3.30	2.36	4.46	0.01
Don't understand NHIS	0.28	0.19	0.38	0.39
Other	10.84	10.14	11.69	0.41
N	2,907	1,607	1,300	

P-values are reported from Wald tests on the equality of means of Treatment and Comparison for each variable.
Standard errors are clustered at the community level.

Table 4.7.8 reports on fees paid to renew NHIS enrolment among those with a currently valid card. While the proportion of individuals reporting having to pay fees from comparison households (92.8 per cent) is statistically significantly higher than the proportion of individuals from treatment households (67 per cent), it is quite surprising that a large fraction of individuals from treatment households reported having had to pay a fee to renew their NHIS enrolment. According to the policy, beneficiary households should be exempted from paying any fee to renew their NHIS card. Our findings highlight that this policy is not borne out in practice and that there is also a big variation in the amount paid. While the majority paid a small amount (44 per cent of individuals paid up to GH¢ 5), the second largest proportion shows that 26 per cent of individuals paid more than GH¢ 21 for the renewal of the NHIS card. We then asked how much the renewal of NHIS was expected to cost, and individuals from comparison households mostly reported zero or very low amounts. The expected amounts reported by individuals from beneficiary households instead were more variable, with the majority reporting between GH¢ 1-5 and GH¢ 11-20.

Table 4.7.8: NHIS coverage, paid premium for renewal of NHIS by treatment status, all individuals

	Comparison	Treatment	P-value of diff.
Individual ever enrolment in NHIS	77.68	83.86	0.00
N	7,201	8,055	
Has valid NHIS insurance for current year	33.30	45.66	0.00
N	7,201	8,055	
Paid fee when last renewed (among individuals with valid NHIS card for current year)	92.83	66.99	0.00
N	2,398	3,678	
Amount paid for last NHIS renewal (among those with valid NHIS card that paid a fee)			
1-5 GHS	44.83	43.26	0.49
6-10 GHS	23.41	25.04	0.37
11-20 GHS	5.17	4.42	0.43
>21 GHS	26.59	27.27	0.65

Amount expected to pay for NHIS renewal (among those with valid NHIS card for current year)			
0 GHS	16.37	12.55	0.01
1-5 GHS	49.12	33.73	0.00
6-10 GHS	16.09	13.22	0.05
11-20 GHS	9.23	33.38	0.00
>20 GHS	9.19	7.12	0.04
N	2,398	3,678	

P-values are reported from Wald tests on the equality of means of Treatment and Comparison for each variable.
Standard errors are clustered at the community level.

Table 4.7.9 further breaks down these indicators by age groups. Higher proportions of individuals younger than 17 years had ever been enrolled with NHIS (83.4 per cent) compared to adults (individuals older than 18 years old; 77.4 per cent). Similarly, a higher proportion of individuals younger than 17 years old have a valid NHIS card for the current year (43.4 per cent) compared to adults (34.8 per cent). A larger proportion of younger individuals paid to renew the NHIS card (79.6 per cent) compared to adults (72.8 per cent).

Table 4.7.9: NHIS coverage, paid premium for renewal of NHIS by age, all individuals

	All	Under 17	Over 18
Individual ever enrolment in NHIS	80.95	83.45	77.40
N	15,256	8,942	6,314
Has valid NHIS insurance for current year	39.83	43.39	34.78
N	15,256	8,942	6,314
Paid fee when last renewed (among individuals with valid NHIS card for current year)	77.19	79.64	72.86
N	6,076	3,880	2,196
N	6,076	3,880	2,196

P-values are reported from Wald tests on the equality of means of Treatment and Comparison for each variable.
Standard errors are clustered at the community level.

Transportation costs and time were reported as the main reasons reported for not renewing NHIS. Time to travel to points of NHIS collection and renewal are, as shown in Table 4.7.10, quite high. Over half of respondents have to travel for more than one hour to reach the NHIS point (33 per cent between one and two hours and 29.6 per cent over two hours). In terms of the cost, while 35.9 per cent of respondents reported that they did not have to pay any cost for transportation to reach the nearest NHIS point, 41.2 per cent had to pay less than GH¢ 9 and 18.9 per cent up to GH¢ 19.

Table 4.7.10: Transportation time and cost of going to renew NHIS card, all individuals

	Per cent
Time to travel to point of NHIS collection	
Zero	0.38
30 minutes or less	18.04
31-60 minutes	18.99
61-120 minutes	33.00
Over 2 hours	29.59
Amount spent for transportation to point of NHIS collection	
Nothing	35.93
1-9 GHS	41.19

10-19 GHS	18.94
20+ GHS	3.83
N	6,076

Overall, the qualitative findings are consistent with the quantitative findings highlighting improved coverage but lingering challenges with regard to the enrolment and renewal processes and overall understanding and communication around the LEAP 1000 benefits with regard to NHIS. While most participants in the qualitative interviews had enrolled in NHIS at some point, renewal was much less consistent. Table 4.7.11 shows that, as seen in the survey data, among the qualitative participants both ever registration and having active cards (as a percent of ever registered) increased at midline and endline as compared to baseline. Nevertheless, the number of participants and their household members with an active card stays far behind the number of ever registered.

Table 4.7.11: NHIS registration and active coverage at baseline, midline and endline LEAP qualitative cohort

	Baseline*			Midline			Endline		
	Total	**Karaga**	**Bongo**	**Total**	**Karaga**	**Bongo**	**Total**	**Karaga**	**Bongo**
Ever registered (No. of observations)	94	37	57	145	84	61	135	65	70
Ever registered (as % of household size)	43.5%	30.8%	59.4%	65.3%	61.3%	71.8%	61.4%	52.4%	72.9%
Number of active cards	21	6	15	67	36	31	47	27	20
Percentage of active card (as % of ever registered)	22.3%	16.2%	26.3%	46.2%	42.9%	50.8%	34.8%	41.5%	28.6%

Despite NHIS registration and renewal being included as benefits in the LEAP 1000 program, cost was still identified as a barrier. A father in Karaga explained that he had never registered his "senior" wife due to the cost. While his second wife, who was the LEAP 1000 beneficiary, had enrolled in NHIS, her card had expired approximately 4 months prior to the interview at endline. When probed on whether it was time or cost that had prevented them from renewing, the father responded, "*it is the money that is not available not the time*".

Time was mentioned as a barrier to renewal, both in terms of travel time and waiting time. A father from Bongo explained getting registered when he was working in Kumasi by bribing the official, when asked why he bribed them he answered,

> *'Because I was going to work and when I got there the queue was long and the guy who came and greeted you gave me the information that if we don't do that to be able to go to work it will be difficult for us. So he went to see the guy, I didn't go with him to see the guy and he did it for me.' (husband, 1st child, Bongo)*

In this example, the participant reflects how time to register was a barrier, especially in the context of men who have migrated for work. At the time of the endline interview, this participant's insurance had expired due to lack of money. Examples of lack of money as a barrier to renewal reflect the continued confusion about the benefits of NHIS enrolment and renewal among LEAP 1000 beneficiaries, and informal costs to overcoming barriers to enrolment.

A mother of 3+ children in Karaga whose household had a mix of mostly expired and never registered members highlighted how distance to the renewal location could serve as a barrier,

> ***'INTERVIEWER:*** *Yes. Why are the cards not active?*
> ***PARTICIPANT:*** *We are still trying to renew them. They registered for them in Karaga and now that they have expired. they have to go back to Karaga to renew them because they don't do that in this community.*
> ***INTERVIEWER:*** *So that is why you have not renewed them?*
> ***PARTICIPANT:*** *Yes. Sometime ago, they took the children from school to Karaga to renew their card and that is when (son's) card was renewed but the others we are yet to renew them.' (1st child, Karaga)*

This example both highlights the challenge of renewal for remote communities while also highlighting the success of another form of integrated programming whereby school children were taken for renewal during school time.

In contrast, a mother in Karaga described how LEAP representatives facilitated NHIS renewal for her household by coming to them to pick up the cards and then bringing them back, a benefit she asked if they would provide again at the end of her interview,

> *'The LEAP people came and took our NHIS cards to renew for us and brought the cards back and I want to know whether when they come this year they will renew the cards for us again.' (3+ children, Karaga).*

Another mother of 3+ in Karaga, who herself had been enrolled between midline and endline interviews, had explained at midline that she had not enrolled herself or any family members in NHIS because even though she understood enrolment was free, she did not have the money to travel to the location where she had to register. At endline she had an NHIS card for herself and a few of her children and explained that the program representatives had said, "*They said they were going to find a date and come and register us but after they said that till date we haven't heard about it again" (3+ children, Karaga)*. While this participant seemed to understand that NHIS coverage was a benefit of LEAP 1000, her husband referred to the small size of the transfer as a limiting factor in enrolling more of his children,

4.7.2 Morbidity, health seeking behaviour and health expenditures

In this section we report the results on impacts of LEAP 1000 on morbidity, health seeking behaviour and health expenditures separately for children (aged 5-17) (Table 4.7.11) and adults (older than 18) (Table 4.7.12).[25] While there is no impact on morbidity or on health expenditures, there is a positive impact on health seeking behaviour for adults (though not on children). The indicators we use for morbidity refer to whether the individual had been sick in the previous two weeks. Among those that had been sick, we then assessed the impact of the program on whether the sick individual sought any care. We also look at health expenditures, total and disaggregated for medication and consultation expenditures and medical supplies expenditures, all expressed in real terms. The program had no impact on any of the health-related

[25] Morbidity of children aged 0-5 years is covered in Section 4.8.

outcomes for children, while it did have a positive impact on health seeking behaviour for adults. **Adults from beneficiary households who reported being sick in the previous two weeks were 10.4 percentage points more likely to seek for care than those in comparison households**.

Table 4.7.11: Impacts on morbidity and service use, individuals aged 5-17

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Illness in last 2 weeks	-0.015	0.210	0.204	0.137	0.147
	(0.02)				
N	10,553	2,855	2,177	3,085	2,436
Sought care for illness in last 2 weeks	-0.064	0.548	0.520	0.701	0.741
	(0.05)				
N	1,828	604	445	423	356
Real health expenditures	-0.772	4.454	4.463	2.318	3.083
	(0.68)				
N	13,985	2,860	2,183	4,842	4,100
Real medication and consultation expenditures	-0.548	2.602	2.597	1.437	1.965
	(0.53)				
N	13,985	2,860	2,183	4,842	4,100
Real medicines and medical supplies expenditures	-0.224	1.852	1.867	0.881	1.119
	(0.36)				
N	13,985	2,860	2,183	4,842	4,100

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.7.12: Impacts on morbidity and service use, individuals aged 18+

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Illness in last 2 weeks	0.009	0.240	0.249	0.188	0.188
	(0.02)				
N	12,839	3,337	3,208	3,203	3,091
Sought care for illness in last 2 weeks	0.104***	0.542	0.565	0.725	0.654
	(0.04)				
N	2,791	806	802	601	582
Real health expenditures	-0.043	8.067	8.075	7.709	7.769
	(1.36)				
N	12,878	3,346	3,218	3,213	3,101
Real medication and consultation expenditures	-0.265	5.025	4.988	4.760	4.992
	(1.10)				
N	12,878	3,346	3,218	3,213	3,101
Real medicines and medical supplies expenditures	0.222	3.042	3.087	2.949	2.777
	(0.58)				
N	12,878	3,346	3,218	3,213	3,101

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

With regard to health care expenditures, in contrast to the quantitative findings, the most prominent theme in the qualitative interviews at both midline and in endline was that since being in LEAP 1000, participants now had more funds to cover health expenses for their children and to prevent such health expenses becoming a major shock for the household. A mother of 3+ from Karaga, quoted above for her appreciation of the NHIS coverage as part of LEAP, also highlighted how a major impact of LEAP was her ability to save money for health expenses,

> *'It has been beneficial to me though I have not been able to buy animals or any asset with the money but I saved some of the money for hospital expenses for myself and children and when my sister-in-law was brought from the village to the hospital it was the LEAP money I used in supporting her to in buy the drugs.' (3+ children, Karaga)*

While several discussed their children not getting sick in the last year, among those whose children did get sick, the transfer funds were considered critical for being able to respond to the health needs of children as well as other family members.

4.8 Child health and nutrition

The section presents the impact estimates for child health and nutrition indicators for children under five. By targeting pregnant women and recent mothers, LEAP 1000 aims to improve the health and nutrition of vulnerable children. This section examines antenatal care (ANC), delivery care and birthweight, morbidity and care for illnesses, nutritional status and breastfeeding and infant and young child feeding practices.

4.8.1 Antenatal care, delivery care and birthweight

There are improvements in terms of antenatal care and health at birth, but because these improvements happened in both treatment and comparison groups, the impact of LEAP 1000 on these outcomes is not significant. The period of pregnancy is a critical time for the development of the foetus and has a lasting effect on the health and development of the child. LEAP 1000 targets pregnant women to support them during this crucial time. Since pregnancy and birth happens only once for each child, it can't be measured longitudinally, so we compare outcomes for children at baseline to newly born children who were born between the baseline and endline survey. Any change in behaviour or impact of LEAP 1000 is then reflected in differences between outcomes for newborns in the treatment and comparison groups. The results are presented in Table 4.8.1. The rate of ANC from a skilled provider has remained nearly universal in the sample at 96 – 97 per cent (due to longstanding and widely known government policy of free ANC care), and hence little room for improvement existed. Furthermore, there has been an increase in seeking ANC at least four times, to nearly 90 per cent, but the impact estimate is not statistically significant. Delivery with the assistance of a skilled provider and delivery in a health facility increased marginally in both the treatment and comparison group but the impact is also not significant. The improvements in ANC and delivery care are reflected in a reduction of children that were considered small at birth (as reported by the mother; impact estimates positive but not statistically significant).

Table 4.8.1: Impacts on ANC and health at birth indicators (children 0 – 35 months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Comparison Mean (5)
ANC from skilled provider[1]	-0.003	0.976	0.961	0.972	0.961
	(0.01)				
N	3,115	1,201	1,126	384	404
ANC 4 times or more	0.008	0.835	0.821	0.912	0.887
	(0.03)				
N	3,104	1,201	1,126	381	396
Delivery with assistance from skilled provider[1]	0.019	0.622	0.607	0.644	0.603
	(0.03)				
N	3,115	1,201	1,126	384	404
Delivery in health facility[2]	0.010	0.616	0.600	0.628	0.596
	(0.03)				
N	3,115	1,201	1,126	384	404
Size at birth small	0.013	0.181	0.211	0.125	0.137
	(0.03)				
N	2,980	1,146	1,047	383	404
Size at birth very small	-0.033	0.094	0.075	0.082	0.099
	(0.02)				
N	2,980	1,146	1,047	383	404
Low birth weight < 2500 gram	-0.053	0.086	0.057	0.074	0.094
	(0.04)				
N	1,567	636	576	187	168

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; [1] Skilled provider includes doctor, nurse, midwife, auxiliary midwife or community health worker. [2] Health facility includes hospital, health facility or village health post.

4.8.2 Childhood illnesses and care for illness

Furthermore, LEAP 1000 had no measurable impact on childhood morbidity and care for illness. The next set of impacts covers the prevalence of common childhood diseases (diarrhoea, acute respiratory infection (ARI) and fever in the sample of under-five year olds. First, the survey asked whether the child had been taken to a health facility for a check-up in the last 12 months. Nearly three-quarters of the children under five were taken for a check-up at endline, a finding similar to baseline figures. The prevalence of diarrhoea in the treatment group decreased as compared to baseline, from 37 per cent at baseline to 30 per cent at endline. This decrease in prevalence was not different in the treatment group compared to the comparison group. If a child was reported to have diarrhoea in the two weeks before the survey, the mother was probed about what actions were taken to care for the child. At endline, nearly two-thirds of the children in the treatment group who suffered from diarrhoea were given oral rehydration salts (ORS), and this rate is comparable in the comparison group at 63 per cent. The share of children who received a recommended home fluid (coconut water, rice water or mashed kenkey) increased from baseline to 16 per cent in the treatment group and 13 per cent in the comparison group. Oral rehydration therapy (ORT) includes receiving ORS or a recommended home fluid. ORT in combination with increased fluids is usually a simple and effective remedy to diarrhoea which can be managed at home. Three-quarters of children in the treatment group received such care for diarrhoea and this rate was again similar in the comparison group at 72 per cent at endline. In addition to ORT or increased fluids, it is generally recommended to continue feeding during an episode of diarrhoea to prevent any nutritional deficiencies. Just under half of children with diarrhoea were also continued to be fed in addition to ORT and increasing fluid intake. This rate is again higher than at baseline, but not significantly different between treatment and comparison group. Finally, less than ten per cent of children who suffered from diarrhoea were not given any treatment, a rate which is slightly lower at endline. **In sum, we observe a reduction in the prevalence of diarrhoea, combined with an increase in appropriate home treatment methods, but since these trends occurred in both the treatment and comparison groups, none of the programme impact estimates are significant.**

For the other two childhood disease, ARI and fever, we observe a similar prevalence at endline with no statistically significant programme impacts. Safe disposal of child stools (see table footnote for definition) and sleeping under a bednet increased in both treatment and comparison groups, but the impacts are not significant. Finally, for each of these three childhood illnesses, the survey asked if and where care was sought besides home-based care. The results indicate that for the majority of children (around 90%), parents sought care at various places (public/private health facilities as well as pharmacies, drug stores and drug vendors), yet LEAP 1000 had no impact on any of these care-seeking behaviours (Table G.4 in Appendix G).

Table 4.8.2: Impacts on child health and care for illness indicators (children 0 – 59 months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Comparison Mean (5)
At least one PNC in last 12 months	0.032	0.694	0.726	0.731	0.728
	(0.02)				
Diarrhoea last 2 weeks	0.012	0.371	0.407	0.304	0.330
	(0.03)				

N	6,731	1,826	1,697	1,644	1,564
Received ORS during episode of diarrhoea	0.016	0.593	0.598	0.651	0.629
	(0.05)				
Received recommended home fluid during episode of diarrhoea[1]	0.034	0.022	0.029	0.161	0.133
	(0.02)				
Received ORT during episode of diarrhoea[2]	0.022	0.646	0.650	0.751	0.722
	(0.04)				
Received ORT with continued feeding during episode of diarrhoea	-0.053	0.326	0.289	0.461	0.476
	(0.05)				
No treatment for diarrhoea during last episode	-0.017	0.109	0.101	0.080	0.092
	(0.02)				
N	2,390	679	696	500	515
Symptoms of ARI last 2 weeks[3]	-0.001	0.052	0.059	0.040	0.047
	(0.01)				
Fever last 2 weeks	0.038	0.230	0.267	0.263	0.261
	(0.02)				
Safe disposal of child stools[4]	0.003	0.239	0.194	0.386	0.333
	(0.03)				
Slept under bednet yesterday	0.007	0.672	0.685	0.805	0.808
	(0.03)				
N	6,731	1,826	1,697	1,644	1,564

Notes: standard errors in parentheses. * 10% significance ** 5% significance; *** 1% significance; [1] Recommended home fluid includes: Coconut water, rice water and mashed kenkey. [2] ORT is Oral Rehydration Therapy and involves giving children with diarrhoea ORS or a recommended home fluid. [3] ARI is acute respiratory infection and symptoms include a cough accompanied by short, rapid breathing. [4] Safe disposal includes a child used the toilet or latrine, stools were flushed through the toilet or latrine, or stools were buried.

Since the sample for these indicators constitute all children under five years, we are also able to estimate the effects on the panel of children which we observe twice, both at baseline and endline. For example, of a child was one year old at baseline, he or she is three years old at endline and is included in this section in both surveys. By restricting the estimation to this sample, we find that LEAP 1000 increased the probability of having a health check-up by 5.5 percentage points (see Appendix G). In addition, the impact estimate for the prevalence of fever also increase to 5.4 per cent, which was statistically significant. However, both these effects are more likely a reflection of baseline imbalances between treatment and comparison groups on these indicators than a true impact, and should thus be interpreted with caution.

Next, we also estimate the impacts for the subsample of index children. An index child is the child in the household through which the household became eligible for LEAP 1000. For example, if there was a child at baseline who was nine months old, then the household was eligible for the programme, and we observe this child both in the baseline and endline data. Alternatively, if a woman was pregnant at baseline and the child was born between surveys, we only observe this child at endline. It was hypothesized that due to the targeting of the programme to the mother of the child that made the household eligible for the programme, the impacts on the index child may be larger than among the sample of all children under five in the household. However, restricting to the sample of index children does not change the estimates dramatically. In only one indicator (receiving recommended home fluids

when having diarrhoea) do we now see a statistically significant programme impact, as compared to in the full sample of children. Tables for these subsamples are presented in Appendix G.

4.8.3 Vaccinations

Baseline results showed high rates of children with vaccinations, indicating little room for improvement by the programme, and indeed, and there was no impact of LEAP 1000 on vaccination coverage. Vaccinations ensure that children are protected from common and preventable childhood diseases. In this sub-section, we look at five vaccinations: BCG, Polio O, the pentavalent vaccine (DTP-HepB-Hib), measles and yellow fever. BCG and Polio 0 should be given at birth or first clinical contact. The three doses of polio and the pentavalent vaccine should be given at 6, 10 and 14 weeks of age, and the measles and yellow fever vaccines are given at an age of nine months. The LEAP 1000 survey asked the caregivers for the health record to copy the vaccinations received by the child. If no health record was available, caregivers were asked to recall the types and number of vaccinations received. Overall, a child should be fully vaccinated before turning one year old. The age group for the fully vaccinated indicator is therefore children aged 12 to 23 months. A child has all basic vaccinations if it received BCG, measles, and three doses each of the pentavalent and polio vaccine (excluding Polio 0, given at birth). Since the baseline results for these indicators already showed a very high vaccination coverage for children in the sample, there was not much room for improvement. This is confirmed in the impact estimates in Table 4.8.3. Most of the indicator values are in the high nineties for vaccinations given early in life, and even the vaccinations given at nine months (measles and yellow fever) show a coverage of close to 90 per cent. The negative impact estimate for BCG is clearly due to a so-called ceiling effect, where the value of the treatment group was already close to universal, and the comparison group caught up over the last two years.

Table 4.8.3: Impacts on vaccinations (children 12 – 23 months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Comparison Mean (5)
BCG	-0.028**	0.986	0.958	0.991	0.992
	(0.01)				
Polio 0 (at birth)	-0.046	0.853	0.813	0.977	0.979
	(0.03)				
Polio 1	0.004	0.943	0.936	0.991	0.988
	(0.02)				
Polio 2	-0.014	0.960	0.928	0.986	0.971
	(0.02)				
Polio 3	-0.037	0.952	0.919	0.960	0.967
	(0.02)				
Penta 1	-0.020	0.970	0.968	0.960	0.980
	(0.02)				
Penta 2	-0.021	0.968	0.950	0.942	0.951
	(0.02)				
Penta 3	-0.012	0.955	0.939	0.917	0.926
	(0.03)				
Measles	-0.036	0.878	0.842	0.872	0.877
	(0.04)				
Yellow fever	-0.038	0.877	0.825	0.877	0.869

	(0.04)				
All basic vaccinations[1]	-0.042	0.848	0.792	0.858	0.856
	(0.05)				
N	1,153	363	338	213	239

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; [1] BCG, measles, and three doses each of pentavalent (DPT-HepB-Hib) and polio vaccine (excluding polio vaccine given at birth).

4.8.4 Infant and young child feeding practices

This sub-section presents the impacts on infant and young feeding (IYCF) practices. Recommended practices include exclusive breastfeeding for children under six months, with continued breastfeeding until two years, introduction of solid or semi-solid food around the age of six months, and complementary food from sufficient food groups with appropriate daily frequency. As in the baseline report, we closely follow the guidelines proposed by the World Health Organization and UNICEF in the construction of indicators for this sub-section.[26]

The results from the impact evaluation show that LEAP 1000 had no effect on any of the infant and young child feeding practices. At baseline, approximately half of all children under two were breastfed within one hour of birth, and this rate increased at endline to nearly 60 per cent in both treatment and comparison group. The rate of exclusive breastfeeding for infants under six months was significantly higher in the treatment group, with an endline only difference of 11.2 percentage points between treatment an comparison groups. About one-third of children were introduced to solid or semi-solid food at 6 – 8 months, which is remarkably lower than at baseline. The next set of impacts estimates are about the diet for children 6 – 23 months old. The indicators for this age group typically improved since baseline, but none of the impact estimates are significant. For example, while more children in treatment and comparison groups are receiving foods from four or more food groups at endline compared to baseline, the impact estimate is an insignificant 5.6 percentage points. In addition, a slightly higher share of children were receiving the minimum number of recommended meals and a minimum acceptable diet at endline, but the impact estimates are not significant. The consumption of iron-rich foods, which helps with the brain development, has increased from baseline to more than 75 per cent.

The positive feeding style indicator is constructed based on literature suggesting that a more positive feeding environment stimulates children's food intake, and therefore micronutrient intake. The rationale for including it in the impact evaluation is that by reducing poverty-related stress, a caregiver may be more responsive to the needs and signals of a child during the feeding sessions. The indicator consists of two components. The first measures the actions taken by the caregiver in the case of a child refusing food. It is considered positive if the child never refuses food or if the caregiver undertakes any action (strong encouragement, singing, telling stories or playing, or trying different food) when the child refuses food.[27] The second component is a general measure of caregiver-child interaction during feeding. It is positive if the caregiver sometimes or often talks to the child when feeding complementary food.[28] A positive

[26] World Health Organization. (2010). Indicators for Assessing Infant and Young Child Feeding Practices: part 2: Measurement. Geneva: World Health Organization.
[27] Ruel, M. T., Levin, C. E., Armar-Klemesu, M., Maxwell, D. and Morris, S. S. (1999) 'Good care practices can mitigate the negative effects of poverty and low maternal schooling on children's nutritional status: Evidence from Accra', *World Development*, 27(11): 1993-2009.
[28] Bentley, M. E., Wasser, H. M. and Creed-Kanashiro, H. M. (2011) 'Responsive feeding and child undernutrition in low- and middle-income countries', *Journal of Nutrition,* 141(3)**:** 502-7.

feeding style means that both components are positive. **The impact results show that the value of the positive feeding style indicator increased slightly in the treatment group, but not in the comparison group, but the impact estimate is not significant.**

Table 4.8.4: Impacts on infant and young child feeding indicators

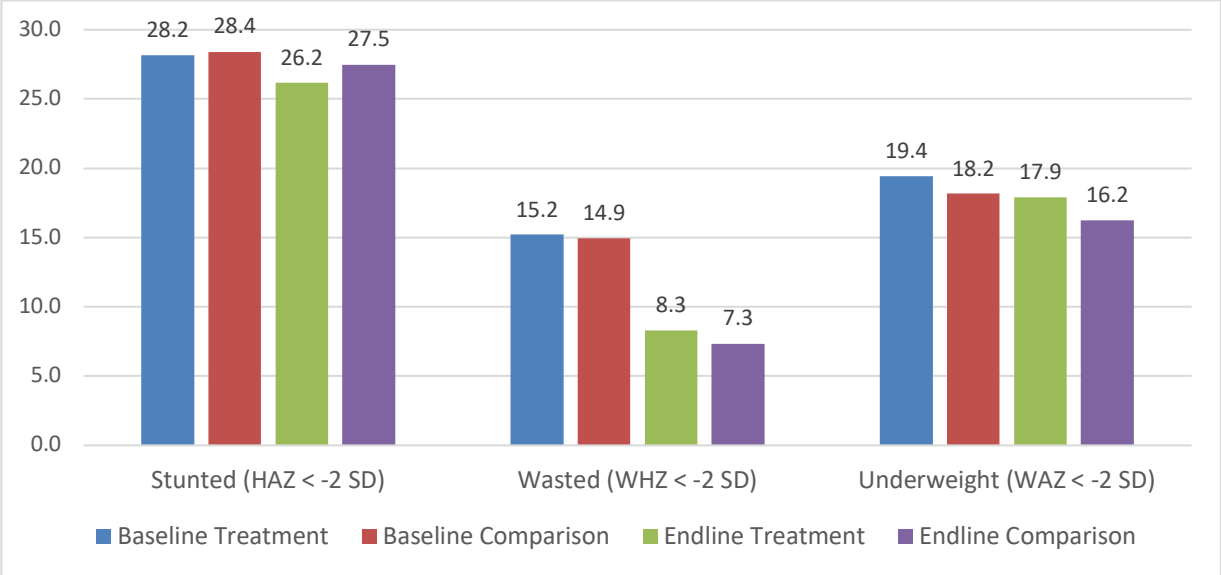
Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Comparison Mean (5)
Breastfeeding within 1 hour of birth	0.033	0.499	0.524	0.597	0.596
	(0.05)				
Children 0 – 23 months	2,216	866	791	265	294
Exclusive breastfeeding under 6 months (cross-sectional)[#]	0.112*			0.896	0.878
	(0.06)				
Children 0 – 5 months	270			140	130
Continued breastfeeding at 1 year	-0.007	0.983	0.981	1.000	1.000
	(0.01)				
Children 12 – 15 months	488	234	211	19	24
Introduction of solid, semi-solid or soft foods	-0.035	0.588	0.604	0.319	0.377
	(0.10)				
Children 6 – 8 months	427	169	161	50	47
Minimum dietary diversity[1]	0.056	0.238	0.240	0.274	0.223
	(0.04)				
Minimum meal frequency[2]	-0.012	0.404	0.372	0.416	0.391
	(0.05)				
Minimum acceptable diet[3]	0.024	0.128	0.122	0.154	0.122
	(0.03)				
Consumption of iron-rich or iron-fortified foods[4]	-0.038	0.610	0.600	0.764	0.793
	(0.04)				
Children 6 – 23 months	1,996	711	653	302	330
= 1 if positive feeding style[5]	0.041	0.430	0.440	0.464	0.425
	(0.05)				
Children 6 – 23 months	1,842	670	611	267	294

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; [#] cross-sectional difference at endline, due to inconsistencies in data collection for this indicator between waves. [1] Food groups include: 1) infant formula, milk other than breast milk, cheese or yogurt or other milk products; 2) foods made from grains, roots, and tubers, including porridge and fortified baby food from grains; 3) vitamin A-rich fruits and vegetables; 4) other fruits and vegetables; 5) eggs; 6) meat, poultry, fish, and shellfish, and organ meats; 7) legumes and nuts. [2] For breastfed children, minimum meal frequency is receiving solid or semi-solid food at least twice a day for infants 6–8 months and at least three times a day for children 9–23 months. For non-breastfed children age 6–23 months, minimum meal frequency is receiving solid or semi-solid food or milk feeds at least four times a day. [3] Breastfed children are considered to have a minimum acceptable diet if they receive food from 4 or more food groups and the minimum age-appropriate meal frequency. Non-breastfed children have a minimum acceptable diet if they receive other milk or milk products at least twice a day, receive the minimum meal frequency, and receive solid or semi-solid foods from at least four food groups not including the milk or milk products food group. [4] This includes fortified baby cereal, meat, poultry, fish, and shellfish, and organ meats and micronutrient powder. [5] Only children that have started receiving solid/semi-solid food. Positive feeding style includes doing something when the child refuses food or when the child never refuses food, and talking to the child when feeding.

4.8.5 Nutritional status

The LEAP 1000 endline data collection included height and weight measurements of children under seven years (83 months or younger) old in the household to assess their nutritional status. One of the

key objectives of the LEAP 1000 programme is to reduce the number of children with stunted growth. The data collection teams used a digital standing scale for the weight measurements (issued by UNICEF) and a portable measuring board (infantometer) for measuring children's heights. Only children three months or older were measured. Similar to the baseline analysis, children who did not belong to the eligible woman in the household or whose measurements were implausible were excluded from the analysis below.



Note: for baseline figures, the age group is 4 – 59 months. For endline, the age group is 4 – 83 months, except for WHZ.

Figure 4.8.1: Nutritional status at baseline and endline, for treatment and comparison groups

We use the height and weight measurements to construct three indicators: length/height-for-age Z-score (HAZ), weight-for-length/height Z-score (WHZ) and weight-for-age Z-score (WAZ) according to the WHO 2006 growth standards for children under five years old and WHO 2007 growth standards for children five years and older. The HAZ is an indicator of long-term growth deficit usually caused by chronic malnutrition. A child with a HAZ below -2 standard deviations (SD) of the reference median is stunted, while a child with a HAZ below -3 SD is considered severely stunted. WHZ constitutes a short-term measure of malnutrition. Children with a WHZ below -2 SD are wasted and children with a score below -3 SD are severely wasted. The WHZ reference is only available for children under five years old. WAZ is a composite measure of both short-term and long-term malnutrition. Children whose WAZ is below -2 SD of the reference median are considered underweight, while children whose score is below -3 SD are severely underweight.

The main results for nutritional status are plotted in Figure 4.8.1 and reveals that the impacts of LEAP 1000 on child nutritional status are very small, if any at all. It shows the average rate of stunting, wasting and underweight for the full sample of children at baseline and endline, for treatment and comparison groups. The rate of stunting has decreased marginally in the sample, and slightly more in the treatment group than in the comparison group. Wasting nearly halved in both groups, but remains higher in the treatment group. The prevalence of underweight also decreased for both groups, and similar to baseline, the rate is slightly higher in the treatment group. Figure 4.8.1 already shows that the impacts

on these indicators are small, if any. This is confirmed in the impact estimates, presented in Table 4.8.5. The impact on stunting is -0.9 percentage points, which is not significant. The impact on severe stunting is higher at -1.5 percentage points, but this estimate is also not significant. The same holds for the other indicators representing nutritional status.

Breaking down by age, impacts of LEAP 1000 on nutritional status remain insignificant for the children under two, and are somewhat adverse for children between two and five years old. We further break down these estimates by age group and by age (Appendix G). It was hypothesized that impacts could potentially be concentrated among younger children, as they may be more responsive to improvements in the household environment. However, when we examined impacts among children 3 – 23 months old, all results remain insignificant. For children 24 – 59 months old, we find significant adverse programme impacts in wasting and underweight of (3.9 and 4.8 percentage point increases, respectively). Disaggregating the results by sex of the child yields no significant programme impacts. Finally, we also estimate the impacts on the panel of children and on the index children, defined as above. Again, no programme impacts are detected for these subsamples.

Table 4.8.5: Impacts on nutritional status (children 0 - 83 Months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Comparison Mean (3)	Endline Treated Mean (4)	Endline Comparison Mean (5)
Length/height-for-age z-score	0.044	-1.110	-1.111	-1.275	-1.323
	(0.06)				
Stunted (HAZ < -2 SD)	-0.009	0.282	0.284	0.262	0.275
	(0.02)				
Severely Stunted (HAZ < -3 SD)	-0.015	0.121	0.118	0.070	0.083
	(0.01)				
N	6,647	1,408	1,285	2,039	1,915
Weight-for-length/height z-score	-0.062	-0.469	-0.436	-0.573	-0.476
	(0.08)				
Wasted (WHZ < -2 SD)	0.008	0.152	0.149	0.083	0.073
	(0.02)				
Severely Wasted (WHZ < -3 SD)	0.004	0.061	0.058	0.024	0.017
	(0.01)				
N	5,629	1,416	1,289	1,508	1,416
Weight-for-age z-score	0.010	-1.019	-0.972	-1.141	-1.104
	(0.05)				
Underweight (WAZ < -2 SD)	0.004	0.194	0.182	0.179	0.162
	(0.02)				
Severely Underweight (WAZ < -3 SD)	-0.015	0.073	0.052	0.045	0.039
	(0.01)				
N	6,639	1,416	1,285	2,035	1,903

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

The lack of programme impacts on nutritional status may be explained by the fact that we found no impacts on child morbidity, nor on any infant and young child feeding practices, which are the pathways through which nutritional impacts would be realized. These pathways are underscored by the UNICEF conceptual framework for nutrition, which shows that the two immediate determinants of

nutritional status are absence of illness and appropriate food intake.[29] And since the LEAP 1000 programme has not been able to significantly affect these two immediate determinants, overall nutritional status has not been impacted. On a related note, we also found no impacts on WASH indicators such as handwashing, sanitation and protected water source, these determinants of illness will also directly affect whether we see nutrition-related outcomes.

In the qualitative interviews, participants frequently discussed that their children were eating more food and higher quality food. This was generally believed to lead to children being healthier. Nevertheless, children's health was still a major concern for most participants and, for some, a lingering source of stress. As we found in midline, while some discussed their children not being sick as much, the impact on child's health was discussed more in the context of having money to use in the case of a child getting sick rather than preventing sickness.

However, two mothers in Bongo did link their participation in the program to allowing them to focus more on prevention than curative responses to health problems. A first-time mother described the impact of having money to get medicine if her child got sick but also went further to talk about her preventive practices,

> *'**INTERVIEWER:** So now that you are on LEAP do you do things like that to protect the baby?*
> ***PARTICIPANT:** Yes.*
> ***INTERVIEWER:** What do you do?*
> ***PARTICIPANT:** I now wash his clothes, wash his hands before he eats, bathe him and I prepare his food nicely before he eats and cover it.*
> ***INTERVIEWER:** What I want to find out is that now that you are in LEAP what support has it given to you to help you take good care of your baby?*
> ***PARTICIPANT:** The support it has given to me is that I can use the money I receive to look for a nice attire and wear for him (inaudible) or I can get a nice bowl with lid and use it to cover the food so that flies will not settle on the food' (1st child, Bongo).*

This example reflects a combination of material improvements (bowls with lids, soap) along with preventive behaviours (washing hands, clothes).

A mother of 3+ children in Bongo said that during the last year her family had not experienced sickness. While she emphasized how the program helped to have money in the case that a child got sick she also made a link between being in the program and being able to take better care of her children's health,

> *'… when I didn't have anything I couldn't take good care of my children but now that they are helping us and am doing something small small I am able to take care of my children's health.' (3+ children, Bongo)*

This mother also associated the messages provided during the payments to the care she provided to her children, who had not experienced sickness in the last year.

[29] See for example: Engle, P. L., Lhotska, L. and Armstrong, H. (1997) 'The care initiative: guidelines for analysis, assessment, and action to improve nutrition', *New York: UNICEF*.

'What I can do for a child's health is the food that they are not supposed to eat, when you didn't have you knew this food is not for a child's food, you know that the food you cooked is not good for a child to eat but because you don't have you have to give it to him to eat, but now that we are in it and they are helping us small small. When we go to collect the money they talk to us to take care of our children, to give them what they need, and when we collect we will be able to prepare food that will help our children to be healthy and won't fall sick.' (3+ children, Bongo)

4.9 Birth registration and child development

This section reports impacts of LEAP 1000 on birth registration and activities associated with child development. Both baseline and endline surveys asked whether children under five years had their births registered. Table 4.9.1 reports whether the birth of the child was registered and, among those that reported having registered the birth, whether they registered it within one year of child's birth and whether the birth certificate was shown to the enumerators. In summary, there was **no impact of the programme on birth registration related indicators**. Similar proportions of children were registered at baseline between comparison and treatment group and, while there is an increase in the proportion of registered children at endline, the trend is similar across treatment (44 per cent at baseline to 55 per cent at endline) and comparison (43 per cent at baseline to 54 per cent at endline) groups, and thus there were no programme impacts on birth registration. Similarly, no impact is found when the analysis is restricted to children that were born after the baseline was conducted (aged 0-24 months at endline), a group that would be expected to be more affected by the programme. In this case, it cannot be ruled out that the lack of a statistically significant impact is due to the small sample size of the sub-sample used (that is, those born between waves). LEAP 1000 is also found to have had no impact on the other two indicators reported for those that did register the birth of the child: 1) the probability of having registered birth within one year since birth and 2) the probability that the enumerators saw the birth certificate.

Table 4.9.1: Impacts on Birth registration, children 0-59 months

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Birth registered	-0.001	0.440	0.433	0.551	0.541
	(0.02)				
N	6,050	1,626	1,509	1,497	1,418
Birth registered within one year of birth	0.034	0.851	0.880	0.936	0.927
	(0.02)				
N	2,960	718	655	822	765
Birth registration seen by enumerators	0.009	0.409	0.413	0.380	0.371
	(0.04)				
N	2,960	718	655	822	765

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.9.2: Impacts on Birth registration, children 0-24 months (new born only) (Single difference)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Birth registered	0.043	0.501	0.510
	(0.06)		
N	759	363	396
Birth registered within one year of birth	0.064	0.925	0.906
	(0.05)		
N	382	181	201
Birth registration seen by enumerators	-0.045	0.369	0.312
	(0.09)		
N	382	181	201

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.9.1 Early Childhood Development

This sub-section focuses on aspects related to early childhood development. In summary, LEAP 1000 had a positive impact on the probability of children being enrolled in pre-school while it has no impact on activities with the engagement of adults in support of early childhood development. Following the analysis procedure implemented by the Multiple Indicator Cluster Survey (MICS), analysis on this topic is restricted to children aged 36-56 months. Indicators examined include enrolment in pre-school and engagement in home support for learning. Home support for learning is proxied by six different activities that were collected both at baseline and endline: reading books to, or looking at picture books with the child; telling stories to the child; singing songs to or with the child, including lullabies; taking the child outside the home, compound, yard or enclosure; playing with the child; and naming, counting, or drawing things to or with the child. The questions asked whether any household member older than 15 years of age engaged with the child in any of the mentioned activities during the three days preceding the interview, and if so we asked to specify whether the activity was conducted by the mother, the father or another household member.

Table 4.9.3 shows that **LEAP 1000 had a positive impact on the probability of being enrolled in pre-school (7.2 percentage points) for children aged 36-59 months.** Compared to baseline, the trend of enrolment is decreasing. However, for the treatment group the decrease is less pronounced compared to the comparison group. When the analysis is disaggregated by gender, the impact is no longer significant although the coefficient is higher for girls compared to boys.

Next we assess the impact of the programme on the number of activities in which adult household members engage with children. We construct six main indicators: the average number of activities undertaken by any adult in the household; a binary indicator for whether adults engaged in four activities or more; mean number of activities the mother engaged in; a binary indicator for whether the mother engaged in one or more activities with the child; mean number of activities the father engaged in; and a binary indicator for whether the father engaged in one or more activities with the child. The results show that there were no impacts on any of these interaction indicators.

Table 4.9.3: Impacts on Pre-school enrolment and support for learning, children 36-59 months

Dependent	Program	Baseline	Baseline	Endline	Endline

Variable	Impact (1)	Treated Mean (2)	Control Mean (3)	Treated Mean (4)	Control Mean (5)
Enrolled in pre-school	0.072**	0.402	0.392	0.319	0.239
	(0.04)				
N	2,431	693	633	570	535
Enrolled in pre-school, girls	0.075	0.428	0.428	0.314	0.232
	(0.05)				
N	1,194	338	310	282	264
Enrolled in pre-school, boys	0.065	0.376	0.358	0.325	0.245
	(0.05)				
N	1,237	355	323	288	271
4+ activities with an adult household member	0.004	0.107	0.128	0.361	0.387
	(0.04)				
N	2,431	693	633	570	535
Mean number of activities with an adult member	0.171	1.766	1.967	3.159	3.192
	(0.17)				
N	2,115	613	561	475	466
1+ activities with the mother	-0.009	0.509	0.535	0.757	0.790
	(0.04)				
N	2,034	591	548	453	442
Mean number of activities with the mother	-0.162	0.930	1.019	1.811	2.062
	(0.14)				
N	2,034	591	548	453	442
1+ activities with the father	0.027	0.190	0.195	0.316	0.299
	(0.04)				
N	1,874	552	511	402	409
Mean number of activities with the father	0.026	0.290	0.284	0.493	0.471
	(0.07)				
N	1,874	552	511	402	409

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.10 Children's education

This section presents the results on the impacts of LEAP 1000 on children's education. The education system is composed of three levels: basic education, secondary cycle and tertiary education. Basic education comprises 11 years of schooling, and it is free and compulsory, starting from age four through 15 years of age. After two years of kindergarten, primary education is composed of two modules of three years each. Then, after three years of junior high school, students can decide to continue secondary education by either attending senior high school or vocational and technical institutes for another three years.

We examine programme impacts on four education outcomes: school enrolment, grade-for-age, drop-out and schooling expenditures. For every dimension, the analysis is performed on all children of school age (5-17) and then disaggregated by gender and by pre-school, primary school age (5-12 years) and secondary school age (13-17). **In summary, we found few protective impacts of LEAP 1000 on school enrolment, and no impacts on drop out, grade-for-age progression, or educational expenditures.**

4.10.1 School enrolment

Table 4.10.1 reports programme impacts on school enrolment, defined as whether the child was enrolled in any school at any time during the school year in which the survey was implemented. The estimates show that the programme had no statistically significant impact on school enrolment, either on the overall sample or on samples stratified by age and gender. At endline, 73 and 71 per cent of treatment and comparison children, respectively, aged 5-17 years were enrolled in school. As shown also in Figure 4.10.1, **there are no large differences in enrolment rates between baseline and endline for the treatment group.** For the comparison group, instead, there is a slight decrease in enrolment between baseline and endline, particularly between the ages of 8 and 13 years. In order to assess if the lack of impacts is due to the classification of age ranges, we also performed additional analysis on different age groups and the results show **significant impacts for children aged 9-12 years**. On average the LEAP 1000 increased the probability of school enrolment by 7 percentage points, with a larger increase for girls (8.9 percentage points) than for boys (5.4 percentage points). (Annex F). Figure 4.9.1 illustrates that enrolment peaks at around 11 years of age and then starts to decrease across adolescence.

Table 4.10.1: Impacts on school enrolment, children 5-17 years

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Currently enrolled, all children 5-17 years	0.013	0.732	0.725	0.732	0.708
	(0.01)				
N	10,354	2,860	2,183	3,001	2,310
Currently enrolled, girls 5-17 years	0.008	0.728	0.715	0.734	0.710
	(0.02)				
N	4,900	1,366	1,051	1,406	1,077
Currently enrolled, boys 5-17 years	0.017	0.737	0.734	0.729	0.706
	(0.02)				
N	5,454	1,494	1,132	1,595	1,233
Currently enrolled, all children 5-12 years	0.019	0.747	0.732	0.741	0.706
	(0.02)				
N	8,030	2,255	1,712	2,278	1,785
Currently enrolled, girls 5-12 years	0.029	0.741	0.726	0.746	0.702
	(0.02)				
N	3,821	1,075	829	1,081	836
Currently enrolled, boys 5-12 years	0.011	0.752	0.739	0.738	0.710
	(0.02)				
N	4,209	1,180	883	1,197	949
Currently enrolled, all children 13-17 years	-0.002	0.678	0.696	0.701	0.712
	(0.03)				
N	2,324	605	471	723	525
Currently enrolled, girls 13-17 years	-0.059	0.677	0.674	0.696	0.735
	(0.05)				
N	1,079	291	222	325	241
Currently enrolled, boys 13-17 years	0.045	0.680	0.716	0.705	0.693
	(0.04)				
N	1,245	314	249	398	284

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

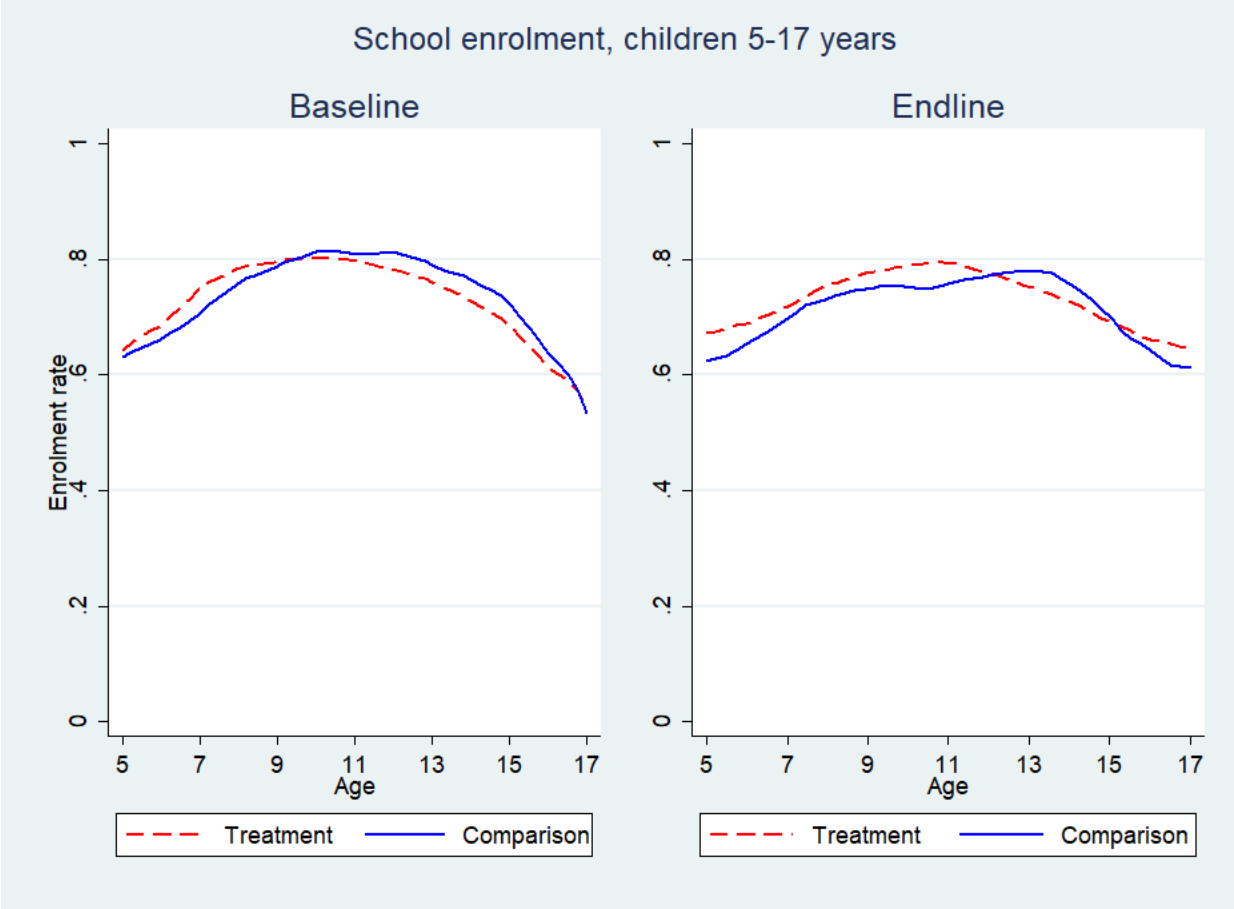


Figure 4.9.1: School enrolment, children 5-17 years by treatment status

4.10.2 Drop-out

In light of the lack of positive impacts of LEAP 1000 on school enrolment, we further explore whether the programme helped enrolled children remain in school. We define drop-out as a binary variable which takes a value of 1 if the child was enrolled at baseline and was no longer enrolled at endline. Age groups were defined by age reported at baseline. Given the nature of how the variable is constructed, we implement a single difference analysis. As shown by the estimates reported in Table 4.10.2, **the LEAP 1000 did not reduce the probability of dropping out of school for any age group or gender**. There is instead some evidence that the programme contributed to increasing the probability of drop out for girls aged 13-17 years. While the level of statistical significance is low ($p<.10$) the size is quite high as it indicates that LEAP 1000 girls were 21.7 pp more likely to drop-out of school as compared to comparison girls of the same age. Given these unexpected findings, we conducted further robustness checks. When community fixed effects instead of district fixed effects (as was done in other estimates reported here), are applied there is no longer a significant programme impact on drop-out. In the context of analysis of secondary schooling, community fixed effects might be more appropriate as distance from nearest secondary schools varies quite substantially across communities (as shown in section 4.2.1). This shows

that the difference of results with and without community fixed effects is primarily driven by the heterogenous distance to secondary schools among the communities. As expected, distance to school can affect drop-out from school.

Table 4.10.2: Impacts on drop-out since baseline, children 5-17 years (single difference)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Dropped-out from school, all children 5-17 years at baseline	0.027	0.133	0.136
	(0.02)		
N	3,134	1,787	1,347
Dropped-out from school, girls 5-17 years at baseline	0.057*	0.129	0.132
	(0.03)		
N	1,444	823	621
Dropped-out from school, boys 5-17 years at baseline	0.002	0.137	0.139
	(0.03)		
N	1,690	964	726
Dropped-out from school, all children 5-12 years at baseline	0.023	0.119	0.119
	(0.02)		
N	2,645	1,516	1,129
Dropped-out from school, girls 5-12 years at baseline	0.039	0.107	0.119
	(0.03)		
N	1,217	695	522
Dropped-out from school, boys 5-12 years at baseline	0.009	0.128	0.118
	(0.03)		
N	1,428	821	607
Dropped-out from school, all children 13-17 years at baseline	0.070	0.217	0.226
	(0.08)		
N	489	271	218
Dropped-out from school, girls 13-17 years at baseline	0.217*	0.247	0.202
	(0.11)		
N	227	128	99
Dropped-out from school, boys 13-17 years at baseline	-0.063	0.189	0.246
	(0.12)		
N	262	143	119

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.10.3 Grade progression

This section reports the result for the analysis on grade progression. We present two sets of results, one for grade-for-age and another for grade progression.[30]

Results reported in Table 4.10.3 show that **the programme had no impact on grade-for-age, neither at the aggregate level for all children in school age (5-17), nor when the impact is assessed on sub-groups by age and gender.** Table 4.10.4 indicates that grade progression on average was also not affected by the programme. There is, however, a negative impact on grade progression for girls, particularly for girls aged 13-17 years. Treated 13-17 years old girls were 28 percentage points less likely to have progressed two years of schooling since baseline compared to the same aged girls in the comparison group. Again, as in the drop-out analysis, when community fixed effects are used instead of the district fixed effects, the impacts become insignificant (and with a smaller coefficient).

Table 4.10.3: Impacts on grade-for-age, children 5-17 years

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Correct grade-for-age, all children 5-17 years	0.008	0.438	0.439	0.408	0.400
	(0.02)				
N	7,493	2,092	1,582	2,188	1,631
Correct grade-for-age, girls 5-17 years	-0.006	0.451	0.440	0.428	0.427
	(0.03)				
N	3,537	994	752	1,029	762
Correct grade-for-age, boys 5-17 years	0.019	0.427	0.438	0.389	0.376
	(0.03)				
N	3,956	1,098	830	1,159	869
Correct grade-for-age, all children 5-12 years	0.011	0.524	0.533	0.501	0.498
	(0.03)				
N	5,876	1,682	1,254	1,683	1,257
Correct grade-for-age, girls 5-12 years	-0.028	0.534	0.528	0.516	0.540
	(0.04)				
N	2,788	797	602	804	585
Correct grade-for-age, boys 5-12 years	0.044	0.516	0.537	0.488	0.461
	(0.03)				
N	3,088	885	652	879	672

[30] The grade-for-age is constructed as a binary variable taking a value of one if the child is attending the correct grade or higher for his or her age and zero otherwise. That is, at the age of seven a child should be enrolled in grade one of primary school. The indicator then takes the value of one if the child enrolled in grade one of primary school or higher and zero otherwise. For this indicator, we apply a difference-in-difference regression on pooled cross-sections of children aged 5-17 in each wave.
The grade progression captures the progression of the child since baseline, independently of the initial level of schooling he or she was at baseline, conditional on being enrolled at baseline. The indicator takes value of one if the child has progressed two grades since baseline and zero if the child has dropped out or has progressed only one grade. In this case the age groups are defined by reported age at baseline and the analysis is a single difference between treatment and comparison groups.

Correct grade-for-age, all children 13-17 years	0.021	0.085	0.081	0.094	0.069
	(0.03)				
N	1,617	410	328	505	374
Correct grade-for-age, girls 13-17 years	0.035	0.112	0.086	0.116	0.050
	(0.04)				
N	749	197	150	225	177
Correct grade-for-age, boys 13-17 years	0.009	0.060	0.078	0.077	0.085
	(0.03)				
N	868	213	178	280	197

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table 4.10.4: Impacts on grade progression since baseline, children 5-17 years (single difference)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Correct grade progression, all children 5-17 years at baseline	-0.024	0.350	0.335
	(0.04)		
N	3,129	1,787	1,342
Correct grade progression, girls 5-17 years at baseline	-0.111*	0.341	0.373
	(0.06)		
N	1,440	823	617
Correct grade progression, boys 5-17 years at baseline	0.049	0.357	0.303
	(0.05)		
N	1,689	964	725
Correct grade progression, all children 5-12 years at baseline	-0.014	0.334	0.323
	(0.04)		
N	2,640	1,516	1,124
Correct grade progression, girls 5-12 years at baseline	-0.076	0.329	0.356
	(0.07)		
N	1,213	695	518
Correct grade progression, boys 5-12 years at baseline	0.039	0.339	0.295
	(0.05)		
N	1,427	821	606
Correct grade progression, all children 13-17 years at baseline	-0.024	0.436	0.397
	(0.10)		
N	489	271	218
Correct grade progression, girls 13-17 years at baseline	-0.282**	0.408	0.463
	(0.13)		
N	227	128	99
Correct grade progression, boys 13-17 years at baseline	0.223	0.461	0.341
	(0.14)		

N	262	143	119

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.10.4 Expenditure on education

To complement the analysis of the impact of LEAP 1000 on enrolment and related schooling outcomes, we also explore the impact of the programme on educational expenditures. Table 4.10.5 reports the impact of LEAP 1000 on **real expenditures on educational expenses**, on average and disaggregated by age groups and gender. While there is **no significant impact on any group**, it is worth highlighting differences between the treatment and comparison groups. Programme impact coefficients are negative (but insignificant) for all age groups and gender categories with the exception of females aged 13-17, the group for which we showed negative impacts on grade progression and, to a lesser extent, drop-out. However, the positive coefficient is also not significant.

Table 4.10.5: Impacts on schooling expenditures, children 5-17 years

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Real education expenditures (12 months), all children 5-17 years	-9.645	100.224	101.097	144.084	154.637
	(8.48)				
N	7,494	2,092	1,582	2,188	1,632
Real education expenditures (12 months), girls 5-17 years	-6.758	101.773	103.642	138.721	147.662
	(10.77)				
N	3,538	994	752	1,029	763
Real education expenditures (12 months), boys 5-17 years	-12.289	98.821	98.788	148.862	160.764
	(9.55)				
N	3,956	1,098	830	1,159	869
Real education expenditures (12 months), all children 5-12 years	-10.764	89.062	88.117	128.298	138.039
	(7.32)				
N	5,877	1,682	1,254	1,683	1,258
Real education expenditures (12 months), girls 5-12 years	-12.756	91.182	88.871	123.650	134.988
	(9.65)				
N	2,789	797	602	804	586
Real education expenditures (12 months), boys 5-12 years	-8.981	87.151	87.419	132.565	140.704
	(8.59)				
N	3,088	885	652	879	672
Real education expenditures (12 months), all children 13-17 years	-6.353	145.834	150.645	196.906	210.785
	(21.81)				
N	1,617	410	328	505	374
Real education expenditures (12 months), girls 13-17 years	25.972	144.512	162.909	192.812	189.926
	(30.66)				
N	749	197	150	225	177

Real education expenditures (12 months), boys 13-17 years	-33.865	147.054	140.315	200.206	229.497
	(24.47)				
N	868	213	178	280	197

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In summary, LEAP 1000 had few to no significant impacts on schooling outcomes for children. The only protective impact was for children 9-12 years of age. Other schooling indicators were not affected by the programme. While we might expect the transfer to relax the budget constraint of households, the degree to which the additional resources can be spent on items like education depends primarily on the amount of the transfer. The lack of positive impact on education outcomes may indicate that the transfer amount is insufficient to affect this type of broader outcomes, beyond consumption and food security.

4.11 Reproductive health, birth history, contraception, and early marriage

There are strong links between a mother's reproductive health and her children's nutrition and health, so in this section, we examine impacts of LEAP 1000 on outcomes related to women's reproductive health, fertility and related outcomes. **In summary, we found positive impacts of LEAP 1000 on the receipt of ante-natal care from skilled care provider visits and a small reduction in the total number of live births, indicating no adverse impacts on fertility resulting from this programme which targets households with pregnant women or young children. However, we found no programme impacts in either direction on contraceptive use, fertility preferences, or child marriage.**

Short inter-pregnancy intervals are linked to poor perinatal, infant and child health outcomes[31]. Modern contraceptive use has the potential to increase inter-pregnancy and birth intervals, with subsequent improvements in infant and child health outcomes.[32] Evaluations are increasingly examining whether cash transfer programmes can increase contraceptive use[33]. It is plausible that CTs may increase contraceptive use, given evidence highlighting that poorer women are less likely to use contraceptive methods[34] as well as potential for the LEAP 1000 to increase access to health services through NHIS premium waivers. There is a common misperception that CTs targeted to households with young children may increase fertility (which may be problematic in high fertility regions). However, rigorous evidence rejects a link between CTs and increased fertility[35].

We present information on reproductive health for all women aged 12 to 49 years in the household and the use of contraceptives, fertility preferences, and unmet need for contraception among the main respondents (LEAP eligible women). Finally, in this section we examine programme impacts on early marriage among women ages 12-24 years at baseline.

4.11.1 Current pregnancy status, antenatal care, and total fertility

Table 4.11.1 reports impacts on fertility related outcomes and antenatal care (ANC). **We see that the programme had a small impact on reducing fertility (defined as number of total live births).** Total live births were 3.28 among treatment women and 3.23 among comparison women at endline, and the LEAP 1000 programme led to women aged 12-49 years in LEAP 1000 households having 0.116 fewer births than comparison women ($p<.10$). However, this impact does not appear to be driven by increased uptake of modern contraceptives, an outcome on which we found no impacts of LEAP 1000 (Table 4.11.2, described below). **Further, there were no impacts on current pregnancy and child mortality (defined as ever having a child born alive who later died) among women aged 12-29 years**.

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[31] Conde-Agudelo, Agustín, et al. "Effects of birth spacing on maternal, perinatal, infant, and child health: a systematic review of causal mechanisms." *Studies in family planning* 43.2 (2012): 93-114.
[32] Cleland, J., et al., Contraception and health. *Lancet*, 2012. 380(9837): p. 149-56.
[33] Khan, M. E., et al. "Conditional and unconditional cash transfers to improve use of contraception in low and middle income countries: A systematic review." *Studies in family planning* 47.4 (2016): 371-383.
[34] Clements, S. and N. Madise, Who is being served least by family planning providers? A study on modern contraceptive use in Ghana, Tanzania And Zimbabwe. *Afr J Reprod Health*, 2004. 8(2): p. 124-36.
[35] Handa S, Daidone S, Peterman A, Davis B, Pereira A, Palermo T, Yablonski J. (June 2017). Myth busting? Confronting Six Common Perceptions about Unconditional Cash Transfers as a Poverty Reduction Strategy in Africa. UNICEF Office of Research – Innocenti Working Paper WP-2017-11. Florence, Italy. https://www.unicef-irc.org/publications/899/

Among currently pregnant women in households interviewed, those in households receiving LEAP 1000 were 11.4 percentage points more likely to receive antenatal care (ANC) from a skilled provider than women in comparison households (p<.10; Table 4.11.1). On average, 70 per cent[36] of treatment and 65.1 per cent of comparison women pregnant at the time of interview reported receiving any skilled ANC. Average number of ANC visits for these women was 2.2 visits, and average month of first ANC visit was 2.8 months at endline. However, there were no programme impacts on any of these related ANC outcomes, including number of ANC visits and first month of ANC care among currently pregnant women.

Table 4.11.1: Impacts on pregnancy status, antenatal care, and fertility outcomes, all women aged 12-49

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
# of total live births	-0.116*	3.086	2.904	3.284	3.228
	(0.06)				
N	7,363	1,930	1,801	1,911	1,721
Ever had child die	0.009	0.176	0.192	0.250	0.257
	(0.01)				
N	7,363	1,930	1,801	1,911	1,721
Currently pregnant	0.015	0.090	0.111	0.102	0.107
	(0.02)				
N	7,333	1,927	1,797	1,901	1,708
ANC from skilled provider during current pregnancy	0.114*	0.882	0.949	0.700	0.651
	(0.06)				
N	753	175	202	193	183
Number of antenatal care visits (including zeros) - current pregnancy	0.026	3.339	3.407	2.217	2.212
	(0.28)				
N	753	175	202	193	183
First month of antenatal care - current pregnancy	0.093	2.811	2.963	2.813	2.810
	(0.19)				
N	599	154	192	134	119

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.11.2 Contraceptive use and fertility preferences

We now turn to contraceptive use[37] and fertility preference in Table 4.11.2. We see large increases over time in modern contraceptive use, both by treatment and comparison women (28.8 and 27.1 per cent,

[36] Note this estimate of 70% is among currently pregnant women and therefore we do not observe the entire duration of their pregnancy at the time of interview. Because some of the currently pregnant women may go on to have a first ANC visit after the interview, the estimate reported in this section is lower than women reporting ANC for completed pregnancies (nearly universal) in section 4.8.1.

[37] We define modern contraceptives as male or female sterilization, injectables, implants, intrauterine device, pills, condoms (male or female), diaphragm, foam or jelly, or emergency contraceptive pills. These are in contrast to

respectively, at endline, compared to 12 and 13 percent, respectively, at baseline). This is likely due to women's pregnant and recently pregnant status during targeting, which closely aligned with baseline, when women would have overall been much less likely to use a contraceptive method. As shown in Table 4.11.2, **we find no programme impacts on contraceptive use (any, modern, or traditional) among main respondents**. There are also no impacts on fertility preferences (defined as ideal number of children) or differences in fertility preferences between primary respondents and their partners (defined as partner wanting more children than woman). At endline, women reported their ideal number of children as 6.4 and 6.3 children among treatment and comparison women, respectively, and 51 per cent of women reported their partners wanted more children than they did. Interestingly, we find no impacts on unmet need for contraception for purposes of limiting births (defined as not currently using a method but did not want any more children), and the percentage of women reporting unmet need for contraception increased slightly in both treatment and comparison groups (15 and 11.7 per cent among treatment and comparison women, respectively at endline). This is one outcome where we may have expected the combined cash and facilitated access to health services via NHIS to have had impacts, through an income effect and reduced barriers to accessing services.

Table 4.11.2: Impacts on contraceptive use and fertility preferences, main respondents

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Currently using modern contraceptive	0.036	0.118	0.133	0.288	0.271
	(0.02)				
N	3,862	1,014	950	960	938
Currently using traditional contraceptive	-0.013	0.037	0.021	0.003	0.001
	(0.01)				
N	3,862	1,014	950	960	938
Currently using any contraceptive	0.030	0.143	0.150	0.291	0.272
	(0.02)				
N	3,862	1,014	950	960	938
Unmet need for family planning - no method	-0.009	0.133	0.088	0.150	0.115
	(0.02)				
N	3,862	1,014	950	960	938
Unmet need for family planning - modern method	-0.009	0.134	0.091	0.150	0.117
	(0.02)				
N	3,862	1,014	950	960	938
Ideal number of children	-0.068	6.192	6.005	6.419	6.299
	(0.12)				
N	4,537	1,151	1,119	1,150	1,117
Partner wants fewer children than woman	0.006	0.036	0.022	0.036	0.018
	(0.01)				
N	2,931	691	718	778	744
Partner wants same # children than woman	-0.026	0.615	0.608	0.456	0.473

lactational amenorrhea method, withdrawal, or rhythm method, which are all considered to be traditional or non-modern methods of contraception and have lower efficacy rates.

	(0.03)				
N	2,931	691	718	778	744
Partner wants more children than woman	0.020	0.350	0.370	0.508	0.510
	(0.03)				
N	2,931	691	718	778	744

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance

In the qualitative interviews, we found both concerns about having more children as well as concerns about not having children. We also saw very low levels of use of modern family planning even among those who indicated not wanting to get pregnant at that time. In general, participants did not make a direct link between LEAP and their fertility beyond saying that the support from the programme allowed them to feel confident about their ability to support their children.

One possible explanation for the lack of change in unmet need is that women did not indicate being interested in using modern methods. Reasons ranged from believing that it was God's will to determine how many children, to believing that they would not get pregnant while breastfeeding to having doubts about the safety and effectiveness. Only two women in the qualitative sample, both with 3+children, were using a modern method at the time of the endline interview, both injectables. One did not want more children at the time of the interview. The other was using injection but was more ambiguous about whether she wanted any more children, even making this contingent on whether the LEAP support would continue. She said if she decided not to have more she would opt to have her "womb turned out". While no one explicitly said they would have more children if they had the continued support of LEAP guaranteed, several did refer to the fact that being in the programme allowed them to consider having their desired number of children rather than limiting themselves due to their poverty.

Both women and men expressed strong social pressure to have large families. Participants reflected a process of balancing social expectations that they *should* have more children, with personal desires to have 2 or 3. One participant explained that being in the LEAP program made her want to have more children to satisfy her personal preference for a large family as well as the expectations of her family and community.

A mother of five in Bongo intended to have one more child. She was breastfeeding at the time of the interview and planned to "rest" after she weaned before having one more child, though she was not using any method. She directly challenged the notion of the LEAP transfer incentivizing her to have more children. When asked whether she wanted more children because of LEAP, she answered,

> *'No, I said we were already giving birth to our children, it was during his pregnancy they came and registered us for the LEAP program, and I haven't weaned him to rest before I give birth again and I will not give birth because of the money [laughs].' (3+ children, Bongo)*

A first-time mother echoed the sentiment of social pressure in her explanation of why she wanted approximately five more children. She described that women with more children are seen as more responsible and are less likely to be insulted by the community. An unmarried participant expressed a contrasting experience in which she felt pressure not to have more children due to her unmarried status.

In contrast to responding to external pressures, some participants expressed a personal desire to have as many children as they could have, as described by this mother of 3+ children in Bongo who desired 15 more children,

> ***INTERVIEWER:*** *You said that the money you receive is not enough to take care of the children you already have and now you are saying you want to give birth to more children. How will you be able to take care of them?*
> ***PARTICIPANT:*** *Even if there was no LEAP, I would have still like to give birth to more children.*
> ***INTERVIEWER:*** *Have you taken any preventive measures as to when you will give birth again?*
> ***PARTICIPANT:*** *No.' (3+ children, Bongo)*

Again, this participant clearly differentiates between LEAP and her desire to have 15 children. This type of sentiment was even more common among men, in both Karaga and Bongo, who indicated wanting up to 20 or more children if they could have them.

A smaller group emphasized concern about only having the number of children they could take care of, regardless of social pressures to have many. A man with two wives in Karaga indicated that he did not intend to have more children until he had a job. There were many tensions with his wife who participated in the study as he had not yet married her officially and she was very upset by this. Interestingly, his wife expressed wanting 100 children, even though she was not happy with their relationship. She later adjusted the 100 children to eleven because it was more feasible to take care of all of them. Simultaneously, she also expressed doubt about when she would actually have another, though she did not indicate using a method to prevent pregnancy, reflecting the multiple, competing influences on women's fertility preferences.

4.11.3 Early Marriage

In Tables 4.11.3 and 4.10.4, we examine impacts of the LEAP 1000 on early marriage dynamics. In Figure 4.10.1, we see that rates of marriage increase steeply in both treatment and comparison groups between the ages of 14 and 19 years, and then continue to increase between ages 19 and 24, but at a slower rate. The most dramatic increases in marriage rates are between the ages of 16 and 18 years. From the figures, we see that females in treatment households were less likely to be married at each age prior to age 20 at baseline as compared to those in comparison households ($p<.05$), and across all ages at endline. Thus, due to this baseline imbalance in marriage rates between treatment and comparison groups, any estimated programme impacts should be interpreted with caution and are likely due to differences which already existed between treatment and comparison groups at baseline, and not necessarily to impacts of the LEAP 1000. Nevertheless, to examine programme impacts on this outcome, we run three different analyses reported in the tables: 1) difference-in-differences estimates among along women aged 12-17 and 12-24 years at baseline who are living in evaluation households at endline (Table 4.11.3); 2) difference-in-differences estimates among women aged 12-17 and 12-24 years at baseline who are living in evaluation households at endline plus those who were reported to have left the household for purposes of marriage (Table 4.11.3); and 3) single difference estimates at endline among never married 12-24 year olds at baseline (Table 4.10.4). In Table 4.10.3, we see that females aged 12-24 years at baseline in LEAP 1000 were 3.5 percentage points less likely to be married by endline than those in comparison households.

Figure 4.11.1: Proportion of females aged 12-14 at baseline married, by treatment status

Table 4.11.3: Impacts on Women's early marriage, women 12-24 years

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Married, all women 12-17 years at baseline	0.000	0.024	0.054	0.030	0.059
	(0.02)				
N	1,237	378	302	312	245
Married, all women 12-24 years at baseline	-0.035**	0.392	0.508	0.416	0.561
	(0.01)				
N	2,681	727	722	613	619
Married (including women that left for marriage), all women 12-17 years at baseline	0.003	0.024	0.054	0.093	0.121
	(0.02)				
N	1,237	378	302	312	245
Married (including women that left for marriage), all women 12-24 years at baseline	-0.028	0.392	0.508	0.469	0.607

	(0.02)				
N	2,681	727	722	613	619

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

However, in Table 4.11.4, we find no impacts in the single difference models among those reported never married at baseline. **Taken together, these estimates suggest that the LEAP 1000 did not have any protective impacts on early marriage.**

Table 4.11.4: Impacts on Women's early marriage (since baseline), women 12-24 years (single difference)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Married since baseline, all women 12-17 years at baseline	0.020	0.007	0.022
	(0.01)		
N	522	292	230
Married since baseline, all women 12-24 years at baseline	0.022	0.021	0.024
	(0.02)		
N	1,170	580	590
Married since baseline (including women that left for marriage), all women 12-17	0.003	0.070	0.083
	(0.04)		
N	557	312	245
Married since baseline (including women that left for marriage), all women 12-24	0.008	0.071	0.068
	(0.04)		
N	1,232	613	619

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Analyses reported in this section demonstrated positive impacts of LEAP 1000 on the receipt of ante-natal care from skilled care provider visits and a small reduction in the total number of live births. The latter finding underscores how LEAP 1000 did not induce increased fertility, despite targeting households with pregnant women or young children. When examining pathway variables linking the programme to fertility-related outcomes, we found no programme impacts on contraceptive use or fertility preferences. Finally, we examined child marriage, given that poverty is a key driver of this adverse outcome, and LEAP 1000 has improved economic security of participating households. Nevertheless, we conclude that LEAP 1000 did not have protective impacts on child marriage. This may be due to several factors. First, the programme had modest impacts on food security and consumption, but these protective impacts may have been insufficient to mitigate all poverty-related drivers of child marriage. Further, poverty is not the only determinant of child marriage, and social norms and opportunity costs of early marriage also play a

large role. Impacts on these drivers are unlikely to be addressed in the short- and medium-terms by LEAP 1000.

4.12 Women's empowerment, knowledge, and well-being

In this section, we examine women's empowerment, perceived stress, social support, social capital, self-reported health, and nutrition-related knowledge. As detailed in the remainder of this section, we found positive impacts of LEAP 1000 on women's savings and amount saved, participation in community groups, social support, and nutrition knowledge. However, we found mixed findings on self-perceived stress and no impacts on other indicators such as self-reported health, future outlook, women's decisionmaking, and social capital.

Women's empowerment measures are important, both with regards to the status of the women themselves, but also as a caregiver-level outcome that has implications for child health. For example, a woman's bargaining power can affect children's access to nutritious foods, purchase of bed nets for malaria prevention, health visits, and other factors.[38] Further, women's empowerment is also an important outcome in its own right, and increasingly, governments and stakeholders are asking whether social protection programmes are, at a minimum, gender sensitive, and even more ambitiously, gender transformative. An example of a gender sensitive design is targeting women or linking to complementary services (as LEAP 1000 does), whereas a transformative design would have the potential to impact gender relations, roles and responsibilities[39]. Evidence to date on cash transfers and women's empowerment is mixed, but there is evidence that government CT programmes in Africa can increase women's savings and entrepreneurial activities[40,41].

4.12.1 Women's empowerment: decision-making, life satisfaction, future outlook, and savings

In Table 4.12.1, we examined whether LEAP 1000 had any impacts on women's agency or decision-making, savings, and future outlook. Consistent with the aforementioned evidence, we find that the programme increased the probability of having saved any money in the last month by 12 percentage points. At endline, 37 and 27.1 per cent of treatment and comparison women, respectively, reported saving any money in the past month. Among those with any savings reported in the last month, LEAP 1000 respondents reported, on average, saving 5.959 more cedis (real value) per month than respondents in comparison households. In contrast, we found no impacts on indicators related to agency (defined as whether woman believes she has the power to make decisions related to her children's well-being and her household's well-being, and whether she is capable of protecting her interests inside the family and outside her household) or a combined agency score (Table 4.12.1). At endline, the percentages of women reporting that they had power to make these decisions ranged from 61 per cent of comparison women

[38] van den Bold, M., Quisumbing, A. R. and Gillespie, S. (2013) 'Women's empowerment and nutrition: an evidence review', *IFPRI Discussion Paper 01294*. Washington D.C., The International Food Policy Research Institute.
[39] Holmes, Rebecca, and Nicola Jones. "Rethinking social protection using a gender lens." (2010). Overseas Development Institute (ODI) Working Paper 320. ODI: London.
[40] Bonilla, J., Zarzur, R. C., Handa, S., Nowlin, C., Peterman, A., Ring, H., Seidenfeld, D., Z. C. G. P. E Team. (2017). Cash for Women's Empowerment? A Mixed-Methods Evaluation of the Government of Zambia's Child Grant Program. *World development, 95*, 55-72.
[41] Natali, L., Handa, S., Peterman, A., Seidenfeld, D., & Tembo, G. (2016). *Making money work: Unconditional cash transfers allow women to save and re-invest in rural Zambia.* Innocenti Working Paper Series 827), UNICEF Office of Research – Innocenti: Florence, Italy.

who believe they have to power to make decisions around household well-being to 71.5 per cent of treatment women who believe they have the power to make decisions about their life course. We also found no programme impacts on life satisfaction and future outlook (defined as whether respondent believes life will be better in 1, 3, or 5 years).

Table 4.12.1: Impacts on Women's empowerment, savings, main respondent

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Agency score	0.202	2.760	2.755	4.119	3.912
	(0.13)				
Believes life determined by own actions	0.047	0.557	0.590	0.652	0.638
	(0.03)				
Believes have power to make decisions - life course	0.027	0.585	0.589	0.715	0.692
	(0.03)				
Believes have power to make decisions - children's wellbeing	0.029	0.492	0.480	0.705	0.664
	(0.03)				
Believes have power to make decisions - household wellbeing	0.024	0.385	0.352	0.667	0.610
	(0.03)				
Believes capable protecting own interests within family	0.043	0.369	0.364	0.708	0.660
	(0.03)				
Believes capable protecting own interests outside family	0.033	0.372	0.380	0.672	0.648
	(0.03)				
Satisfied with life some/most/all of time	0.001	0.567	0.569	0.686	0.686
	(0.03)				
Believes life will be better in 1 year	0.030	0.792	0.808	0.887	0.873
	(0.02)				
Believes life will be better in 3 years	0.026	0.822	0.838	0.960	0.950
	(0.02)				
Believes life will be better in 5 years	0.003	0.824	0.827	0.964	0.964
	(0.02)				
Saving money	0.120***	0.070	0.091	0.370	0.271
	(0.02)				
Amount of money saved last month - excluding zeros (real)	8.376	54.271	55.443	30.598	23.456
	(12.40)				
Amount of money saved last month (real)	5.958***	3.801	5.065	10.874	6.181
	(1.56)				
N	4,540	1,151	1,119	1,151	1,119

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

To further assess women's empowerment, which is a multidimensional concept difficult to quantify, we added in the endline survey two indicators not measured at baseline. We asked women, "Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Imagine a ladder where on the bottom step, the first step are people with who have no free choice and no control over their lives, and on the highest step, the tenth are people who have completely free choice and total control over their lives. On which step of the ladder would you say you are today?" Response options ranged from 1-10. For the second question, we asked

women, “To what extent do you feel able to make decisions in your household, for example, decisions about what to spend money on, decisions about your child’s education or health or decisions on if you should work or not? Imagine a ladder where on the bottom step, the first step are people with no decision making power, and on the highest step, the tenth are people who are able to make all decisions they wish. On which step of the ladder would you say you are today?” Average reported levels for the first question were 5.8 and 5.6 among treatment and comparison women, respectively. Further, average reported levels on the second question were 5.7 and 5.5 among treatment and comparison women, respectively. We found no programme impacts on either empowerment indicator.

Table 4.12.2: Impacts on Women's stress and empowerment, main respondent (Single difference)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Woman level of control over her life	0.250	5.755	5.637
	(0.17)		
Woman level of decision-making ability	0.232	5.702	5.464
	(0.18)		
N	2,270	1,151	1,119

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In the qualitative interviews, most women expressed that they controlled the LEAP 1000 funds and/or made decisions in consultation with their husbands. Several men and women explicitly said that the LEAP funds were for women to manage and decide about. As a potential indicator of autonomy, several participants referred to women no longer having to ask men for money since they had money of their own to use. This dynamic was generally described in positive terms as women having more resources and power to decide rather than men failing to support women.

The level of autonomy was again context specific as several women in Bongo had been on their own when their husbands went to work in the mines, leaving them to manage the households. In Karaga, two women had migrated to work in Accra and a third had recently returned home from Accra. While we were not able to interview the women who were away at the time of the fieldwork, the woman who had returned indicated that she came back because her husband had asked her to. Another context specific dynamic in Karaga was that some men were more involved in managing the funds if they were shared among co-wives, though some beneficiary women described doing the sharing on their own. Other women refused to share, which could reflect their sense of autonomy over the use of the LEAP funds. In summary, women expressed autonomy in their use of the LEAP funds, which may lead to broader autonomy in household decisions moving forward.

One potential challenge to feeling a sense of control was that by living in a very collective dynamic, women benefitted from the support of their households but also felt a burden to support their households in times of need.

> *‘**INTERVIEWER:** The money that you receive from LEAP can you tell me how you share it in this house?*
> ***PARTICIPANT:** When I receive the money from LEAP am able to give some to my mother and my*

grandmother and when my husband is around I will give him some. I can't also ignore my mother at home so I give her some.
INTERVIEWER: *Do you still do that, do you still give money to those at home and give to those over there?*
PARTICIPANT: *Yes.' (1st child, Bongo)*

A frequent example of this was contributions to the costs associated with funerals. A mother of five in Bongo described how she had to use her LEAP funds for her grandmother's funeral,

'You can go and collect the money and come and a problem comes up and you will use the money to resolve that issue. So when we went and collected that money and came back my grandmother died so I used the money over there, we used it to do small small things. We used it to buy drinks and hired drummers to that place, my husband even got small money and added to it and it was 30 Ghana cedis so all the money was spent there.'(3+ children, Bongo)

Several participants referred to the mix of pride and responsibility they felt now that they could afford to contribute to these family rituals, such as funerals and naming ceremonies.

4.12.2 Perceived stress and social support, main respondents

In Table 4.12.3, we examined programme impacts on social support and perceived stress. Both are general indicators of well-being, but also may indirectly impact child well-being and health through diminished caregiving practices. Cash transfers may reduce stress through the food security pathway, which is one of the main sources of uncertainty experienced daily in sub-Saharan Africa. Indeed, the LEAP 1000 baseline qualitative findings highlighted the caregivers' worry and stress about not having enough food for their children. Reductions in overall stress levels may improve the quality of caregiving relationships, reduce violence levels, and allow household members to become more forward-looking. Furthermore, high levels of chronic stress have been found to induce physiological changes which result in adverse health outcomes, including compromised immune function. [42] [43] [44] Thus, reductions in stress have long-term implications for health, both for adults and their children. Furthermore, social support may mediate the relationship between cash transfers and child health, through the caregiver's ability to rely on others for support when needed. **The programme evaluation shows a positive impact on the level of social support, a result, which is mainly driven by an increase in emotional support. Average stress levels, measured using the Cohen stress scale, reduce over time, but these findings are not statistically significant at the conventional levels.**

To measure social support, we used a modified version of the widely implemented and validated Medical Outcomes Scores (MOS) – Social Support score.[45] Items in this scale include questions such as:1)

[42] Dowd J.B., Aiello A.E. (2012) Immunosenescence: Psychosocial and Behavioral Determinants. In: Bosch J.A., Phillips A.C., Lord J.M., editors. New York: Springer.
[43] Glaser R, Kiecolt-Glaser J.K. (2005) Stress-induced immune dysfunction: implications for health. *Nature Reviews Immunology*. 5(3):243-51.
[44] Kiecolt-Glaser J.K., Glaser R. (2001) Stress and immunity: Age enhances the risks. *Current Directions in Psychological Science.* 10(1):18-21.
[45] RAND Corporation (1995). User's Manual for Medical Outcomes Study (MOS) Core Measures of health-related quality of life. Santa Monica, CA: RAND Corporation.

whether the individual has someone who would help them if they were confined to bed, 2) take them to the doctor if they need it, 3) prepare their meals if they are unable to do it themselves, 4) help with daily chores if they are sick, 5) have a good time with, 6) turn to for suggestions dealing with a personal problem, 7) someone to understand their problems, 8) and having someone to love and make them feel wanted. The overall score is obtained by averaging the responses to the items and then standardizing (possible range from 0-100). In addition, we separated the questions referring to instrumental (questions 1 to 4) and emotional social support (question 5 to 8). The scores for the respective types of social support are also standardized on a 0 to 100 scale to facilitate comparison. Analysis of the baseline data[46] suggested that instrumental and emotional social support are perceived by the participants as inherently different, whereby reciprocal instrumental support is often an integral part of women's lives focusing on basic, daily needs and survival and emotional support is less common but more strongly related to life satisfaction. In Table 4.12.3, we see that LEAP 1000 increased women's perceived social support. The program impact is positive and significant for both types of social support, with a slightly larger increase in emotional social support. The difference in instrumental social support is due to an increase in support of the participant group, the difference for emotional social support is, however, due to an increase in support for the participants and a downward sloping trend for the non-participant group.

The positive coefficients show the changes in the availability of support in case of need, meaning that the potential support expected to be received increased due to strengthening of their social network. Hypotheses, which are echoed by the qualitative data, are that programme participants are more trustworthy to reciprocate support, because the promise of the future transfer serves as an assurance. Additionally, we saw above that the transfers allow households to reintegrate into their communities by allowing them to participate in social functions, from which poverty may have previously excluded them. Relatedly, the cash transfer might enable beneficiaries to support individuals or the community, which makes them feel more comfortable to ask for help in return when needed in the future, further (or newly) integrating them into the complex socio-economic networks of their communities.

Table 4.12.3: Impacts on Women's social support and perceived stress, main respondent

Dependent Variable	Programme Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Cohen perceived stress scale	-0.274	31.818	31.717	30.653	30.825
	(0.32)				
MOS-Social Support score(standardized)	3.314***	52.059	53.526	54.562	52.715
	(1.23)				
MOS- Instrumental Social Support score (standardized)	2.805*	55.807	57.170	59.918	58.476
	(1.43)				
MOS- Emotional Social Support score (standardized)	3.824***	48.310	49.882	49.206	46.953
	(1.30)				

[46] Barrington, C., de Milliano, M., Akaliguang, A., Aborigo, R., Gbedemah, C., Angeles, G., Handa, S. (forthcoming). Contextualizing Women's Wellbeing: Social Support among Extremely Poor Women in Northern Ghana. UNICEF.

N	4,540	1,151	1,119	1,151	1,119

Notes: SE in parentheses. * 10% significance ** 5% significance; *** 1% significance

In the qualitative interviews, women perceived changes due to LEAP in the way they were giving and receiving support. The women described how the benefit ***enabled them to take up a support-giving role rather than being in a support-receiving position***. As expressed by this mother of three children, who recently lost her husband, the support given is mainly in the form of lending money or giving food to close family and friends.

> *'**INTERVIEWER:** Do you share the money with other members of the household?*
> ***PARTICIPANT:** No, not the money but they come to me for soap to wash and anything that they need and think I can support.*
> ***INTERVIEWER:** What about people outside the household?*
> ***PARTICIPANT**: Yes, two of my aunties in this community. When I receive the money, I buy food ingredients for them out of my own will. I also lend money to my friend sometimes and she will pay back later or contribute to susu.' (3+ children, Karaga)*

The participant talked mainly about giving instrumental and financial support to help with basic needs of household members and friends.

A number of women described that because of the LEAP benefit they do not have to ask their husband whenever they wanted to buy something. In particular, in Bongo where some of the men were unemployed after working in the mines, the women felt that they put less financial pressure on their husbands and could even provide financial support to them, rather than relying on them. Similar to the mother of six children in Bongo below women used words as 'bother less' or 'worry less' to describe what supporting their husband meant for them.

> *'Ok, he also helps just that I don't worry him like before, the collecting of the money has made me not to bother him again about ingredients, also if he needs some money, I can take it and remove some for him to help himself. If it also gets finished he won't say that I had money and didn't help him.' (3+ children, Bongo)*

The qualitative findings are in line with the quantitative results, in that the exchange of support increased for most of the participants. While the MOS-scale focuses on the availability to support when needed, the qualitative findings complements this by highlighting beneficiaries' ability to give support.

In contrast, we find no impacts on perceived stress as measured by the Cohen Perceived Stress Scale (Table 4.12.3).[47] This scale comprises a series of ten questions (reference period is the previous four weeks), such as whether the woman had often been upset due to something that happened unexpectedly, how often she could not cope with all the things she had to do, how often she felt confident about her ability to handle personal problems, and how often she had been angered because things were outside her control, among others. These questions were asked to main respondents only, and the possible range of scores was 10 to 50, where higher scores indicate increasing stress.

[47] Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior*, 385-396.

In addition to the Cohen PSS, we implemented a newly designed scale to alternatively measure perceived stress, called the Enhanced Life Distress Scale (ELDS). Development of this ELDS was led by UNICEF Office of Research – Innocenti and informed by an existing scale[48] in addition to new, qualitative research conducted in Ghana, Tanzania, and Malawi in 2016-2017, with the aim to better measure stress in a more context-appropriate way. The Cohen PSS was developed in the Midwestern United States and was intended to be used among adults with at least a junior high school level of education, and may not capture the type of stress experienced by poor individuals with low levels of education in rural sub-Saharan Africa. While the Life Distress Inventory was also developed in the United States, we significantly modified and adapted it based on the aforementioned qualitative research. The resulting scale includes 12 items and asks women to respond whether they worried about any of the following items in the past 7 days, and if so, how distressed they felt (ranked from 1 to 3, indicating the highest level of distress): own/household's financial situation; failure of own or household's farm or non-farm business; employment or that of family members; access to education or that of family member; access to food and clean drinking water; physical health or that of family members; own/family member's substance use (drug/alcohol); violence towards self/family members; theft; romantic relationship/marriage; relationship with other family members; relationship with friends/community members; preventing pregnancy, spacing births, health of current pregnancy or that of partner). Scores were then summed for each item to create the Enhanced Life Distress Scale (ELDS), with items for which participants reported not worrying about coded as zero (scale range 0-36). In Table 4.12.4, we find that LEAP 1000 increased levels of distress as measured by the ELDS by 1.39 points, on average (out of a total possible 36 points; significant at the 10 per cent level).

Table 4.12.4: Impacts on Women's stress (Single difference)

Dependent Variable	Programme Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Enhanced Life Distress Index (0-39)	1.418* (0.78)	18.412	17.738
N	2,270	1,151	1,119

Notes: t-stat in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Inconsistent with the quantitative finding of increased distress, in the qualitative interviews, many women did convey a general sense that the money from the LEAP programme was a stress-reducer in their lives. As mentioned earlier, one of the most common ways that women expressed feeling less stress with in relation to worrying about food and the health of their children as the money from the transfer allowed them to buy food, medicine and other health-promoting resources and have access to credit or loans, if needed, to seek out health care. As an example, one of the most highly impacted women in the qualitative sample described feeling less stress related to food security due to God's grace and their good crops, which she had been able to enhance using her LEAP transfer,

[48] Thompson, M., Yoshioka, M., & Ager, R. (1994). Life distress inventory. In J. Fischer & K. Corcoran (Eds.), *Measures of clinical practice: A sourcebook* (2nd ed., pp. 267). New York: Free Press.

*'**INTERVIEWER:** Can you tell me how life has been in the past year? That is from the period I visited till now.*
***PARTICIPANT**: Life changed for me because the challenges that were encountered last year have been addressed by God's grace so there have been a change for me.*
***INTERVIEWER:** What kind of challenges are you talking about? I want you to explain everything clearly for me*
***PARTICIPANT**: For instance, in the household there are times our feeding becomes a big challenge and there were days we have nothing to feed the children with but by God's grace this year our farming was good because we had good yields in our rice production hence we had enough food to feed on.' (3+ children, Karaga)*

However, the lack of improvement/decline in the stress indicators may reflect that even with the alleviation of the worry about food and health, some women continued to worry about the wellbeing of their children and experience other forms of stress in their lives that may not have been reduced with their participation in the programme.

As mentioned earlier, women experienced many shocks during the two years of the study including the death of children, spouses and other family members. These losses left a profound emotional impact on women as well as an economic impact. Environmental shocks were also common, affecting crop production and the stability of women's homes. These shocks may have contributed to the lack of impact on stress indicators.

Another noticeable source of stress for several women in both regions was their relationship with their husband. There were several women who had separations during the course of the study or described ongoing tensions and challenges in their relationships that may have contributed to ongoing stress. A first- time mother in Karaga who had not received her LEAP transfer during the past year because she had been working in Accra described substantial stress due to the fact that her husband, with whom she had one child, had not yet performed official marriage rituals. Her husband had another wife with whom he had a child and he had also not yet officially married this woman. This couple had spent most of the year living apart as they both worked in Accra. While they were able to make improvements to their lives, the woman described not having peace of mind due to her relationship tensions,

*'**INTERVIEWER:** What was your experience in life after I last visited you?*
***PARTICIPANT**: After you visited me life was not easy for me because every day I was quarrelling with my husband and had to travel to Accra to work. I came back recently.*
***INTERVIEWER:** And what else about your life?*
***PARTICIPANT**: When I went to Accra I was able to get work to do and what I got from Accra is better than staying in this community. I came because I left my child with my mother and went to Accra and every day when I think about my child I don't have a peace of mind so I came back home to see how the child is doing and my husband also asked me to come home.' (1st child, Karaga)*

While this participant had been able to make more money with her work in Accra during the last year, she continued to experience stress due to being away from her child and her relationship tensions. She went on,

*'**INTERVIEWER:** Ok. Can you tell me something about the quarrel between you and your husband?*
***PARTICIPANT**: [laughing] He asked me to come home and I refused that is why we are quarrelling. He has not yet done the marriage rites and I want him to prepare so that we do the wedding and in that case I can be in his house all the time.*
***INTERVIEWER:** So is that the reason why you have come back to stay in your father's house?*
***PARTICPANT**: Yes but we are talking to each other just that if I stay in his house he will not be serious to do the wedding. I don't want to give birth to many children when the man has not married me completely.' (1st child, Karaga)*

Another example of a relationship challenge was a mother of 3+ children in Karaga whose husband had "abandoned" her because his other wife was less needy.

*'**INTERVIEWER:** So how does this poverty disturb your relationship with your husband?*
***PARTICIPANT**: It is the reason why he has abandoned us. The other wife has enough that is why his attention is on them and not on us. He is not bothered about us so we are just living in this house almost on our own*
***INTERVIEWER:** Ok*
***PARTICIPANT**: You know how men behave, his attention will be drifted to the one who has enough so because I haven't got he barely associates with me. You realize he is in her room.' (3+ children, Karaga)*

Of note, while the female participant expressed concern about the relationship and the way her husband treated her, her male partner described in his interview that the LEAP programme had helped the relationship to improve by reducing their poverty and increasing the peace,

*'**INTERVIEWER:** How has your relationship been since you started receiving the money?*
***PARTICIPANT**: It has increased the love and peace between us. It is only when you don't have money to provide for the family that you can have problems with your wife but once I am able to provide some needs with the money we are peaceful with each other.*
***INTERVIEWER:** How many wives do you have?*
***PARTICPANT**: Two.*
***INTERVIEWER:** What is the relationship between them as a result of the money?*
***PARTICIPANT**: They like each other and there is peace. They work together and for one another.' (husband, 3+ children, Karaga)*

Women in Bongo also expressed tension in their relationships. A first-time mother in Bongo explained that while some of the tension related to poverty had been reduced, she still got angry.

*'**PARTICPANT:** You may want something from the man and won't get and because you don't have he may have and say he doesn't have and that can be annoying. Or you may want to do something with him to help all of you and he won't want to do it and it will annoy you and you will think if you could afford you won't wait for him to do that thing or if you have you will bring half and he*

will also bring half and you will do that thing and it will be nice. But because you don't have and you tell him he ignores you and you know it's annoying.
INTERVIEWER: *Hmm, so now that we are talking and you said you want something to do and can't get and it's a problem for you, does it cause misunderstanding or problems between you?*
PARTICIPANT: *As I said if I want something and I don't get it is worrying or if I say I want this or this is needed and he doesn't do it for me you know that it will be a problem. So if I want something and I don't get you know that it is something that will make me angry.' (1st child, Bongo)*

These examples of how relationship stress continued even when families were receiving the LEAP money may help to explain why stress was not reduced by the program.

While men's stress was not measured in the survey, given that most women in the sample were married and negotiating their lives with male partners, we consider men's stress relevant to our understanding of women's stress. A noticeable pattern among men in the qualitative interviews was the stress they experienced related to adherence to norms of masculinity, or what has been called gender role strain[49]. This strain was especially prominent among the men in Bongo who had migrated to work in gold mines and had been laid off shortly before the interview. While they had made money to help fund improvements to their living structures and overall economic situation, they expressed tension around missing out on farming, which was considered a male responsibility.

'As am sitting now if not because of my wife and my mother, last year I didn't farm here if not because of them I will not get food to eat. When I came back to build these rooms it's their food they used to cook for the workers. The money I brought for us to use and buy food is what am using so if they didn't farm and we were to buy till date how much is the money. And the family is now big ehe, if he will eat it's from me and if there is money ehee. If I was still working I wouldn't have a problem hmm. If they are lying down in this house it's still my debt, there are days I have money and there are some days I don't have so how will I send them to the hospital or buy drugs for them or buy something for them. With all of them if someone falls down and dies it's still my debt .' (husband, 1st child, Bongo)

The stress of being laid off and the sense that he did not contribute to food production was present throughout his interview. In addition to his wife, this participant was responsible for supporting his parents, which added additional stress. Another male participant in Bongo echoed the sentiment that men were responsible for farming and providing for the household, and he described how he needed to be ready to take care of his wife's daughter when she would fall sick. The male participant did not yet have any biological children of his own, which was another source of stress related to his masculinity.

As another reflection on men's gender roles, a mother of 3+ in Karaga mentioned that her husband had sometimes not accepted LEAP money when she offered it to him for household needs. She said that he rejected it "*with the excuse that the money is meant for taking care of the children" (3+ children, Karaga).*

[49] Pleck, J. H. (1995). The gender role strain paradigm: An update. In R. F. Levant & W. S. Pollack (Eds.), ***A new psychology of men*** (pp. 11-32). New York: Basic Books

She went on to say that her participation in LEAP had not changed her husband's responsibilities because the money is given to the women and is expected to be used by the women,

> *'**INTERVIEWER:** So has LEAP 1000 brought any change in your responsibilities?*
> ***PARTICIPANT**: Yes because with the support I don't complain about issues again. Hence, there has been a change.*
> ***INTERVIEWER:** How about its relation to you?*
> ***PARTICIPANT**: Yes, you know it is money paid to women to take care of ourselves not for the men so we don't give it to them.*
> ***INTERVIEWER:** So how has it affected your husband's responsibility?*
> ***PARTICIPANT**: It has not changed his responsibility because it is not his money and I cannot give it to him to change his responsibilities.' (3+ children, Karaga)*

Again reflecting perceived gender roles and responsibilities, this couple viewed the LEAP money as being for the children and under the control of the woman. Further extending the idea of the LEAP money being for women and children, a male participant in Karaga suggested the need for LEAP to provide support for men, saying that they could use the money for their own needs, "*we the men can also use ours to help grow our businesses and also farm in large quantity."* Giving money to both men and women would be more sustainable according to the participant.

In summary, notions of gender roles and responsibilities shaped the way the LEAP funds were managed within households. The in-depth interviews emphasize the importance of the relationships between the female beneficiary, her husband and other household members with regards to creating tensions or stress, and availability of additional emotional and instrumental support.

4.12.3 Social capital and group membership

A set of new indicators that we included at endline related to women's social capital, defined as "norms and networks that enable people to act collectively[50]" (asked to the LEAP 1000 woman only). Social capital is linked to resilience, in that individuals and communities with stronger and more diverse ties will have increased capacity to respond to shocks and challenges. In addition, social capital is a measure of participants' perception of their position within the community. Do participants feel part of the collective or has the LEAP transfer thrown up barriers between them and non-receiving community members? **When comparing the treatment and control group, LEAP 1000 recipients are not statistically different from the control group in terms of their perception of getting along with others, being part of the community or having the feeling that people take advantage of you. They are 14 percentage points more likely to be part of at least one group in the community.**

We assessed women's social capital using the following four statements separately and asked women whether they strongly disagreed, disagreed, felt neutral, agreed, or strongly agreed: 1) The majority of people in this community generally get along with each other; 2) I feel part of this community; 3) The

[50] Woolcock, Michael, and Deepa Narayan. "Social capital: Implications for development theory, research, and policy." *The world bank research observer* 15.2 (2000): 225-249.

majority of people in this community would try to take advantage of you if they got the chance; 4) If you needed to borrow GH¢ 50 in an emergency, how many people could you go to for this money? In Table 4.12.5, we see that none of the responses between treatment and control women are statistically significant at conventional levels. We find that the women receiving LEAP 1000 have a slightly higher percentage of being positively perceived in the community, while simultaneously having slightly lower percentage of trust in other community members. The insignificance of the coefficients, however, suggests that participants do not perceive themselves as treated differently in the community.

Table 4.12.5: Impacts on Women's social capital, main respondent (Single difference)

Dependent Variable	Programme Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
People generally get along with each other (agree or strongly agree)	0.027	0.934	0.924
	(0.02)		
I feel part of this community (agree or strongly agree)	0.001	0.923	0.921
	(0.02)		
People would try to take advantage of you (agree or strongly agree)	0.035	0.302	0.284
	(0.04)		
No. people would lend 50GH in case of emergency	-0.140	2.116	2.097
	(0.18)		
N	2,270	1,151	1,119

Notes: SE in parentheses. * 10% significance ** 5% significance; *** 1% significance. Percentages are estimates based on respondents 'Agreeing' or 'Strongly agreeing' with the statement

Relatedly, we asked respondents about their membership in groups, including those related to agriculture, livestock, fishers; credit or microfinance; mutual help or insurance; trade or business; civic or charitable groups; religious; other women's/men's groups; and local government. We found that LEAP 1000 positively impacted their membership in at least one group with a 14 percentage point increase (Table 4.12.6). This finding supports the idea that LEAP 1000 may facilitate economic activities and to participation in the community. For both treatment and control groups the highest membership is in women's groups, religious associations, credit and agricultural groups. A statistically significant difference between the two groups is found for religious groups and women's groups, with a higher membership among women receiving LEAP. Beneficiary women in the qualitative sample show examples of increased participation mainly in local savings groups and a mutual help group. One woman describes how the transfer enabled her to make contributions at her local church. Besides, in the qualitative interviews the women expressed what these memberships meant to themselves and their households.

Table 4.12.6: Impacts on Women's group membership, main respondent (Single difference)

Dependent Variable	Programme Impact	Endline Treated Mean	Endline Control Mean

	(1)	(2)	(3)
Member of agricultural/livestock/fishery group	0.006	0.123	0.099
	(0.03)		
Member of credit or microfinace group	0.004	0.216	0.174
	(0.02)		
Member of other women's group	0.072*	0.404	0.324
	(0.04)		
Member of religious group	0.083**	0.316	0.302
	(0.04)		
Member of mutual help or insurance group	0.025	0.125	0.109
	(0.03)		
Member of trade or business groups	0.012	0.023	0.013
	(0.01)		
Member of civic groups or charity	0.008	0.010	0.011
	(0.01)		
Member of local government group	0.002	0.001	0.000
	(0.00)		
Member of at least one community group	0.141***	0.690	0.600
	(0.04)		
N	2,270	1,151	1,119

Notes: SE in parentheses. * 10% significance ** 5% significance; *** 1% significance;

In the qualitative interviews at baseline women described limited participation in their communities, mostly due to not having the resources they believed were necessary or being shamed by their appearance. There was a noticeable increase in social participation at endline among women in both communities, especially in local savings groups, called *susu*. In Bongo, some women described participating in *susu* through the market but there were also community based *susu*. One of the most successful participants, who was a first-time mother in Bongo, described her participation in 2 different *susu*,

> *'**PARTICIPANT:** I am still doing the susu in the market but you know now that it's work season I don't go to the market everyday so when I go to the market and it's good I give but in the house we do it every Saturday, there is no Saturday we don't contribute.*
>
> ***INTERVIEWER:** How much do you contribute?*
>
> ***PARTICIPANT:** They have a book, they have first box and second box. Those in the first box were contributing 5 cedis every Saturday but because they have stopped they are now contributing 10 cedis every Saturday and we have collected a new box so we contribute 5 cedis every Saturday. They contributed for a month before we started but they say we will collect the money the same day so they said we have to give the amount they are also giving. So, from next week we have to give the same amount so that when it's time they will come and reimburse us the same day.' (1st child, Bongo)*

She later described how her participation in the *susu* group allowed her to accumulate quantities of money that would be difficult to save on her own or borrow from others and facilitated planning. When asked what the benefit of *susu* is, she answered,

'The benefit of the susu is that when am contributing now I am contributing and planning because there are times that it gets very difficult for you and when you want thousand cedis you can't get. So if you are doing the susu book and its complete I will say because I have completed the susu book if I need money I will get it and when you collect that one it is also helpful.' (1st child, Bongo)

In Karaga, a mother of seven children also described how her participation in a savings group allowed her to maximize her LEAP funds to be able to improve her agricultural productivity,

'I was able to buy groundnut seeds from it to sow. Land preparations was done by the group so I bought my seeds from that money and hired labor to help.' (3+ children, Karaga)

Both of the above examples indicate women's increased ability to be forward thinking, such as planning expenses or making investments that with money they can return later.

In Karaga, two other women had joined a *susu* but had yet to make a contribution, reflecting that women may have the intention and take some initiative towards saving but not yet have the financial stability to do so. Other groups that women described participating in included women's groups that provided them support post-partum, a church choir, and what appeared to be a shea oil collective of sorts that entailed a "white person" coming periodically to purchase the oil. All of these groups require some monetary contribution, which most women described as impossible prior to their participation in the LEAP 1000 programme. These groups all represent "weak" ties beyond the kin networks that have the potential to provide access to new and diverse resources and social influence[51].

A mother of 3 children, who experienced a major shock with the death of her husband between midline and endline described the key support she received from her self-help group, which was not a *susu* but did require a small monetary contribution.

'I was in a self-help group where we contribute money to support each other in case a member gets a problem. I was the organizer for that group and later promoted to be the president of the group. Later I left the group because I couldn't contribute but when the LEAP 1000 support started I joined the group again and I was made the group leader again. When my husband died they came to support me with food including rice, cooking oil, tomatoes, bread and cash, and all came from the contributions we do.' (3+ children, Karaga)

This participant was a leader but lacked sufficient funds to continue her participation in the group prior to participating in LEAP. Once she received the transfer, she was able to reconnect with the group, which ended up being a key source of resilience following the death of her husband.

Beyond the actual cash, one of the main facilitators of increased participation in community groups and overall connection to community was that beneficiaries experienced less shame related to poverty. The stigma and shame of poverty can be a major barrier to social participation that limits access to support and

[51] Granovetter, M. S. (1973). The strength of weak ties. American journal of sociology, 78(6), 1360-1380.

weak ties[52]. A first-time mother in Bongo who was part of a *susu* described how being in LEAP reduced her shame,

> *'Yes, I will say I have taken myself from that because when you wear a dress and the armpit is torn or you wear a sandal and the handle is torn it is shameful. So when that one came I said that I don't have to neglect myself and look wretched and someone will see me and say what am I collecting money for and my dress is torn and I sew or my sandal is torn and I change footwear. I have realized that those things are shameful but since LEAP came there is no more shame.' (1st child, Bongo)*

In addition to less shame about appearances and being able to make contributions to community groups, a mother in Karaga described that she experienced less embarrassment because she could lend money to people when they asked her.

> *'My self- esteem has been high because I no longer borrow money from people and I am also able to support others when they are in need. For instance, my younger siblings. So no more embarrassment when someone asks for support and I am unable to help.' (3+ children, Karaga)*

A mother of 4 children in Karaga who had lost her husband between baseline and midline and was living in a poorly maintained compound with limited family support at endline described how being in LEAP allowed her to be more active in the community by being able to make contributions to collective causes. She described that without money she would not be able to attend birth or wedding ceremonies. The money allowed her to "spend confidently" at the ceremony and interact with her community members. Increased self-esteem and confidence, and reduced embarrassment, are all potential facilitators of increased social participation, which can be critical to helping women to multiply the transfer and diversify the resources they have access to.

There was very little concern or experience with tension within communities related to LEAP participation. By endline, most participants felt that the community supported their participation in the program, or at least they were not observing negative reactions from their community. To explain the lack of tension, one male participant from Karaga spoke about how the benefits of the program extended beyond the household to the community,

> ***'INTERVIEWER:*** *What about your relationship with other people regarding the LEAP support that your household receives?*
> ***PARTICIPANT:*** *It is good because my neighbors, one way or the other, benefit from the support. When my wife uses the money to cook food and we are all seated under the shed she will just bring the food out and we will all eat.*
> ***INTERVIEWER:*** *Isn't there jealousy?*
> ***PARTICIPANT:*** *No.'(husband, 3+ children, Karaga)*

Another male participant from Karaga commented on the collective benefit saying,

[52] Rock, A., Barrington, C., Abdoulayi, S., Tsoka, M., Mvula, P. and Handa, S. (2016). Social networks, social participation, and health among youth living in extreme poverty in rural Malawi. *Social Science & Medicine*, 170, 55-62.

'If this one collects, and this one collects and this one collects small, I think all those who collect life on earth will be enjoyable for them. And when you use it to buy somebody's goods that person will also make get market/make sales so it is helpful for all of us on earth.' (husband, 3+ children, Bongo)

These perceptions reflect how beneficiaries perceived that the overall community benefitted from the programme, which helped to reduce tensions as well as facilitate more participation and community cohesion. While responses were predominantly positive, it should be noted that the implementation was not entirely tension-free. One first-time mother in Karaga indicated at midline that people in her community questioned whether she "deserved" the transfer; Another exception was a mother of 3+ in Bongo who never felt that her community supported her. Nevertheless, in this case the tension existed before LEAP started and this participant was the one that the field team identified as potentially being ineligible for the program.

4.12.4 Self-reported health and physical functioning, main respondents

Another aspect of women's well-being is health and physical functioning. We asked respondents to rate their health as poor, fair, good, very good, or excellent. This measure of self-reported health has been found to be a good predictor of future morbidity and mortality.[53] Next, to assess physical impairment we used items assessing activities of daily living (ADLs). These questions included whether the respondent can engage in vigorous activities; engage in moderate activities; carry a 10- kilogram bag of shopping for 500 metres; bend, squat, or kneel; and walk 2 kilometres. Response options included easily, with difficulty, and not at all. We then created a composite measure which indicated whether the respondent reported any difficulties in carrying out any of these activities. At endline, 14 and 13.7 per cent of treatment and comparison women, respectively, rated themselves in fair or poor health. Further, 40.8 per cent of treatment women and 38.1 per cent of comparison women reported difficulties with ADLs. We found no programme impacts on self-rated health or physical impairment (Table 4.12.6).

Table 4.12.6: Impacts on Women's self-reported health, main respondent

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Fair/poor self-rated health	-0.010	0.243	0.230	0.140	0.137
	(0.02)				
Believes health is better than a year ago	-0.043	0.464	0.438	0.510	0.527
	(0.03)				
Has difficulty with ADL	0.024	0.511	0.508	0.408	0.381
	(0.03)				
N	4,540	1,151	1,119	1,151	1,119

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.12.5 Child nutrition-related knowledge, main respondents

[53] DeSalvo, K.B., Bloser, N., Reynolds, K., He, J., & Muntner, P. (2006). Mortality prediction with a single general self-rated health question. *Journal of General Internal Medicine*, 21(3), 267–275.

Knowledge of infant and child feeding practices is another key caregiver-level characteristic that can influence children's nutrition. We asked respondents a series of open-ended questions to assess their knowledge on these topics, including the first food a newborn should receive; how long after birth a baby should be put to the breast; recommended length of breastfeeding; types of iron-rich foods; types of food which contain Vitamin A; and what to do when a child has diarrhoea. We found that LEAP 1000 positively increased respondents' knowledge of vitamin-A rich foods by 5.1 percentage points and diarrhoea treatments by 5.7 percentage points (Table 4.12.7).

Table 4.12.7: Impacts on Women's nutrition and feeding knowledge, main respondent

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Knows first food for newborn	-0.003	0.978	0.976	0.985	0.986
	(0.01)				
Knows to breastfeed immediately	0.027	0.662	0.674	0.786	0.771
	(0.03)				
Knows to breastfeed for 24 months or more	-0.015	0.799	0.765	0.308	0.289
	(0.03)				
Knows iron-rich foods	0.011	0.788	0.785	0.961	0.947
	(0.02)				
Knows vitamin A-rich foods	0.051*	0.590	0.618	0.791	0.768
	(0.03)				
Knows diarrhea treatments	0.057*	0.542	0.540	0.698	0.639
	(0.03)				
N	4,540	1,151	1,119	1,151	1,119

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.13 Women's experience of Intimate Partner Violence (IPV) and related help-seeking behaviours

In this section we examine female main respondents' experiences with IPV (also called domestic violence). In summary, we find little evidence of a reduction in overall experiences of IPV, but we do find that LEAP 1000 had a protective effect on the severity of violence, particularly emotional and physical violence, that women experienced from their partners.

Global estimates indicate that one in three women will experience IPV in her lifetime. Similarly, in Ghana, the most recent available evidence indicates that 39 percent of ever-partnered women have ever experienced physical, sexual or emotional IPV from their current or most recent partner, and 28 to 35% have experienced IPV in the past 12 months.[54,55] IPV has adverse social, health and economic impacts on

[54] Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF Macro. (2009). Ghana Demographic and Health Survey 2008. Calverton, Maryland, USA: GSS, GHS, and ICF Macro.

[55] Institute of Development Studies (IDS), Ghana Statistical Services (GSS) & Associates. (2016). Domestic Violence in Ghana: Incidence, Attitudes, Determinants and Consequences. Brighton: IDS.

women, households, and communities, and it has detrimental impacts on children's health, nutrition and development. Children's exposure to IPV may impair growth and nutrition prenatally through the toddler years via dysregulation of the stress-responsive systems.[56] This means that violence-induced stress (even just being in a household where violence occurs; the child does not have to be a direct victim of violence) affects the body's stress response system, and this in turn can have long-term impacts on children's health and growth. Research shows that children whose mothers experience IPV have an increased risk of developmental delays, asthma, elevated total cortisol (a hormone related to stress) output, severe acute malnutrition, under-two mortality, decreased growth and stunting, respiratory infection, diarrhoea, and internalizing and externalizing behaviours. These negative health and behavioural outcomes may be realized through adverse birth outcomes (low birthweight, foetal injury, placental abruption, or preterm birth) due to exposure during pregnancy, via physiological changes in response to violence, or other pathways such as compromised care. For example, mothers who suffer violence may have impaired health (including injury, malnutrition, and cognitive impairment) and increased risk of depression and substance abuse, all of which negatively affect children's care, feeding practices, and ultimately children's health and well-being. Finally, violence is a cycle that is learned early in life, and children who witness IPV between their parents are at increased risk in adulthood of perpetration of and victimization from IPV.

Because of this body of evidence linking IPV and child health and well-being, we examined programme impacts on IPV. Data were collected in accordance with guidelines produced by the WHO, including sensitization of survey enumerators, adherence to confidentiality, conducting interviews in a private setting, and providing referral information. Only main respondents (LEAP-eligible women and comparison women) were asked questions relating to IPV.

4.13.1 Women's experience of intimate partner violence (IPV), main respondents

IPV was measured using validated survey items from the WHO Multi-Country Study on Women's Health and Domestic Violence. Women were asked about their experience in the past 12 months of controlling behaviours by their partners and emotional, physical and sexual intimate partner violence. Controlling behaviours included prohibiting the woman from seeing her friends, restricting contact with family of birth, insistence on knowing where she is at all times, ignoring her and treating her indifferently, getting angry if she speaks with another man, often suspicious that she is unfaithful, and expecting her to gain his permission before obtaining health care for herself. Emotional violence was assessed through the following questions: whether her current or most recent partner insulted her or made her feel bad about herself; belittled or humiliated her in front of other people; did things to scare or intimidate her on purpose; or threatened to hurt her or someone she cares about. Physical violence was assessed through questions asking whether her current or most recent partner ever did the following: push, shake, or throw something at her; slap her; twist her arm or pull her hair; punch her with his fist or with something that could hurt her; kick her, drag her or beat her up; try to choke her or burn her on purpose; threaten or attack her with a knife, gun, or any other weapon. Finally, sexual violence was assessed by asking whether her current or most recent partner ever: physically forced her to have sexual intercourse with him when she did want to; or forced her to perform other sexual acts that she did not want to. Because our

[56] Yount K.M., DiGirolamo A.M., Ramakrishnan U. (2011). Impacts of domestic violence on child growth and nutrition: A conceptual review of the pathways of influence. *Social Science & Medicine*, 72(9):1534-54.

interest lies in establishing whether the program had an impact on IPV, we restrict the analysis only to those women married or cohabiting at baseline. We then constructed composite indicators for whether women experienced any of the following: emotional, physical, sexual IPV and any of the emotional, physical, sexual IPV. Next, we assessed the severity of violence experienced by summing the responses of the frequencies for each indicator ("not at all" was coded as zero, "sometimes" as one and "often" as two). We focused the analysis on the indicators which referred to the experience of violence in the previous 12 months since the aim is to assess whether the programme has had an impact on these behaviours.

In Table 4.13.1 we see high reported rates of IPV (as compared to national rates) which are steady over time and limited protective impacts of LEAP 1000 on women's experiences of physical IPV (significant at the 10 per cent level) but no impact on emotional or sexual violence. At endline, 56.9 and 56.6 per cent of treatment and comparison women reported 12-month experience of emotional violence; 28 and 28.6 reported 12-month physical IPV; and 21 and 21.3 reported sexual IPV, among treatment and comparison women, respectively. However, the programme did reduce the frequency of the violent episodes occurring, particularly for emotional and physical violence.

It is reassuring that we find some protective impacts of the programme on IPV and no adverse effects on this outcome. It is sometimes posited that transfers given to women could increase conflict and violence in the household, as men seek to extract resources from women or feel threatened and subsequently try to reassert their authority in the relationship[57]. There is no evidence of this happening to LEAP 1000 recipients.

Further, because partner's intake of alcohol is a risk factor for IPV, we asked women whether their partner ever drinks, and whether he is sometimes or often drunk, and we found no impacts on these outcomes.

Table 4.13.1: Impacts on Women's intimate partner violence, main respondent

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Experienced controlling behaviours (12 months)	-0.024	0.821	0.814	0.823	0.838
	(0.02)				
Frequency of controlling behaviours (12 months)	-0.112	2.433	2.467	2.181	2.315
	(0.11)				
Experienced emotional IPV-12 months	-0.029	0.619	0.586	0.569	0.566
	(0.02)				
Frequency emotional IPV (12 months)	-0.157**	1.265	1.088	1.042	1.027
	(0.08)				
Experienced physical IPV-12 months	-0.047*	0.378	0.338	0.280	0.286
	(0.03)				
Frequency physical IPV-12 months	-0.183*	1.254	1.094	0.862	0.881

[57] Buller, A., Peterman, A., Ranganathan, M., Bleile, A., Hidrobo, M., & Heise, L. (2017). A mixed methods review of cash transfers and intimate partner violence in low and middle-income countries. *UNICEF Office of Research - Innocenti Working Paper, Forthcoming*.

	(0.09)				
Experienced sexual IPV-12 months	-0.010	0.193	0.185	0.210	0.213
	(0.02)				
Frequency sexual IPV (12 months)	-0.045	0.223	0.188	0.206	0.218
	(0.03)				
Experienced emotional/physical/sexual IPV-12 months	-0.031	0.674	0.642	0.624	0.624
	(0.03)				
Frequency emotional/physical/sexual IPV-12 months	-0.385**	2.742	2.370	2.110	2.126
	(0.17)				
Current/last partner ever drinks	-0.024	0.203	0.173	0.213	0.207
	(0.02)				
Partner often drunk	-0.015	0.041	0.026	0.042	0.041
	(0.01)				
Partner sometimes/often drunk	-0.032	0.168	0.136	0.197	0.197
	(0.02)				
N	4,184	1,070	1,031	1,067	1,016

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

4.13.2 Help-seeking among victims of IPV

Finally, among women who reported experiencing a form of IPV, we further asked if they had ever told anyone or sought help related to the violence. Options for reporting included friends, family, husband/partner's family, neighbours (combined to create an "informal reporting" category). Formal reporting sources included police, doctor/health worker, priest/religious leader, counsellor, NGO/women's organization, or local leader. We found that 52 and 44 per cent of treatment and comparison women experiencing IPV sought help or told someone, but only 4.1 and 3.4 per cent, respectively sought help from a formal source, and there were no programme impacts on any of the help seeking outcomes (Table 4.13.2).

Table 4.13.2: Impacts on help seeking and reporting, main respondents who experienced intimate partner violence (IPV)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Sought help/told someone about IPV	0.024	0.255	0.211	0.520	0.444
	(0.05)				
Told/sought help for IPV from friend	0.014	0.046	0.050	0.061	0.051
	(0.02)				
Told/sought help for IPV from family	0.022	0.155	0.129	0.322	0.270
	(0.04)				
Told/sought help for IPV from partner's family	0.006	0.127	0.102	0.288	0.252
	(0.03)				
Told/sought help for IPV from neighbour	0.003	0.002	0.000	0.012	0.008
	(0.01)				
Told/sought help for IPV from formal source	0.004	0.007	0.005	0.041	0.034

	(0.01)				
Told/sought help for IPV from informal source	0.029	0.253	0.210	0.520	0.439
	(0.05)				
N	2,061	637	601	417	406

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; Notes: 1 Formal source includes included police, doctor/health worker, priest/religious leader, counsellor, NGO/women's organization, or local leader

5. Conclusion

This impact evaluation has demonstrated that after 13 payments over two years, LEAP 1000 improved well-being of households across multiple dimensions and was well-implemented in terms of payment regularity, satisfaction with the e-payment modality, minimal reports of leakage, and transparency of programme criteria.

Looking across dimensions, we found that LEAP 1000 increased consumption, had protective impacts against poverty despite increasing poverty trends in the study sample over time, positively impacted some dimensions of economic productivity and savings, increased enrolment in NHIS and use of health services, increased social support, and reduced frequency of intimate partner violence against women. Furthermore, we found no increases in fertility or spending on alcohol and tobacco as a result of the programme. Nevertheless, we found no improvements in relation to one of LEAP 1000's primary objectives, namely reducing child stunting and improving nutrition. Given that child nutrition and stunting are determined by a complex set of inputs, this result, combined with the lack of programme impacts on child feeding practices, drinking water and sanitation (some of the complex determinants of nutrition), suggest that cash and health insurance alone are not enough to reduce child stunting, and that *complementary interventions may be needed.*

In interpreting the findings reported here, it is important to keep in mind the limitations of the estimation strategy used, namely regression discontinuity. Because randomized programme assignment was not feasible, we used a quasi-experimental evaluation method, comparing households just below and just above the PMT cut-off. While the estimation strategy is rigorous and can identify causal impacts near the PMT cut-off, the estimates reported here likely underestimate programme impacts across all LEAP 1000 households. To this end, treatment households further from the cut-off (that is, poorer households), may have demonstrated even larger programme impacts, had we been able to credibly identify programme impacts among this group.

Transfer amount is a key determinant of programme impacts, and there are two important factors related to transfer amount with implications for programme impacts: 1) inflation and 2) transfer amount as a percentage of baseline household expenditures. The modest impacts across domains and on poverty reduction, as well as lack of impacts on child nutrition and subjective reports about food security may be reflective of overall trends of increasing poverty over the time period studied and/or an approximately 20% loss in real value of the transfer amount in only two years, which limits the range of impacts we may expect to see. To mitigate impacts of inflation, the Ministry may want to consider appointing an independent review board to periodically review the value of the transfer against inflection and provide recommendations for period transfer amount increases. Additionally, the transfer amount represented approximately 12.5 per cent of households' consumption at baseline, which is relatively low compared to other cash transfer programmes in sub-Saharan Africa.

Findings related to NHIS enrolment underscore successes resulting from collaboration between the National Health Insurance Agency (NHIA) and the DSW to enrol beneficiaries of LEAP into the NHIS. This is an important step towards integrated social protection programmes. Nevertheless, gaps remain, particularly around enrolment among adults as compared to children, and around understanding of both the need to renew NHIS enrolment annually and LEAP households' eligibility for no-cost re-enrolment.

National enrolment campaigns in 2016 likely contributed to some of the reported successes, and NHIA together with DSW may want to consider repeating such campaigns periodically, in an effort to increase awareness.

This evaluation has demonstrated some key successes of the LEAP 1000 programme, including operational performance and the programme's effects in mitigating against an increasing poverty trend in the sample and increasing NHIS enrolment and health seeking. Findings also highlight areas where LEAP 1000 has had limited impacts, suggesting the need for complementary or more integrated programming and the need to maintain the real value of the transfers.

Appendix A: Attrition

A.1 Overall Attrition

Table A.1.1: Household demographic characteristics (Attriters versus Panel Households)

Variables	Attriters Mean	N1	Panel Mean	N2	Mean Diff	Diff SE	p-value
Household size	5.861	166	6.658	2,331	0.788	0.171	0.000
# of children aged 0 - 11 months	0.693	166	0.582	2,331	-0.111	0.042	0.009
# of children aged 12 - 23 months	0.265	166	0.353	2,331	0.087	0.041	0.036
# of children aged 24 - 35 months	0.199	166	0.165	2,331	-0.034	0.036	0.349
# of children aged 36 - 47 months	0.295	166	0.309	2,331	0.013	0.033	0.685
# of children aged 48 - 59 months	0.229	166	0.270	2,331	0.041	0.039	0.290
# of children aged 60 - 71 months	0.157	166	0.270	2,331	0.113	0.030	0.000
# of children 6 - 12	1.012	166	1.432	2,331	0.415	0.091	0.000
# of children 13 - 17	0.337	166	0.462	2,331	0.123	0.051	0.017
# of adults 18 - 24	0.645	166	0.513	2,331	-0.130	0.058	0.026
# of adults 25 - 34	0.843	166	0.944	2,331	0.101	0.063	0.109
# of adults 35 - 44	0.422	166	0.653	2,331	0.230	0.054	0.000
# of adults 45 - 54	0.247	166	0.288	2,331	0.041	0.042	0.326
# of adults 55 - 64	0.181	166	0.175	2,331	-0.007	0.033	0.842
# of adults 65 and more	0.337	166	0.243	2,331	-0.094	0.044	0.033
# of orphans	0.145	166	0.129	2,331	-0.016	0.040	0.687

Notes: Standard errors obtained by clustering at community level

Table A.1.2: Household demographic characteristics (Attriters versus Panel Households) - with controls

Variables	Attriters Mean	N1	Panel Mean	N2	Mean Diff	Diff SE	p-value
Head is married	0.904	166	0.958	2,331	0.055	0.024	0.023
Head is female	0.211	166	0.085	2,331	-0.127	0.031	0.000
Age of head	39.488	166	39.316	2,331	-0.204	1.224	0.868
# of children under 5 years	1.681	166	1.679	2,331	-0.004	0.052	0.946
# of children under 6 years	1.837	166	1.949	2,331	0.109	0.056	0.053
Educational level of head	3.452	166	4.136	2,331	0.694	0.599	0.249
Head no formal schooling	0.819	166	0.800	2,331	-0.020	0.029	0.499
# of PWD	0.066	166	0.085	2,331	0.019	0.020	0.331

Notes: Standard errors obtained by clustering at community level

Table A.1.3: Household characteristics (Attriters versus Panel Households) - with controls

Variables	Attriters Mean	N1	Panel Mean	N2	Mean Diff	Diff SE	p-value
Improved source of water	0.753	166	0.594	2,331	-0.159	0.042	0.000
Appropriate water treatment method	0.018	166	0.013	2,331	-0.005	0.011	0.645
Improved source of sanitation	0.127	166	0.098	2,331	-0.029	0.025	0.245
Appropriate hand washing facilities	0.073	165	0.070	2,327	-0.003	0.022	0.901
# of rooms	2.729	166	3.128	2,331	0.398	0.122	0.001
Has 1+ outstanding loan, last 12 months	0.367	166	0.363	2,331	-0.005	0.037	0.885
# of household members per room	2.589	166	2.541	2,331	-0.051	0.093	0.583
Source of lighting - Electricity	0.169	166	0.287	2,331	0.119	0.039	0.003
Outer wall material - Mud/earth	0.964	166	0.959	2,331	-0.005	0.015	0.730
Roof material - metal sheet	0.620	166	0.650	2,331	0.030	0.043	0.486
Floor material - Cement/concrete	0.759	166	0.741	2,331	-0.018	0.032	0.581

Type of cooking fuel - Wood/firewood	0.837	166	0.892	2,331	0.055	0.031	0.078
Source of drinking water - tube well, borehole	0.693	166	0.536	2,331	-0.158	0.045	0.001
Source of drinking water - unprotected well or spring	0.114	166	0.199	2,331	0.084	0.032	0.009
Does something to to make water asfer to drink?	0.072	166	0.047	2,331	-0.025	0.022	0.253
Type of toilet - No facility, bush, field	0.849	166	0.879	2,331	0.030	0.028	0.285
Type of stove - Cook open fire	0.988	166	0.984	2,331	-0.004	0.008	0.630
Place of cooking - Outdoors	0.084	166	0.115	2,331	0.031	0.022	0.168

Notes: Standard errors obtained by clustering at community level

Table A.1.4: Household food security indicators (Attriters versus Panel Households) - with controls

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Food share as % of total budget consumption	79.956	166	77.817	2,331	-2.142	1.037	0.041
Number of meals per day	2.518	166	2.636	2,331	0.118	0.056	0.037
Worried about food security	0.855	166	0.881	2,331	0.026	0.028	0.352
Household with 1+ members who went without food for a day, last 4 weeks	0.452	166	0.420	2,331	-0.032	0.047	0.498
Had a child U5 not given enough food	0.699	166	0.731	2,331	0.033	0.040	0.418

Notes: Standard errors obtained by clustering at community level

Table A.1.5: Poverty-related indicators (Attriters versus Panel Households) - with controls

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Poverty status	90.964	166	86.958	2,331	-4.053	2.104	0.056
Extreme poverty status	65.060	166	61.862	2,331	-3.267	4.574	0.476
Poverty gap	73.895	166	70.823	2,331	-3.142	3.670	0.393
Extreme poverty gap	23.998	166	22.810	2,331	-1.227	2.117	0.563
AE hhld expenditure p month constant Greater Accra Sep-15 prices	91.338	166	95.315	2,331	4.078	5.241	0.438
AE food expenditure p month constant Greater Accra Sep-15 prices	72.087	166	73.146	2,331	1.128	4.435	0.799
AE non-food expenditure p month constant Greater Accra Sep-15 prices	19.251	166	22.168	2,331	2.950	1.593	0.066
# of children (5-17 years) with no shoes	1.090	166	1.650	2,331	0.553	0.112	0.000
# of children (5-17 years) with no two sets of clothes	0.548	166	0.777	2,331	0.226	0.126	0.076
# of children (5-17 years) with no pair of shoes and no two sets of clothes	0.482	166	0.715	2,331	0.230	0.115	0.048

Notes: Standard errors obtained by clustering at community level

Table A.1.6: Economic activity indicators (Attriters versus Panel Households) - with controls

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Head works in formal sector	0.096	166	0.092	2,331	-0.005	0.024	0.842

Household operates non-farm enterprise	0.169	166	0.216	2,331	0.047	0.028	0.088
# of large animals	2.663	166	2.842	2,331	0.180	0.606	0.767
# of poultry	2.946	166	4.154	2,331	1.206	0.595	0.044
Chicken ownership	0.361	166	0.426	2,331	0.064	0.037	0.084
Goats ownership	0.247	166	0.309	2,331	0.062	0.036	0.086
Has 1+ outstanding loan, last 12 months	0.367	166	0.363	2,331	-0.005	0.037	0.885
Purchased food or other gods on credit, last 12 months	0.211	166	0.261	2,331	0.050	0.036	0.163

Notes: Standard errors obtained by clustering at community level

Table A.1.7: Women indicators (Attriters versus Panel Households) - with controls

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
# of women 12 - 49 years	1.428	166	1.601	2,331	0.172	0.062	0.006
# of pregnant women	0.120	166	0.162	2,331	0.042	0.029	0.150
# of pregnant and recently pregnant women who sought ANC	0.900	20	0.928	374	0.035	0.057	0.547
Total number of children born in household	3.861	166	4.831	2,331	0.964	0.235	0.000
Total number of children died in household	0.380	166	0.457	2,331	0.078	0.071	0.270

Notes: Standard errors obtained by clustering at community level

Table A.1.8: Nutritional knowledge characteristics (Attriters versus Panel Households)

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Knows first food for newborn	0.958	166	0.977	2,331	0.019	0.015	0.199
Knows to breastfeed immediately	0.693	166	0.668	2,331	-0.025	0.037	0.497
Knows to breastfeed for 24 months	0.813	166	0.779	2,331	-0.035	0.030	0.242
Knows iron-rich foods	0.753	166	0.786	2,331	0.033	0.032	0.295
Knows vitamin A-rich foods	0.566	166	0.604	2,331	0.037	0.039	0.344
Knows diarrhea treatments	0.458	166	0.546	2,331	0.088	0.049	0.072

Notes: Standard errors obtained by clustering at community level

Table A.1.9: Contraceptive use characteristics (Attriters versus Panel Households) - with controls

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Currently using modern contraceptive	0.181	149	0.124	2,014	-0.058	0.036	0.112
Currently using traditional contraceptive	0.013	149	0.028	2,014	0.015	0.011	0.179
Currently using any contraceptive	0.188	149	0.144	2,014	-0.044	0.038	0.246
Unmet need for family planning - no method	0.107	149	0.110	2,014	0.002	0.026	0.932
Unmet need for family planning - modern method	0.107	149	0.112	2,014	0.005	0.025	0.855
Ideal number of children	5.428	166	6.132	2,331	0.700	0.208	0.001
Partner wants fewer children than woman	0.011	95	0.029	1,434	0.018	0.012	0.133
Partner wants same # children than woman	0.737	95	0.609	1,434	-0.127	0.039	0.001
Partner wants more children than woman	0.253	95	0.362	1,434	0.109	0.041	0.008

Notes: Standard errors obtained by clustering at community level

Table A.1.10: Self-reported health (Attriters versus Panel Households) - with controls

Variables	Attriters Mean	N1	Panel Mean	N2	Mean Diff	Diff SE	p-value
Fair/poor self-rated health	0.229	166	0.237	2,331	0.008	0.034	0.812
Believes health is better than a year ago	0.416	166	0.456	2,331	0.040	0.038	0.289
Has difficulty with ADL	0.494	166	0.509	2,331	0.015	0.043	0.731

Notes: Standard errors obtained by clustering at community level

Table A.1.11: Empower indicators (Attriters versus Panel Households) - with controls

Variables	Attriters Mean	N1	Panel Mean	N2	Mean Diff	Diff SE	p-value
Believes life determined by own actions	0.542	166	0.573	2,331	0.031	0.044	0.481
Believes have power to make decisions - life course	0.614	166	0.582	2,331	-0.032	0.042	0.442
Believes have power to make decisions - children's wellbeing	0.500	166	0.486	2,331	-0.015	0.041	0.725
Believes have power to make decisions - household wellbeing	0.355	166	0.370	2,331	0.014	0.037	0.707
Believes capable protecting own interests within family	0.349	166	0.369	2,331	0.019	0.037	0.610
Believes capable protecting own interests outside family	0.355	166	0.377	2,331	0.021	0.042	0.623
Satisfied with life some/most/all of time	0.524	166	0.571	2,331	0.047	0.037	0.196
Believes life will be better in 1 year	0.735	166	0.805	2,331	0.070	0.033	0.034
Believes life will be better in 3 years	0.807	166	0.831	2,331	0.024	0.032	0.453
Believes life will be better in 5 years	0.825	166	0.826	2,331	0.000	0.033	0.992
Saving money	0.048	166	0.081	2,331	0.033	0.018	0.065
Amount of money saved last month	1.639	166	3.347	2,331	1.717	0.901	0.058
Amount of money saved last month - excluding zeros	34.000	8	41.500	188	7.724	14.143	0.586

Notes: Standard errors obtained by clustering at community level

Table A.1.12: Stress indicators (Attriters versus Panel Households) - with controls

Variables	Attriters Mean	N1	Panel Mean	N2	Mean Diff	Diff SE	p-value
MOS-Social Support score(standardized)	48.513	166	53.087	2,331	4.582	1.715	0.008
Cohen perceived stress scale	32.633	166	31.732	2,331	-0.903	0.461	0.052

Notes: Standard errors obtained by clustering at community level

Table A.1.13: IPV indicators (Attriters versus Panel Households) - with controls

Variables	Attriters Mean	N1	Panel Mean	N2	Mean Diff	Diff SE	p-value
Experienced controlling behaviors-12 months	0.827	156	0.815	2,216	-0.012	0.031	0.704
Experienced emotional IPV-	0.615	156	0.605	2,216	-0.010	0.042	0.805

lifetime							
Experienced emotional IPV-12mo	0.615	156	0.602	2,216	-0.014	0.042	0.749
Experienced physical IPV-lifetime	0.327	156	0.363	2,216	0.036	0.039	0.356
Experienced physical IPV-12mo	0.327	156	0.362	2,216	0.035	0.039	0.367
Experienced sexual IPV-lifetime	0.226	155	0.192	2,203	-0.034	0.031	0.269
Experienced sexual IPV-12mo	0.226	155	0.188	2,203	-0.037	0.031	0.223
Experienced emotional/physical/sexual IPV-lifetime	0.641	156	0.661	2,216	0.019	0.041	0.635
Experienced physical/sexual IPV-lifetime	0.378	156	0.422	2,216	0.044	0.039	0.256
Experienced emotional/physical/sexual IPV-12 months	0.641	156	0.658	2,216	0.017	0.041	0.683
Experienced physical/sexual IPV-12 months	0.378	156	0.420	2,216	0.041	0.039	0.287
Current/last partner ever drinks	0.173	156	0.190	2,216	0.017	0.032	0.605
Partner often drunk	0.019	156	0.034	2,216	0.015	0.011	0.178
Partner sometimes/often drunk	0.109	156	0.155	2,216	0.046	0.027	0.087

Notes: Standard errors obtained by clustering at community level

Table A.1.14: IPV help indicators (Attriters versus Panel Households) - with controls

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Sought help/told someone about IPV	0.321	84	0.232	1,267	-0.089	0.059	0.135
Told/sought help for IPV from friend	0.048	84	0.048	1,267	0.000	0.023	0.984
Told/sought help for IPV from family	0.143	84	0.141	1,267	-0.001	0.038	0.977
Told/sought help for IPV from partner's family	0.202	84	0.114	1,267	-0.088	0.050	0.080
Told/sought help for IPV from neighbor	0.012	84	0.001	1,267	-0.011	0.011	0.330
Told/sought help for IPV from formal source	0.012	84	0.006	1,267	-0.006	0.011	0.582
Told/sought help for IPV from informal source	0.321	84	0.230	1,267	-0.090	0.059	0.129

Notes: Standard errors obtained by clustering at community level

Table A.1.15: Eligible women characteristics (Attriters versus Panel Households) - with controls

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Age at first marriage - Females	19.419	160	19.473	2,274	0.053	0.242	0.828
Married before 18 - Females	0.244	160	0.208	2,274	-0.036	0.032	0.268
Educational level	4.855	166	3.630	2,331	-1.219	0.564	0.032
Education, some primary or less	0.108	166	0.074	2,331	-0.035	0.022	0.115
Age of spouse	33.947	114	37.571	2,041	3.584	0.982	0.000
Educational level of spouse	4.193	114	4.580	2,041	0.396	0.795	0.619

Notes: Standard errors obtained by clustering at community level

Table A.1.16: ANC, delivery care and weight at birth (Attriters versus Panel Households)

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
ANC from skilled provider	0.980	149	0.971	2,017	-0.009	0.014	0.505
ANC 4 times or more	0.852	149	0.829	2,017	-0.023	0.032	0.478
Delivery with assistance from	0.765	149	0.616	2,017	-0.149	0.046	0.001

skilled provider							
Delivery in health facility	0.745	149	0.610	2,017	-0.135	0.046	0.004
Size of baby at birth small or very small	0.275	149	0.261	2,017	-0.014	0.038	0.704
Low birth weight < 2500 gram	0.101	99	0.074	1,069	-0.027	0.033	0.408
Birth registered	0.389	149	0.412	2,017	0.024	0.046	0.607
Birth registered within one year of birth	0.948	58	0.898	832	-0.051	0.036	0.157

Notes: Standard errors obtained by clustering at community level

Table A.1.17: Child health and care for illness (Attriters versus Panel Households)

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
At least one PNC in last 12 months	0.638	149	0.665	2,017	0.027	0.042	0.515
Diarrhoea last 2 weeks	0.403	149	0.424	2,017	0.022	0.036	0.537
Received ORS during episode of diarrhoea	0.550	60	0.568	856	0.016	0.059	0.790
Received recommended home fluid during episode of diarrhoea	0.033	60	0.014	856	-0.020	0.021	0.357
Received ORT during episode of diarrhoea	0.617	60	0.617	856	-0.001	0.062	0.984
Received ORT with continued feeding during episode of diarrhoea	0.317	60	0.287	856	-0.030	0.060	0.616
No treatment for diarrhoea during last episode	0.117	60	0.111	856	-0.005	0.043	0.911
Symptoms of ARI last 2 weeks	0.040	149	0.055	2,017	0.014	0.017	0.388
Fever last 2 weeks	0.235	149	0.230	2,017	-0.005	0.037	0.895
Safe disposal of child stools	0.262	149	0.174	2,017	-0.089	0.038	0.021
Slept under bednet yesterday	0.664	149	0.706	2,017	0.042	0.043	0.334

Notes: Standard errors obtained by clustering at community level

Table A.1.18: Vaccination coverage children 12-23 months (Attriters versus Panel Households)

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
BCG: Vaccination against Tuberculosis	1.128	149	1.072	2,017	-0.055	0.030	0.066
OPV 0 drops	1.208	149	1.218	2,017	0.010	0.035	0.779
OPV 1 drops	1.174	149	1.142	2,017	-0.032	0.036	0.367
OPV 2 drops	1.242	149	1.195	2,017	-0.046	0.039	0.244
OPV 3 drops	1.289	149	1.271	2,017	-0.017	0.042	0.683
Penta 1 injection	1.248	149	1.173	2,017	-0.076	0.039	0.054
Penta 2 injection	1.295	149	1.242	2,017	-0.053	0.041	0.198
Penta 3 injection	1.342	149	1.309	2,017	-0.033	0.044	0.463
Measles shot	1.638	149	1.581	2,017	-0.056	0.042	0.179
Yellow Fever shot	1.651	149	1.592	2,017	-0.059	0.042	0.161
Received all vaccinations	0.800	35	0.707	683	-0.094	0.074	0.209

Notes: Standard errors obtained by clustering at community level

Table A.1.19: Nutritional status children 3-59 months (Attriters versus Panel Households)

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Length/height-for-age Z-score	-0.567	101	-0.716	1,520	-0.149	0.208	0.475
Weight-for-age Z-score	-0.715	100	-0.797	1,499	-0.083	0.142	0.559
Weight-for-length/height Z-score	-0.422	100	-0.511	1,499	-0.089	0.190	0.639
Stunted (HAZ < -2 SD)	0.253	99	0.224	1,499	-0.028	0.041	0.494

Severely Stunted (HAZ < -3 SD)	0.101	99	0.109	1,499	0.008	0.031	0.806
Wasted (WHZ < -2 SD)	0.180	100	0.175	1,499	-0.004	0.040	0.913
Severely Wasted (WHZ < -3 SD)	0.070	100	0.064	1,499	-0.006	0.024	0.807
Underweight (WAZ < -2 SD)	0.160	100	0.167	1,497	0.007	0.042	0.866
Severely Underweight (WAZ < -3 SD)	0.050	100	0.058	1,497	0.008	0.023	0.718

Notes: Standard errors obtained by clustering at community level

Table A.1.20: Infant and Young Child Feeding Practices (Attriters versus Panel Households)

	Attriters		Panel		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Exclusive breastfeeding under 6 months	0.095	63	0.100	680	0.004	0.043	0.918
Continued breastfeeding at 1 year	0.875	24	0.989	440	0.114	0.083	0.175
Introduction of solid, semi-solid or soft foods	0.654	26	0.593	324	-0.061	0.094	0.516
Minimum meal frequency for all children	0.395	86	0.388	1,337	-0.007	0.055	0.898
Minimum acceptable diet for all children	0.105	86	0.128	1,337	0.023	0.034	0.491
Consumption of iron-rich or iron-fortified foods	0.488	86	0.604	1,337	0.116	0.051	0.023
= 1 if positive feeding style	0.432	88	0.430	1,299	-0.001	0.055	0.978

Notes: Standard errors obtained by clustering at community level

A.2 Differential Attrition

Table A.2.1: Household demographic characteristics (Comparison versus Treatment Households)

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Household size	6.347	1,146	6.959	1,185	0.324	0.184	0.079
# of children aged 0 - 11 months	0.561	1,146	0.602	1,185	0.066	0.044	0.142
# of children aged 12 - 23 months	0.342	1,146	0.363	1,185	-0.065	0.041	0.113
# of children aged 24 - 35 months	0.168	1,146	0.162	1,185	-0.000	0.031	0.988
# of children aged 36 - 47 months	0.300	1,146	0.317	1,185	-0.010	0.036	0.784
# of children aged 48 - 59 months	0.263	1,146	0.278	1,185	0.007	0.035	0.845
# of children aged 60 - 71 months	0.248	1,146	0.291	1,185	0.030	0.036	0.409
# of children 6 - 12	1.246	1,146	1.612	1,185	0.239	0.097	0.014
# of children 13 - 17	0.411	1,146	0.511	1,185	0.025	0.063	0.691
# of adults 18 - 24	0.557	1,146	0.471	1,185	0.023	0.052	0.661
# of adults 25 - 34	0.962	1,146	0.926	1,185	-0.026	0.065	0.696
# of adults 35 - 44	0.606	1,146	0.700	1,185	0.023	0.059	0.704
# of adults 45 - 54	0.289	1,146	0.287	1,185	-0.006	0.035	0.875
# of adults 55 - 64	0.163	1,146	0.186	1,185	0.005	0.036	0.880
# of adults 65 and more	0.231	1,146	0.255	1,185	0.013	0.034	0.708
# of orphans	0.120	1,146	0.137	1,185	-0.000	0.040	0.993

Notes: Standard errors obtained by clustering at community level

Table A.2.2: Household demographic characteristics (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Head is married	0.961	1,146	0.956	1,185	-0.010	0.015	0.528
Head is female	0.075	1,146	0.094	1,185	0.047	0.023	0.043
Age of head	38.142	1,146	40.451	1,185	0.447	0.887	0.615
# of children under 5 years	1.634	1,146	1.722	1,185	-0.003	0.061	0.964
# of children under 6 years	1.882	1,146	2.013	1,185	0.027	0.071	0.702
Educational level of head	4.452	1,146	3.830	1,185	-0.268	0.693	0.700
Head no formal schooling	0.783	1,146	0.817	1,185	0.016	0.032	0.625
# of PWD	0.086	1,146	0.084	1,185	-0.004	0.025	0.886

Notes: Standard errors obtained by clustering at community level

Table A.2.3: Household head characteristics (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Improved source of water	0.579	1,146	0.608	1,185	-0.007	0.040	0.862
Appropriate water treatment method	0.015	1,146	0.011	1,185	-0.016	0.011	0.138
Improved source of sanitation	0.095	1,146	0.100	1,185	0.007	0.025	0.769
Appropriate hand washing facilities	0.071	1,145	0.069	1,182	-0.008	0.023	0.727
# of rooms	3.082	1,146	3.172	1,185	0.058	0.149	0.697
Has 1+ outstanding loan, last 12 months	0.351	1,146	0.374	1,185	0.044	0.042	0.302
# of household members per	2.465	1,146	2.613	1,185	0.042	0.097	0.663

room							
Source of lighting - Electricity	0.312	1,146	0.263	1,185	-0.006	0.030	0.850
Outer wall material - Mud/earth	0.957	1,146	0.960	1,185	0.004	0.018	0.822
Roof material - metal sheet	0.654	1,146	0.647	1,185	-0.019	0.032	0.555
Floor material - Cement/concrete	0.743	1,146	0.739	1,185	-0.020	0.041	0.621
Type of cooking fuel - Wood/firewood	0.886	1,146	0.899	1,185	0.001	0.022	0.947
Source of drinking water - tube well, borehole	0.513	1,146	0.558	1,185	-0.005	0.035	0.883
Source of drinking water - unprotected well or spring	0.215	1,146	0.183	1,185	-0.053	0.029	0.070
Does something to to make water asfer to drink?	0.048	1,146	0.046	1,185	-0.003	0.020	0.869
Type of toilet - No facility, bush, field	0.880	1,146	0.878	1,185	-0.003	0.027	0.923
Type of stove - Cook open fire	0.984	1,146	0.984	1,185	-0.011	0.011	0.341
Place of cooking - Outdoors	0.115	1,146	0.116	1,185	0.003	0.028	0.902

Notes: Standard errors obtained by clustering at community level

Table A.2.4: Household food security indicators (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Food share as % of total budget consumption	77.860	1,146	77.776	1,185	-1.604	1.171	0.173
Number of meals per day	2.647	1,146	2.624	1,185	-0.067	0.042	0.116
Worried about food security	0.877	1,146	0.885	1,185	0.024	0.028	0.397
Household with 1+ members who went without food for a day, last 4 weeks	0.407	1,146	0.434	1,185	0.010	0.044	0.811
Had a child U5 not given enough food	0.728	1,146	0.735	1,185	0.035	0.037	0.351

Notes: Standard errors obtained by clustering at community level

Table A.2.5: Poverty-related indicators (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Poverty status	85.515	1,146	88.354	1,185	-0.497	2.332	0.831
Extreme poverty status	59.860	1,146	63.797	1,185	-2.803	3.718	0.452
Poverty gap	68.692	1,146	72.883	1,185	-1.413	3.356	0.674
Extreme poverty gap	21.598	1,146	23.981	1,185	-0.344	1.892	0.856
AE hhld expenditure p month constant Greater Accra Sep-15 prices	97.806	1,146	92.905	1,185	5.259	4.786	0.273
AE food expenditure p month constant Greater Accra Sep-15 prices	75.047	1,146	71.307	1,185	1.302	3.865	0.737
AE non-food expenditure p month constant Greater Accra Sep-15 prices	22.759	1,146	21.597	1,185	3.957	1.921	0.041
# of children (5-17 years) with no shoes	1.394	1,146	1.896	1,185	0.390	0.134	0.004
# of children (5-17 years) with no two sets of clothes	0.643	1,146	0.907	1,185	0.146	0.109	0.182
# of children (5-17 years) with no pair of shoes and no two sets of clothes	0.589	1,146	0.836	1,185	0.149	0.108	0.168

Notes: Standard errors obtained by clustering at community level

Table A.2.6: Economic activity indicators (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Head works in formal sector	0.084	1,146	0.100	1,185	0.035	0.025	0.162
Household operates non-farm enterprise	0.223	1,146	0.208	1,185	0.004	0.035	0.908
# of large animals	2.887	1,146	2.798	1,185	-0.417	0.884	0.638
# of poultry	4.034	1,146	4.269	1,185	0.528	0.743	0.478
Chicken ownership	0.417	1,146	0.434	1,185	-0.029	0.038	0.438
Goats ownership	0.299	1,146	0.318	1,185	-0.016	0.036	0.655
Has 1+ outstanding loan, last 12 months	0.351	1,146	0.374	1,185	0.044	0.042	0.302
Purchased food or other gods on credit, last 12 months	0.262	1,146	0.261	1,185	-0.012	0.032	0.713

Notes: Standard errors obtained by clustering at community level

Table A.2.7: Women indicators (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
# of women 12 - 49 years	1.572	1,146	1.629	1,185	0.085	0.064	0.190
# of pregnant women	0.176	1,146	0.148	1,185	0.009	0.033	0.789
# of pregnant and recently pregnant women who sought ANC	0.955	201	0.896	173	-0.018	0.061	0.770
Total number of children born in household	4.590	1,146	5.065	1,185	0.249	0.258	0.337
Total number of children died in household	0.476	1,146	0.439	1,185	0.013	0.073	0.855

Notes: Standard errors obtained by clustering at community level

Table A.2.8: Nutritional knowledge characteristics (Comparison versus Treatment Households)

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Knows first food for newborn	0.976	1,146	0.978	1,185	-0.009	0.012	0.480
Knows to breastfeed immediately	0.675	1,146	0.662	1,185	-0.079	0.036	0.032
Knows to breastfeed for 24 months	0.759	1,146	0.797	1,185	0.070	0.032	0.031
Knows iron-rich foods	0.782	1,146	0.791	1,185	-0.003	0.032	0.919
Knows vitamin A-rich foods	0.617	1,146	0.591	1,185	-0.061	0.039	0.121
Knows diarrhea treatments	0.546	1,146	0.546	1,185	-0.047	0.053	0.374

Notes: Standard errors obtained by clustering at community level

Table A.2.9: Contraceptive use characteristics (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Currently using modern contraceptive	0.129	975	0.118	1,039	-0.032	0.025	0.211
Currently using traditional contraceptive	0.021	975	0.036	1,039	0.001	0.015	0.968
Currently using any contraceptive	0.146	975	0.142	1,039	-0.034	0.028	0.230
Unmet need for family planning -	0.087	975	0.131	1,039	0.049	0.023	0.033

no method							
Unmet need for family planning - modern method	0.090	975	0.133	1,039	0.046	0.024	0.054
Ideal number of children	6.046	1,146	6.215	1,185	-0.430	0.218	0.051
Partner wants fewer children than woman	0.022	731	0.036	703	0.045	0.014	0.001
Partner wants same # children than woman	0.606	731	0.613	703	0.044	0.047	0.346
Partner wants more children than woman	0.372	731	0.351	703	-0.089	0.045	0.048

Notes: Standard errors obtained by clustering at community level

Table A.2.10: Self-Reported Health characteristics (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Fair/poor self-rated health	0.229	1,146	0.245	1,185	0.016	0.038	0.681
Believes health is better than a year ago	0.448	1,146	0.464	1,185	-0.016	0.036	0.665
Has difficulty with ADL	0.504	1,146	0.513	1,185	-0.006	0.036	0.873

Notes: Standard errors obtained by clustering at community level

Table A.2.11: Empower indicators (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
Believes life determined by own actions	0.590	1,146	0.556	1,185	0.027	0.038	0.471
Believes have power to make decisions - life course	0.581	1,146	0.583	1,185	0.010	0.042	0.805
Believes have power to make decisions - children's wellbeing	0.476	1,146	0.495	1,185	0.013	0.041	0.752
Believes have power to make decisions - household wellbeing	0.351	1,146	0.388	1,185	0.034	0.039	0.387
Believes capable protecting own interests within family	0.361	1,146	0.376	1,185	0.015	0.043	0.731
Believes capable protecting own interests outside family	0.377	1,146	0.376	1,185	-0.079	0.048	0.100
Satisfied with life some/most/all of time	0.572	1,146	0.570	1,185	0.017	0.048	0.720
Believes life will be better in 1 year	0.811	1,146	0.800	1,185	-0.020	0.025	0.433
Believes life will be better in 3 years	0.838	1,146	0.825	1,185	-0.006	0.029	0.840
Believes life will be better in 5 years	0.826	1,146	0.825	1,185	-0.021	0.027	0.448
Saving money	0.091	1,146	0.071	1,185	-0.041	0.024	0.085
Amount of money saved last month	3.849	1,146	2.862	1,185	-1.846	1.200	0.126
Amount of money saved last month - excluding zeros	42.413	104	40.369	84	-1.979	15.082	0.896

Notes: Standard errors obtained by clustering at community level

Table A.2.12: Stress indicators (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
MOS-Social Support score(standardized)	53.829	1,146	52.371	1,185	-4.006	1.819	0.029

Cohen perceived stress scale	31.661	1,146	31.800	1,185	-0.267	0.400	0.505

Notes: Standard errors obtained by clustering at community level

Table A.2.13: IPV indicators (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	Comparison N1	Treatment Mean	Treatment N2	Mean Diff	Diff SE	p-value
Experienced controlling behaviors-12 months	0.814	1,092	0.816	1,124	0.025	0.035	0.470
Experienced emotional IPV-lifetime	0.591	1,092	0.619	1,124	0.022	0.043	0.609
Experienced emotional IPV-12mo	0.588	1,092	0.616	1,124	0.029	0.042	0.488
Experienced physical IPV-lifetime	0.347	1,092	0.379	1,124	0.008	0.037	0.836
Experienced physical IPV-12mo	0.347	1,092	0.377	1,124	0.001	0.037	0.982
Experienced sexual IPV-lifetime	0.191	1,089	0.193	1,114	-0.012	0.030	0.700
Experienced sexual IPV-12mo	0.185	1,089	0.191	1,114	-0.015	0.031	0.624
Experienced emotional/physical/sexual IPV-lifetime	0.648	1,092	0.673	1,124	0.035	0.042	0.404
Experienced physical/sexual IPV-lifetime	0.408	1,092	0.436	1,124	0.019	0.040	0.632
Experienced emotional/physical/sexual IPV-12 months	0.645	1,092	0.671	1,124	0.043	0.042	0.312
Experienced physical/sexual IPV-12 months	0.406	1,092	0.433	1,124	0.010	0.041	0.798
Current/last partner ever drinks	0.176	1,092	0.204	1,124	-0.033	0.033	0.313
Partner often drunk	0.026	1,092	0.043	1,124	0.020	0.013	0.124
Partner sometimes/often drunk	0.139	1,092	0.171	1,124	-0.012	0.030	0.703

Notes: Standard errors obtained by clustering at community level

Table A.2.14: IPV help indicators (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	Comparison N1	Treatment Mean	Treatment N2	Mean Diff	Diff SE	p-value
Sought help/told someone about IPV	0.210	619	0.253	648	0.049	0.049	0.317
Told/sought help for IPV from friend	0.050	619	0.046	648	-0.011	0.027	0.687
Told/sought help for IPV from family	0.126	619	0.156	648	0.027	0.041	0.508
Told/sought help for IPV from partner's family	0.103	619	0.123	648	0.009	0.036	0.798
Told/sought help for IPV from neighbor	0.000	619	0.002	648	-0.003	0.003	0.315
Told/sought help for IPV from formal source	0.005	619	0.006	648	0.001	0.009	0.875
Told/sought help for IPV from informal source	0.208	619	0.252	648	0.053	0.050	0.287

Notes: Standard errors obtained by clustering at community level

Table A.2.15: Eligible women characteristics (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	Comparison N1	Treatment Mean	Treatment N2	Mean Diff	Diff SE	p-value
Age at first marriage - Females	19.435	1,118	19.510	1,156	-0.032	0.274	0.908
Married before 18 - Females	0.215	1,118	0.201	1,156	-0.013	0.030	0.667
Educational level	3.727	1,146	3.536	1,185	0.507	0.578	0.381
Education, some primary or less	0.072	1,146	0.075	1,185	0.011	0.022	0.623

Age of spouse	36.344	1,009	38.770	1,032	0.650	0.893	0.467
Educational level of spouse	4.933	1,009	4.234	1,032	-0.740	0.794	0.353

Notes: Standard errors obtained by clustering at community level

Table A.2.16: ANC, delivery care and weight at birth (Comparison versus Treatment Households)

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
ANC from skilled provider	0.964	964	0.977	1,053	0.000	0.011	0.972
ANC 4 times or more	0.823	964	0.836	1,053	0.042	0.029	0.150
Delivery with assistance from skilled provider	0.613	964	0.619	1,053	-0.027	0.045	0.554
Delivery in health facility	0.605	964	0.614	1,053	-0.017	0.047	0.713
Size of baby at birth small or very small	0.269	964	0.254	1,053	-0.021	0.042	0.610
Low birth weight < 2500 gram	0.057	507	0.089	562	0.047	0.033	0.151
Birth registered	0.423	964	0.403	1,053	0.039	0.047	0.416
Birth registered within one year of birth	0.924	408	0.873	424	-0.075	0.048	0.120

Notes: Standard errors obtained by clustering at community level

Table A.2.17: Child health and care for illness (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
At least one PNC in last 12 months	0.683	964	0.649	1,053	-0.095	0.042	0.025
Diarrhoea last 2 weeks	0.448	964	0.403	1,053	-0.072	0.040	0.073
Received ORS during episode of diarrhoea	0.583	432	0.552	424	0.042	0.063	0.505
Received recommended home fluid during episode of diarrhoea	0.019	432	0.009	424	-0.016	0.015	0.279
Received ORT during episode of diarrhoea	0.634	432	0.599	424	-0.003	0.062	0.968
Received ORT with continued feeding during episode of diarrhoea	0.282	432	0.292	424	0.107	0.062	0.089
No treatment for diarrhoea during last episode	0.102	432	0.120	424	-0.002	0.045	0.957
Symptoms of ARI last 2 weeks	0.067	964	0.043	1,053	-0.031	0.018	0.085
Fever last 2 weeks	0.242	964	0.219	1,053	-0.084	0.036	0.021
Safe disposal of child stools	0.162	964	0.184	1,053	-0.043	0.036	0.238
Slept under bednet yesterday	0.720	964	0.693	1,053	0.001	0.037	0.971

Notes: Standard errors obtained by clustering at community level

Table A.2.18: Vaccination coverage children 12-23 months (Comparison versus Treatment Households) - with controls

Variables	Comparison Mean	N1	Treatment Mean	N2	Mean Diff	Diff SE	p-value
BCG: Vaccination against Tuberculosis	1.082	964	1.064	1,053	-0.009	0.027	0.725
OPV 0 drops	1.233	964	1.203	1,053	-0.027	0.036	0.462
OPV 1 drops	1.142	964	1.142	1,053	-0.003	0.027	0.905
OPV 2 drops	1.200	964	1.191	1,053	-0.026	0.038	0.492
OPV 3 drops	1.277	964	1.266	1,053	-0.019	0.043	0.663
Penta 1 injection	1.172	964	1.173	1,053	-0.021	0.034	0.551
Penta 2 injection	1.251	964	1.235	1,053	-0.015	0.038	0.702

Penta 3 injection	1.323	964	1.297	1,053	-0.023	0.041	0.567
Measles shot	1.592	964	1.571	1,053	0.004	0.043	0.926
Yellow Fever shot	1.605	964	1.580	1,053	0.001	0.044	0.981
Received all vaccinations	0.664	327	0.747	356	0.120	0.070	0.089

Notes: Standard errors obtained by clustering at community level

Table A.2.19: Nutritional status children 3-59 months (Comparison versus Treatment Households) - with controls

	Comparison		Treatment		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Length/height-for-age Z-score	-0.645	712	-0.778	808	-0.127	0.184	0.493
Weight-for-age Z-score	-0.731	701	-0.855	798	0.018	0.126	0.886
Weight-for-length/height Z-score	-0.464	701	-0.551	798	0.184	0.169	0.279
Stunted (HAZ < -2 SD)	0.217	700	0.230	799	0.068	0.040	0.093
Severely Stunted (HAZ < -3 SD)	0.110	700	0.108	799	-0.006	0.034	0.866
Wasted (WHZ < -2 SD)	0.160	701	0.189	798	-0.006	0.034	0.856
Severely Wasted (WHZ < -3 SD)	0.060	701	0.068	798	-0.018	0.026	0.492
Underweight (WAZ < -2 SD)	0.144	699	0.187	798	0.030	0.035	0.400
Severely Underweight (WAZ < -3 SD)	0.040	699	0.074	798	0.023	0.023	0.305

Notes: Standard errors obtained by clustering at community level

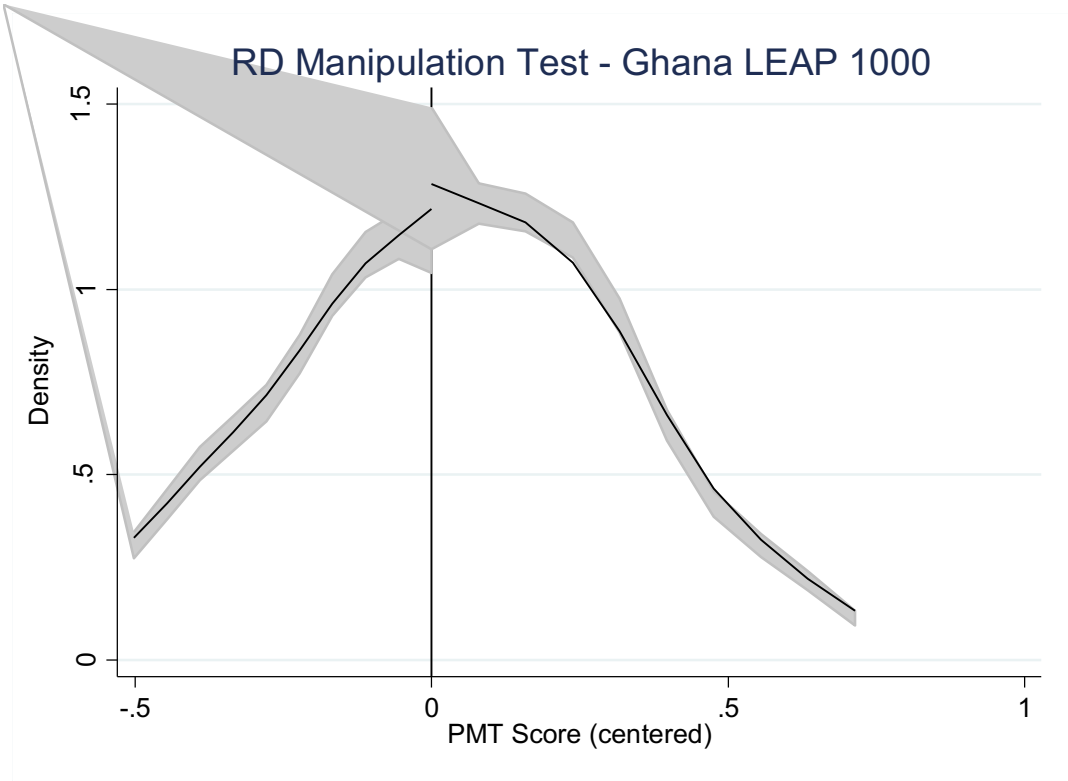
Table A.2.20: Infant and Young Child Feeding Practices (Comparison versus Treatment Households) - with controls

	Comparison		Treatment		Mean	Diff	
Variables	Mean	N1	Mean	N2	Diff	SE	p-value
Exclusive breastfeeding under 6 months	0.098	325	0.101	355	-0.046	0.053	0.383
Continued breastfeeding at 1 year	0.990	208	0.987	232	-0.007	0.017	0.684
Introduction of solid, semi-solid or soft foods	0.606	160	0.579	164	-0.116	0.114	0.309
Minimum meal frequency for all children	0.368	639	0.407	698	0.037	0.054	0.491
Minimum acceptable diet for all children	0.122	639	0.133	698	-0.011	0.037	0.762
Consumption of iron-rich or iron-fortified foods	0.596	639	0.612	698	0.077	0.052	0.143
= 1 if positive feeding style	0.438	621	0.423	678	-0.074	0.051	0.149

Notes: Standard errors obtained by clustering at community level

Appendix B: Manipulation test for the regression discontinuity design

For the assumptions behind the RDD to hold, it is important that eligible households were not able to manipulate their PMT score to ensure they qualified for the programme. The PMT score is based on responses to a short household questionnaire covering household demographics, housing characteristics, agricultural assets and durables ownership. Answers to these questions are entered into a formula to calculate the PMT score. This formula is held by the LMU and is not revealed to the public to prevent any possible manipulations.[58] More importantly, the PMT score (conditional on demographic eligibility according to LEAP categories) is the only factor determining eligibility for receiving LEAP 1000.



Note: Figure based on Ghana LEAP 1000 targeting data in the five districts of the impact evaluation (N=8,058). The graph consists of two separate graphs plotted on each side of the cut-off, which is why the lines are not connected at the cut-off.

Figure B.1: Manipulation test for Ghana LEAP 1000

One way of making sure that potential beneficiaries did not manipulate their score is by conducting a manipulation test. The main idea behind such a test is that there should be no discontinuity in the density of the PMT score at the cutoff point.[59] If potential beneficiaries were successful in manipulating their score to become eligible for the programme, we would see an unexpectedly higher number (i.e. density)

[58] In addition, during targeting the answers of a random sample of approximately 50% of applying households was validated by physically visiting the dwelling.

[59] See Cattaneo, M. D., Michael Jansson, and Xinwei Ma. (2017). rddensity: Manipulation Testing based on Density Discontinuity. *Stata Journal*, forthcoming and McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics* 142(2): 698-714.

of candidate households just below the cutoff compared to just above the cutoff. The result of such a manipulation test for Ghana LEAP 1000 is plotted in Figure B.1 using the targeting data of the programme. ***This graph confirms that there was no manipulation of scores in Ghana LEAP 1000***, as the confidence intervals for the lines below and above the cutoff overlap and hence there is no significant difference in the density around the cutoff. In any case, the line is slightly higher on the right side (i.e. the non-eligible side) of the threshold, which is further confirmation that scores were not manipulated to make households eligible for the programme.

Appendix C: Data quality assurance

On-site field visitations started two days after the fieldwork began, mainly to find out how the CAPI program was working, browse through the data collected by each interviewer and address some of their concerns. ISSER visited the Yendi team on the 29th and visited Karaga and Gbintri teams on the 30th of June. The team proceeded to Bongo and Garu on the 1st of July after visiting the team in Langbinsi. On all the visits, the Technical Team monitored how anthropometric measurements of kids were being done. They also ensured that respondents' privacy and confidentiality issues were well taken care of. At the end of every visit, the team organized a debriefing exercise and addressed concerns of the enumerators. Field data collection was successfully completed on the 22nd of August, 2017.

The first phase of the quality control checks of the data started in the first week of fieldwork when the first batch of data from completed interviews was sent to the office. These data were quickly reviewed and adjustments were made to the CAPI programme as needed. When field work was completed, the data was subjected to a comprehensive review process of checking, detecting and correcting inaccurate entries from the data files. This was accompanied by callbacks to enumerators and respondents to explain and fix incomplete or inaccurate data records.

Appendix D: Construction of consumption aggregates LEAP 1000 impact evaluation

The collection of accurate consumption data is crucial to determine the welfare of the households in the LEAP 1000 programme. The LEAP 1000 baseline and endline surveys included a consumption module, closely following the structure of the Ghana Living Standards Survey Round 6 (GLSS6). The most notable difference between the GLSS6 consumption module and ours, is that in the GLSS6 consumption of frequently purchased items (food and non-food) is collected during six consecutive visits to the same household with a five-day interval between visits. The LEAP 1000 survey was designed to include only one visit per household. In addition, for sake of brevity, a number of rarely consumed items were excluded from the LEAP 1000 survey and some items were collapsed into broader groups. These items were identified by looking at the responses of poor households in Northern and Upper East regions to all consumption items in the raw GLSS6 data. A comparison of the number of consumption items is provided in Table D.1.

A second difference is the inclusion of user values of durable goods in the GLSS6 consumption aggregate. The LEAP 1000 survey did not collect information on durable goods, as poor households typically possess very few durable goods. User values constituted about two per cent of total consumption of poor households in the GLSS.

Table D.1: Comparison of consumption groups between LEAP 1000 survey (baseline/endline) and GLSS6

Consumption Category	LEAP 1000	GLSS6
FOOD		
Food consumption	69/69 items	89 items
Non-alcoholic beverages	3/3 items	9 items
Food outside the home	2/2 items	9 items
NON-FOOD		
Alcohol & Tobacco	4/4 items	14 items
Clothes & repair	20/22 items	37 items
Footwear	2/2 items	10 items
		4 items in Sec 7
Housing	10/10 items in Sec 15C	19 items in Sec 9a
		5 items in Sec 9b
User value of durable goods	n/a	7 groups of durables

Furnishing and housing services	5/5 items in Sec 15C 3/3 items in Sec 15A	50 items in Sec 9a 9 items in Sec 9b
Health (medicines and medical supplies)	1/1 item in Sec 15A	18 items in Sec 9a 6 items in Sec 9b
Transport (Purchase and maintenance)	3/2 items in Sec 15A 0/1 item in Sec 15B 1/1 item in Sec 15C	17 items in Sec 9a 9 items in Sec 9b
Communication	2/2 items in Sec 15A	7 items in Sec 9a 5 items in Sec 9b
Recreation & Culture	2/2 items in Sec 15A 5/4 items in Sec 15B	56 items in Sec 9a 8 items in Sec 9b
Education	10/10 items in Sec 2	9 items in Sec 2a 12 items in Sec 9a
Restaurants & Hotels	n/a	2 items in Sec 9a 9 items in Sec 9b
Miscellaneous Goods & Services	2/1 items in Sec 15A 2/4 items in Sec 15B	21 items in Sec 9a 6 items in Sec 9b

Note: the first number in the column LEAP 1000 refers to the baseline survey and the second to the endline survey. Items in red were excluded from the GLSS consumption aggregates. Note that health expenditures from Section 3 (health of members 5 years and older) and Section 7 are not included in the consumption aggregates, following GLSS protocols.

The total consumption aggregate is based on two major components: food and non-food. Food consumption (and other frequent household goods) was measured using a recall period of seven days. Purchases, own production and gifts were counted as consumption. The value of the purchases, as well as the market value of produced food was directly elicited from respondents. Values of goods received (and for a minimal number of missing values) were imputed as follows (457 values at baseline and 901 at endline)[60]:

[60] At baseline (endline), there were a total of 37,903 (35,837) nonzero observations for consumption goods, so the imputations represent a rather small part of the total consumption aggregates.

1. If the household bought or produced the item as well, take the mean household expenditure on units bought and produced (40 imputations at baseline/58 at endline)
2. If the household has not bought or produced the item, take the mean expenditure by district/item/unit (411/806)
3. If the household has not bought or produced the item, and no other household in the district as well, take the mean expenditure by item/unit for full sample (5/6)
4. As a final resort, the data was inspected if another item/unit combination could provide information on the value of the gift, or the community price data was consulted for information about the value of the concerned goods (1/31)

Food consumption was aggregated in 11 food consumption groups and converted to monthly values.

Non-food expenditures was measured using various recall periods, based on the frequency of typical purchases of such items. The recall period for more frequent households items was similar to food consumption (seven days), whereas the period for less frequent purchases was either six or 12 months. The value of purchased goods and the market value of goods produced or received as gifts was directly reported by the respondent. Non-food expenditure was aggregated in 10 broad consumption groups and also converted to monthly values.

Outliers

Outlier correction followed the procedure used for the construction of the GLSS6 consumption aggregates. That is, if the per capita value is higher than five standard deviations from the per capita district mean of that item, it was replaced by the district mean. Only a few values were replaced by this procedure. We also exclude the top and bottom 1% of the consumption distribution to account for extreme outliers at both ends of the spectrum.

Inflation correction

The data collection for the LEAP 1000 impact evaluation spanned two different regions and three months at each wave. If prices were relatively constant within waves and between waves, it is not necessary to account for price differences. However, inspection of the official consumer price index (CPI) for the Northern and Upper East regions for July – September 2015 and June – August 2017 revealed substantial variation in price levels both within waves and between waves (Figure). We therefore construct a price index to deflate household expenditure to August 2017 Greater Accra prices. We take Greater Accra as our reference region because the Ghanaian national poverty lines are also reflected in Greater Accra prices. The deflation of food and non-food items is done separately due to the difference in inflation rates between the two groups.

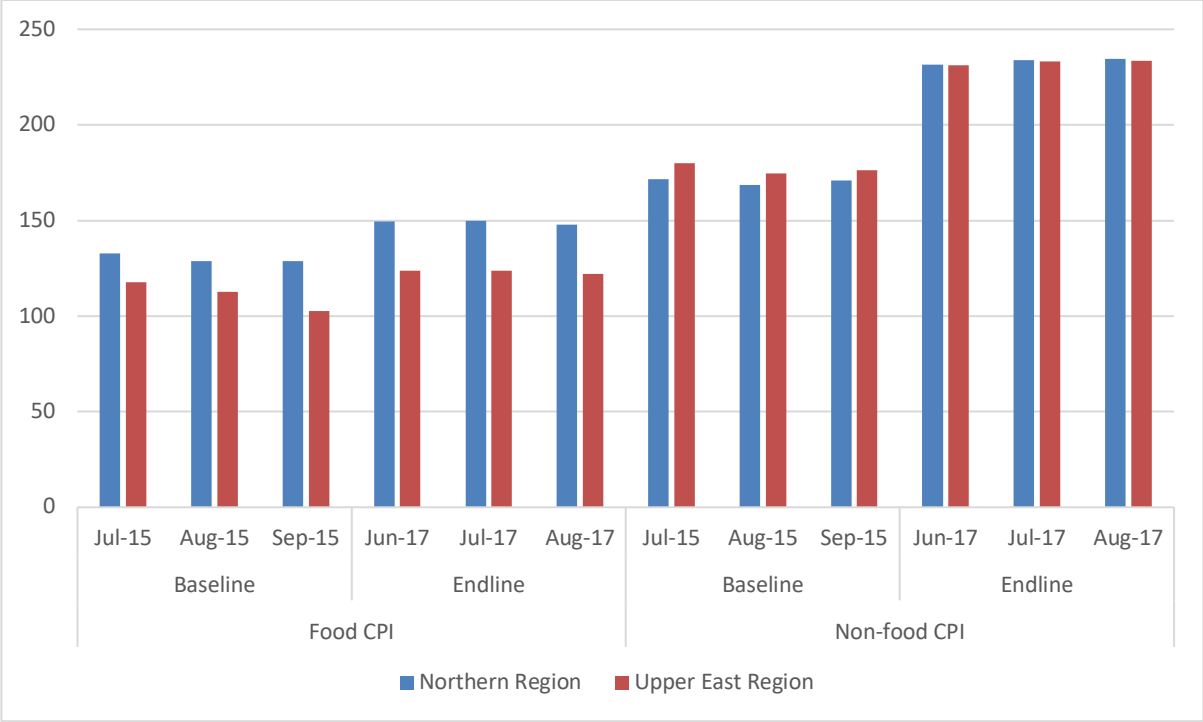


Figure D.1, Consumer Price Index (CPI, 2012=100) in Northern and Upper East region, July - September 2015 and June – August 2017

The deflator rates are presented below; we divide the nominal expenditure by these deflators to obtain consumption values in August 2017 Greater Accra prices.

Table D.2, Deflater rates for LEAP 1000 impact evaluation

	Food					
	Jul-15	Aug-15	Sep-15	Jun-17	Jul-17	Aug-17
Northern Region	0.85834	0.83312	0.83312	0.96766	0.96831	0.95666
Upper East Region	0.76067	0.72962	0.66494	0.80078	0.80142	0.78978
	Non-Food					
	Jul-15	Aug-15	Sep-15	Jun-17	Jul-17	Aug-17
Northern Region	0.69886	0.68704	0.69641	0.94336	0.95314	0.95518
Upper East Region	0.73350	0.71149	0.71801	0.94214	0.95069	0.95232

Appendix E: Additional tables for Chapter 4.4

Table E.1: Impacts on Consumption Indicators (Nominal values)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Nominal AE household expenditure per month	6.794***	87.284	93.406	75.664	74.996
	(2.46)				
Nominal AE food expenditure per month	5.445***	66.779	71.928	55.456	55.131
	(1.99)				
Nominal AE non-food expenditure per month	1.349	20.504	21.478	20.208	19.864
	(1.01)				
N	4,566	1,157	1,127	1,166	1,116

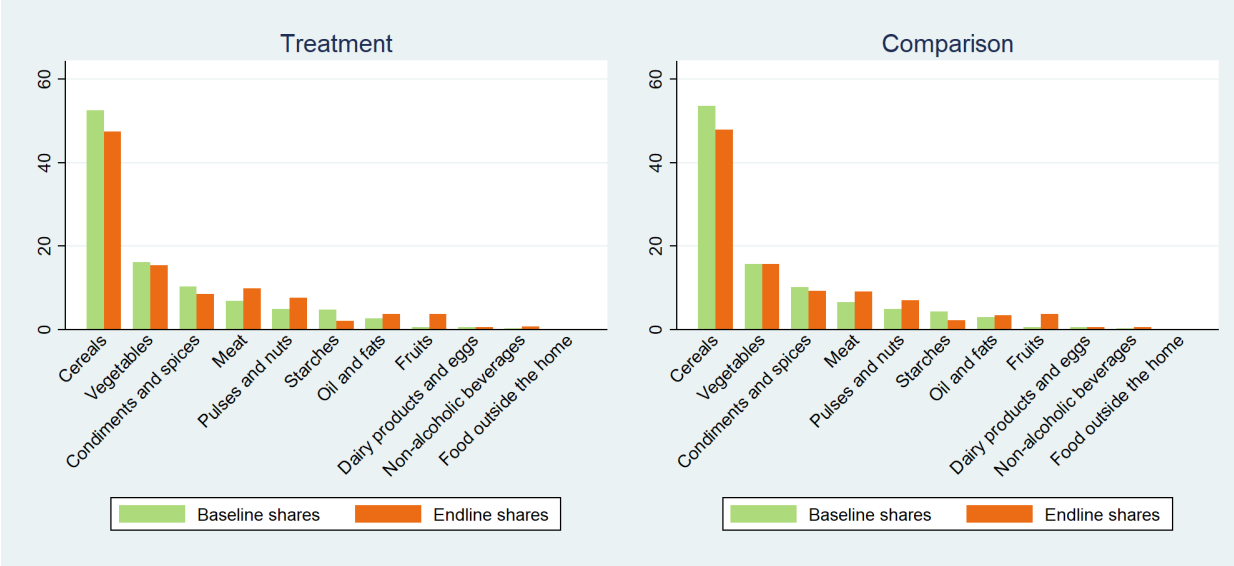
Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; bottom and top 1% for each wave excluded

Table E.2: Impacts on Consumption shares

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Consumption share of food consumption	-0.002	0.774	0.777	0.745	0.750
	(0.01)				
Consumption share of alcohol & tobacco	0.001	0.003	0.003	0.007	0.005
	(0.00)				
Consumption share of furnishing & housing services	0.002	0.055	0.055	0.053	0.051
	(0.00)				
Consumption share of housing	0.001	0.016	0.019	0.019	0.021
	(0.00)				
Consumption share of clothes & footwear	0.009***	0.028	0.031	0.058	0.052
	(0.00)				
Consumption share of medicines and medical supplies	-0.011***	0.043	0.039	0.026	0.033
	(0.00)				
Consumption share of education	0.003	0.033	0.029	0.064	0.056
	(0.00)				
Consumption share of transportation	-0.006***	0.010	0.007	0.007	0.010
	(0.00)				
Consumption share of communication	0.001	0.009	0.012	0.004	0.006
	(0.00)				
Consumption share of recreation & culture	0.000	0.014	0.014	0.003	0.004
	(0.00)				
Consumption share of miscellaneous goods & services	0.002*	0.014	0.015	0.014	0.012
	(0.00)				

N	4,567	1,158	1,126	1,167	1,116

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;



Note: The top and bottom 1% of the consumption distribution is excluded.

Figure E.1: Share of food groups in the food basket at baseline and endline, for treatment and comparison groups

Table E.3: Impacts on Food Consumption shares

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Food consumption share of cereals	0.004	0.527	0.535	0.474	0.479
	(0.01)				
Food consumption share of meats	0.004	0.069	0.066	0.098	0.091
	(0.00)				
Food consumption share of dairy products, including eggs	0.001	0.006	0.006	0.006	0.006
	(0.00)				
Food consumption share of oil and fats	0.005**	0.028	0.031	0.037	0.035
	(0.00)				
Food consumption share of fruits	-0.001	0.006	0.005	0.037	0.037
	(0.00)				
Food consumption share of vegetables	-0.007	0.159	0.155	0.155	0.158
	(0.01)				
Food consumption share of spices and condiments	-0.005	0.101	0.102	0.085	0.092
	(0.00)				
Food consumption share of starchy foods	-0.007*	0.048	0.044	0.021	0.023
	(0.00)				

Food consumption share of pulses and nuts	0.005	0.050	0.050	0.076	0.072
	(0.00)				
Food consumption share of non-alcoholic beverages	0.002	0.003	0.003	0.008	0.006
	(0.00)				
Food consumption share of food eaten outside the home	0.000	0.002	0.001	0.002	0.001
	(0.00)				
N	4,567	1,158	1,126	1,167	1,116

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table E.4: Impacts on Broad Consumption groups (in 2017 real GHS)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
AE food expenditure p month constant Greater Accra Aug-17 prices	6.645***	83.925	89.780	61.158	60.307
	(2.34)				
Real AE expenditure per month on alcohol & tobacco	0.098	0.434	0.386	0.618	0.465
	(0.18)				
Real AE expenditure per month on furnishing & housing services	0.799***	6.257	6.835	3.970	3.754
	(0.28)				
Real AE expenditure per month on housing	0.381*	2.050	2.522	1.640	1.735
	(0.21)				
Real AE expenditure per month on clothes & footwear	0.975***	3.564	4.071	4.760	4.294
	(0.23)				
Real AE expenditure per month on medicines and medical supplies	-0.878	6.173	6.055	2.925	3.682
	(0.86)				
Real AE expenditure per month on education	0.127	3.884	3.399	4.519	3.918
	(0.31)				
Real AE expenditure per month on transportation	-0.580*	1.711	1.527	0.771	1.158
	(0.30)				
Real AE expenditure per month on communication	0.314	1.264	1.732	0.373	0.523
	(0.22)				
Real AE expenditure per month on recreation & culture	0.207	2.133	2.330	0.307	0.305
	(0.41)				
Real AE expenditure per month on miscellaneous goods & services	0.378**	1.765	1.945	1.254	1.054
	(0.18)				
N	4,567	1,158	1,126	1,167	1,116

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; bottom and top 1% for each wave excluded

Table E.5: Impacts on Broad Consumption groups (in nominal GHS)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Nominal AE food expenditure per month	5.445***	66.779	71.928	55.456	55.131
	(1.99)				
Nominal AE expenditure per month on alcohol & tobacco	0.123	0.297	0.266	0.588	0.429
	(0.15)				
Nominal AE expenditure per month on furnishing & housing services	0.598***	4.385	4.779	3.790	3.593
	(0.21)				
Nominal AE expenditure per month on housing	0.258	1.427	1.754	1.573	1.646
	(0.17)				
Nominal AE expenditure per month on clothes & footwear	0.804***	2.495	2.847	4.537	4.091
	(0.19)				
Nominal AE expenditure per month on medicines and medical supplies	-0.781	4.295	4.207	2.792	3.498
	(0.66)				
Nominal AE expenditure per month on education	0.256	2.715	2.374	4.314	3.724
	(0.25)				
Nominal AE expenditure per month on transportation	-0.470*	1.192	1.063	0.769	1.103
	(0.24)				
Nominal AE expenditure per month on communication	0.183	0.881	1.206	0.356	0.497
	(0.16)				
Nominal AE expenditure per month on recreation & culture	0.152	1.481	1.617	0.293	0.283
	(0.29)				
Nominal AE expenditure per month on miscellaneous goods & services	0.225	1.336	1.365	1.196	1.000
	(0.18)				
N	4,566	1,157	1,127	1,166	1,116

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; bottom and top 1% for each wave excluded

Table E.6: Impacts on Food Consumption groups (in nominal GHS)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Nominal AE food expenditure per month on cereals	3.046***	34.836	37.913	25.742	25.783
	(1.11)				
Nominal AE food expenditure per month on meats	0.486	4.914	4.940	5.842	5.381
	(0.42)				
Nominal AE food expenditure per month on dairy products, including	0.207*	0.544	0.674	0.457	0.377

eggs					
	(0.12)				
Nominal AE food expenditure per month on oil and fats	0.422**	2.123	2.392	2.287	2.136
	(0.19)				
Nominal AE food expenditure per month on fruits	0.014	0.448	0.442	2.073	2.051
	(0.19)				
Nominal AE food expenditure per month on vegetables	0.702*	9.612	10.348	8.166	8.183
	(0.42)				
Nominal AE food expenditure per month on spices and condiments	0.449*	6.214	6.939	4.480	4.764
	(0.25)				
Nominal AE food expenditure per month on starchy foods	-0.283	3.764	3.746	1.287	1.520
	(0.36)				
Nominal AE food expenditure per month on pulses and nuts	0.320	3.906	4.100	4.564	4.445
	(0.38)				
Nominal AE food expenditure per month on non-alcoholic beverages	0.060	0.296	0.328	0.459	0.432
	(0.12)				
Nominal AE food expenditure per month on food eaten outside the home	0.022	0.122	0.106	0.097	0.059
	(0.06)				
N	4,566	1,157	1,127	1,166	1,116

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; bottom and top 1% for each wave excluded

Table E.7: Impacts on having enough food by month (endline indicators only)

Dependent Variable	Program Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
Not enough food - January	0.052	0.510	0.507
	(0.04)		
Not enough food - February	0.024	0.557	0.574
	(0.05)		
Not enough food - March	-0.003	0.319	0.340
	(0.04)		
Not enough food - April	-0.008	0.083	0.074
	(0.02)		
Not enough food - May	-0.001	0.034	0.032
	(0.02)		
Not enough food - June	-0.021	0.025	0.041
	(0.02)		
Not enough food - July	-0.019	0.037	0.057
	(0.02)		
Not enough food - August	-0.037**	0.069	0.089
	(0.02)		
Not enough food - September	-0.003	0.130	0.134
	(0.03)		
Not enough food - October	0.030	0.270	0.241

	(0.04)			
Not enough food - November	0.003	0.379	0.363	
	(0.04)			
Not enough food - December	-0.032	0.480	0.492	
	(0.04)			
N	2,331	1,185	1,146	

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table E.8: Impacts on having a pair of shoes, children 5-17 years

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Has a pair of shoes	0.100***	0.216	0.270	0.593	0.547
	(0.03)				
N	10,567	2,860	2,183	3,084	2,440
Has a pair of shoes, girls	0.072*	0.224	0.272	0.598	0.574
	(0.04)				
N	5,012	1,366	1,051	1,451	1,144
Has a pair of shoes, boys	0.124***	0.209	0.269	0.589	0.524
	(0.04)				
N	5,555	1,494	1,132	1,633	1,296
Has a pair of shoes, 5 - 12 years	0.092***	0.185	0.226	0.573	0.522
	(0.03)				
N	8,232	2,255	1,712	2,356	1,909
Has a pair of shoes, girls 5 - 12 years	0.072*	0.191	0.222	0.583	0.543
	(0.04)				
N	3,925	1,075	829	1,121	900
Has a pair of shoes, boys 5 - 12 years	0.110***	0.180	0.231	0.563	0.504
	(0.03)				
N	4,307	1,180	883	1,235	1,009
Has a pair of shoes, 13 - 17 years	0.118**	0.331	0.430	0.661	0.638
	(0.05)				
N	2,335	605	471	728	531
Has a pair of shoes, girls 13 - 17 years	0.068	0.345	0.458	0.649	0.689
	(0.06)				
N	1,087	291	222	330	244
Has a pair of shoes, boys 13 - 17 years	0.154**	0.319	0.404	0.670	0.594
	(0.07)				
N	1,248	314	249	398	287

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table E.9: Impacts on having two sets of clothes, children 5-17 years

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Has two sets of clothes	0.095***	0.625	0.663	0.899	0.841
	(0.03)				
N	10,568	2,860	2,183	3,085	2,440
Has two sets of clothes, girls	0.087***	0.628	0.668	0.900	0.854

	(0.03)				
N	5,012	1,366	1,051	1,451	1,144
Has two sets of clothes, boys	0.103***	0.622	0.659	0.897	0.829
	(0.04)				
N	5,556	1,494	1,132	1,634	1,296
Has two sets of clothes, 5 - 12 years	0.095***	0.609	0.639	0.892	0.829
	(0.03)				
N	8,233	2,255	1,712	2,357	1,909
Has two sets of clothes, girls 5 - 12 years	0.101***	0.608	0.640	0.899	0.835
	(0.03)				
N	3,925	1,075	829	1,121	900
Has two sets of clothes, boys 5 - 12 years	0.088**	0.610	0.638	0.885	0.823
	(0.04)				
N	4,308	1,180	883	1,236	1,009
Has two sets of clothes, 13 - 17 years	0.096**	0.683	0.750	0.922	0.885
	(0.04)				
N	2,335	605	471	728	531
Has two sets of clothes, girls 13 - 17 years	0.035	0.702	0.772	0.906	0.926
	(0.05)				
N	1,087	291	222	330	244
Has two sets of clothes, boys 13 - 17 years	0.144***	0.665	0.731	0.935	0.850
	(0.05)				
N	1,248	314	249	398	287

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table E.10: Impacts on having two sets of clothes, children 5-17 years

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Has a pair of shoes and two sets of clothes	0.100***	0.186	0.241	0.581	0.536
	(0.03)				
N	10,567	2,860	2,183	3,084	2,440
Has a pair of shoes and two sets of clothes, girls	0.075**	0.188	0.241	0.585	0.562
	(0.04)				
N	5,012	1,366	1,051	1,451	1,144
Has a pair of shoes and two sets of clothes, boys	0.122***	0.184	0.242	0.576	0.512
	(0.03)				
N	5,555	1,494	1,132	1,633	1,296
Has a pair of shoes and two sets of clothes, 5 - 12 years	0.091***	0.157	0.200	0.559	0.512
	(0.03)				
N	8,232	2,255	1,712	2,356	1,909
Has a pair of shoes and two sets of clothes, girls 5 - 12 years	0.077**	0.156	0.193	0.571	0.531
	(0.04)				
N	3,925	1,075	829	1,121	900

Has a pair of shoes and two sets of clothes, boys 5 - 12 years	0.104***	0.158	0.207	0.549	0.494
	(0.03)				
N	4,307	1,180	883	1,235	1,009
Has a pair of shoes and two sets of clothes, 13 - 17 years	0.122**	0.293	0.391	0.650	0.623
	(0.05)				
N	2,335	605	471	728	531
Has a pair of shoes and two sets of clothes, girls 13 - 17 years	0.063	0.306	0.417	0.635	0.677
	(0.06)				
N	1,087	291	222	330	244
Has a pair of shoes and two sets of clothes, boys 13 - 17 years	0.165**	0.282	0.367	0.663	0.576
	(0.07)				
N	1,248	314	249	398	287

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Appendix F: Additional tables for chapter 4.5

Table F.1: Impacts on time use for household chores – Male Children

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Spent time collecting water yesterday	-0.033	0.176	0.136	0.174	0.166
	(0.03)				
N	3,588	946	698	1,104	840
Hours spent collecting water yesterday	-0.060	0.258	0.199	0.189	0.189
	(0.04)				
N	3,588	946	698	1,104	840
Spent time collecting firewood yesterday	-0.022	0.096	0.067	0.038	0.031
	(0.02)				
N	3,588	946	698	1,104	840
Hours spent collecting firewood yesterday	-0.075*	0.223	0.142	0.060	0.054
	(0.04)				
N	3,588	946	698	1,104	840
Spent time taking care of children, cooking or cleaning yesterday	-0.035	0.210	0.188	0.267	0.276
	(0.03)				
N	3,588	946	698	1,104	840
Hours spent taking care of children, cooking or cleaning yesterday	-0.242**	0.596	0.469	0.562	0.668
	(0.12)				
N	3,588	946	698	1,104	840
Performed any household chores at all yesterday	-0.042	0.307	0.287	0.376	0.393
	(0.04)				
N	3,588	946	698	1,104	840
Hours spent on household chores yesterday	-0.377***	1.078	0.810	0.811	0.910
	(0.14)				
N	3,588	946	698	1,104	840

Notes: t statistic in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table F.2: Impacts on time use for household chores – Female Adult

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Spent time collecting water yesterday	-0.003	0.709	0.709	0.767	0.770
	(0.02)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent collecting water yesterday	0.056	1.205	1.228	1.280	1.245
	(0.07)				
N	6,937	1,810	1,733	1,743	1,651
Spent time collecting firewood yesterday	-0.004	0.452	0.455	0.404	0.410

	(0.03)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent collecting firewood yesterday	0.021	1.141	1.198	1.010	1.039
	(0.10)				
N	6,937	1,810	1,733	1,743	1,651
Spent time taking care of children, cooking or cleaning yesterday	-0.006	0.883	0.875	0.907	0.904
	(0.02)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent taking care of children, cooking or cleaning yesterday	0.034	3.838	3.877	4.778	4.764
	(0.20)				
N	6,937	1,810	1,733	1,743	1,651
Performed any household chores at all yesterday	0.002	0.921	0.919	0.936	0.931
	(0.02)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent on household chores yesterday	0.105	6.184	6.304	6.961	6.947
	(0.27)				
N	6,937	1,810	1,733	1,743	1,651

Notes: t statistic in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table F.3: Impacts on time use for household chores – Male Adult

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Spent time collecting water yesterday	-0.003	0.064	0.055	0.066	0.059
	(0.01)				
N	5,611	1,446	1,382	1,421	1,362
Hours spent collecting water yesterday	-0.021	0.104	0.087	0.082	0.087
	(0.03)				
N	5,611	1,446	1,382	1,421	1,362
Spent time collecting firewood yesterday	-0.006	0.076	0.055	0.043	0.028
	(0.01)				
N	5,611	1,446	1,382	1,421	1,362
Hours spent collecting firewood yesterday	-0.015	0.162	0.117	0.082	0.054
	(0.03)				
N	5,611	1,446	1,382	1,421	1,362
Spent time taking care of children, cooking or cleaning yesterday	0.051**	0.163	0.198	0.174	0.160
	(0.02)				
N	5,611	1,446	1,382	1,421	1,362
Hours spent taking care of children, cooking or cleaning yesterday	0.189**	0.433	0.570	0.447	0.402
	(0.09)				
N	5,611	1,446	1,382	1,421	1,362
Performed any household chores at all yesterday	0.046*	0.221	0.241	0.222	0.197
	(0.02)				

N	5,611	1,446	1,382	1,421	1,362
Hours spent on household chores yesterday	0.143	0.700	0.774	0.602	0.544
	(0.11)				
N	5,611	1,446	1,382	1,421	1,362

Notes: t statistic in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table F.4: Impacts on time use for household chores – Female Elderly

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Spent time collecting water yesterday	-0.047	0.080	0.045	0.075	0.084
	(0.03)				
N	884	230	215	222	217
Hours spent collecting water yesterday	-0.089	0.131	0.068	0.110	0.134
	(0.06)				
N	884	230	215	222	217
Spent time collecting firewood yesterday	-0.025	0.081	0.064	0.062	0.074
	(0.03)				
N	884	230	215	222	217
Hours spent collecting firewood yesterday	-0.085	0.206	0.152	0.128	0.159
	(0.08)				
N	884	230	215	222	217
Spent time taking care of children, cooking or cleaning yesterday	0.023	0.435	0.453	0.548	0.548
	(0.06)				
N	884	230	215	222	217
Hours spent taking care of children, cooking or cleaning yesterday	0.160	1.879	2.037	2.310	2.366
	(0.47)				
N	884	230	215	222	217
Performed any household chores at all yesterday	0.030	0.453	0.494	0.552	0.566
	(0.06)				
N	884	230	215	222	217
Hours spent on household chores yesterday	-0.014	2.216	2.256	2.548	2.659
	(0.51)				
N	884	230	215	222	217

Notes: t statistic in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table F.5: Impacts on time use for productive activities – Male Children

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Spent time on household farming activity in past rainy season	0.048	0.486	0.482	0.575	0.519
	(0.04)				

N	3,588	946	698	1,104	840
Days spent on household farming activities in last rainy season	-0.001	6.116	6.387	9.571	9.796
	(1.07)				
N	3,588	946	698	1,104	840
Spent time on household NFE in last 7 days	0.009	0.013	0.014	0.019	0.010
	(0.01)				
N	3,588	946	698	1,104	840
Hours spent on household NFE in last 7 days	0.052	0.070	0.087	0.057	0.019
	(0.04)				
N	3,588	946	698	1,104	840
Spent time on household livestock activities in last 7 days	-0.027	0.216	0.197	0.167	0.173
	(0.03)				
N	3,588	946	698	1,104	840
Hours spent on household livestock activities in last 7 days	-0.310	1.448	1.614	0.663	1.119
	(0.40)				
N	3,588	946	698	1,104	840
Spent time collecting nuts or fruits in last 7 days	0.005	0.036	0.038	0.030	0.027
	(0.02)				
N	3,588	946	698	1,104	840
Hours spent on collecting nuts or fruits in last 7 days	0.030	0.128	0.136	0.209	0.185
	(0.09)				
N	3,588	946	698	1,104	840
Spent time on casual labour last 7 days	-0.023	0.063	0.052	0.017	0.027
	(0.01)				
N	3,588	946	698	1,104	840
Hours spent on casual labour in last 7 days	-0.208	0.509	0.326	0.132	0.146
	(0.13)				
N	3,588	946	698	1,104	840
Spent time on wage labour in last 7 days	-0.005	0.034	0.036	0.044	0.049
	(0.02)				
N	3,588	946	698	1,104	840
Hours spent on wage labour in last 7 days	-0.146	0.328	0.364	0.591	0.754
	(0.23)				
N	3,588	946	698	1,104	840

Notes: t statistic in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table F.6: Impacts on time use for productive activities – Female Adult

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Spent time on household farming activity in past rainy season	0.044**	0.762	0.767	0.873	0.834

	(0.02)				
N	6,937	1,810	1,733	1,743	1,651
Days spent on household farming activities in last rainy season	-0.298	14.031	13.268	23.946	23.462
	(1.28)				
N	6,937	1,810	1,733	1,743	1,651
Spent time on household NFE in last 7 days	0.015	0.083	0.096	0.070	0.067
	(0.01)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent on household NFE in last 7 days	0.264	0.835	1.137	0.623	0.664
	(0.22)				
N	6,937	1,810	1,733	1,743	1,651
Spent time on household livestock activities in last 7 days	0.016	0.094	0.090	0.068	0.048
	(0.02)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent on household livestock activities in last 7 days	-0.013	0.303	0.285	0.204	0.199
	(0.08)				
N	6,937	1,810	1,733	1,743	1,651
Spent time collecting nuts or fruits in last 7 days	-0.007	0.148	0.155	0.279	0.291
	(0.02)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent on collecting nuts or fruits in last 7 days	-0.251	1.045	1.028	2.399	2.635
	(0.27)				
N	6,937	1,810	1,733	1,743	1,651
Spent time on casual labour last 7 days	0.014	0.103	0.115	0.058	0.056
	(0.02)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent on casual labour in last 7 days	0.036	0.870	0.924	0.702	0.729
	(0.21)				
N	6,937	1,810	1,733	1,743	1,651
Spent time on wage labour in last 7 days	0.007	0.058	0.069	0.144	0.148
	(0.02)				
N	6,937	1,810	1,733	1,743	1,651
Hours spent on wage labour in last 7 days	0.513	0.577	0.786	2.903	2.627
	(0.36)				
N	6,937	1,810	1,733	1,743	1,651

Notes: t statistic in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table F.7: Impacts on time use for productive activities – Male Adult

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Spent time on household farming	0.030*	0.884	0.906	0.938	0.929

activity in past rainy season					
	(0.02)				
N	5,611	1,446	1,382	1,421	1,362
Days spent on household farming activities in last rainy season	-1.287	22.427	22.420	32.623	34.008
	(1.83)				
N	5,611	1,446	1,382	1,421	1,362
Spent time on household NFE in last 7 days	0.007	0.041	0.052	0.040	0.043
	(0.01)				
N	5,611	1,446	1,382	1,421	1,362
Hours spent on household NFE in last 7 days	-0.053	0.585	0.656	0.440	0.558
	(0.26)				
N	5,611	1,446	1,382	1,421	1,362
Spent time on household livestock activities in last 7 days	0.033	0.252	0.246	0.322	0.277
	(0.03)				
N	5,611	1,446	1,382	1,421	1,362
Hours spent on household livestock activities in last 7 days	-0.154	1.382	1.468	1.381	1.605
	(0.27)				
N	5,611	1,446	1,382	1,421	1,362
Spent time collecting nuts or fruits in last 7 days	-0.011	0.034	0.023	0.010	0.010
	(0.01)				
N	5,611	1,446	1,382	1,421	1,362
Hours spent on collecting nuts or fruits in last 7 days	-0.314**	0.244	0.073	0.094	0.238
	(0.14)				
N	5,611	1,446	1,382	1,421	1,362
Spent time on casual labour last 7 days	-0.012	0.177	0.167	0.098	0.100
	(0.02)				
N	5,611	1,446	1,382	1,421	1,362
Hours spent on casual labour in last 7 days	-0.194	1.815	1.480	0.968	0.805
	(0.29)				
N	5,611	1,446	1,382	1,421	1,362
Spent time on wage labour in last 7 days	-0.026	0.093	0.093	0.150	0.176
	(0.02)				
N	5,611	1,446	1,382	1,421	1,362
Hours spent on wage labour in last 7 days	-0.986*	1.399	1.115	3.061	3.742
	(0.50)				
N	5,611	1,446	1,382	1,421	1,362

Notes: t statistic in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table F.8: Impacts on time use for productive activities – Female Elderly

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)

Spent time on household farming activity in past rainy season	0.065	0.274	0.327	0.254	0.228
	(0.06)				
N	884	230	215	222	217
Days spent on household farming activities in last rainy season	1.681	4.682	6.159	4.673	4.082
	(1.58)				
N	884	230	215	222	217
Spent time on household NFE in last 7 days	0.035*	0.026	0.023	0.035	0.000
	(0.02)				
N	884	230	215	222	217
Hours spent on household NFE in last 7 days	0.364	0.214	0.361	0.185	0.000
	(0.28)				
N	884	230	215	222	217
Spent time on household livestock activities in last 7 days	-0.037*	0.045	0.025	0.023	0.038
	(0.02)				
N	884	230	215	222	217
Hours spent on household livestock activities in last 7 days	-0.096	0.069	0.049	0.058	0.128
	(0.07)				
N	884	230	215	222	217
Spent time collecting nuts or fruits in last 7 days	0.014	0.050	0.076	0.080	0.090
	(0.04)				
N	884	230	215	222	217
Hours spent on collecting nuts or fruits in last 7 days	0.035	0.241	0.386	0.713	0.793
	(0.41)				
N	884	230	215	222	217
Spent time on casual labour last 7 days	0.020	0.009	0.028	0.000	0.000
	(0.01)				
N	884	230	215	222	217
Hours spent on casual labour in last 7 days	-0.088	0.210	0.121	0.000	0.000
	(0.21)				
N	884	230	215	222	217
Spent time on wage labour in last 7 days	0.005	0.004	0.009	0.005	0.005
	(0.01)				
N	884	230	215	222	217
Hours spent on wage labour in last 7 days	0.117	0.057	0.146	0.183	0.126
	(0.25)				
N	884	230	215	222	217

Notes: t statistic in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Appendix G: Additional tables for chapter 4.8

Table G.1: Impacts on Child Health Indicators (Panel of children)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
At least one PNC in last 12 months	0.055**	0.692	0.732	0.796	0.780
	(0.02)				
N	5,775	1,770	1,630	1,233	1,142
Diarrhoea last 2 weeks	0.034	0.367	0.408	0.317	0.327
	(0.03)				
N	5,775	1,770	1,630	1,233	1,142
Received ORS during episode of diarrhoea	-0.006	0.591	0.594	0.652	0.649
	(0.05)				
N	2,085	652	669	391	373
Received recommended home fluid during episode of diarrhoea	0.028	0.023	0.029	0.169	0.149
	(0.03)				
N	2,085	652	669	391	373
Received ORT during episode of diarrhoea	0.009	0.645	0.643	0.762	0.741
	(0.05)				
N	2,085	652	669	391	373
Received ORT with continued feeding during episode of diarrhoea	-0.065	0.326	0.286	0.480	0.508
	(0.05)				
N	2,085	652	669	391	373
No treatment for diarrhoea during last episode	-0.010	0.108	0.105	0.065	0.077
	(0.03)				
N	2,085	652	669	391	373
Symptoms of ARI last 2 weeks	-0.003	0.051	0.059	0.037	0.048
	(0.01)				
N	5,775	1,770	1,630	1,233	1,142
Fever last 2 weeks	0.055**	0.231	0.270	0.286	0.272
	(0.02)				
N	5,775	1,770	1,630	1,233	1,142
Safe disposal of child stools	0.001	0.239	0.192	0.411	0.355
	(0.03)				
N	5,775	1,770	1,630	1,233	1,142
Slept under bednet yesterday	0.002	0.675	0.688	0.790	0.797
	(0.03)				
N	5,775	1,770	1,630	1,233	1,142

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.2: Impacts on Child Health Indicators (index child)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
At least one PNC in last 12 months	0.044	0.638	0.678	0.804	0.799
	(0.03)				
N	4,113	1,012	936	1,114	1,051
Diarrhoea last 2 weeks	0.017	0.401	0.439	0.344	0.361
	(0.03)				
N	4,113	1,012	936	1,114	1,051
Received ORS during episode of diarrhoea	0.026	0.541	0.566	0.651	0.641
	(0.05)				
N	1,581	407	414	382	378
Received recommended home fluid during episode of diarrhoea	0.055**	0.009	0.020	0.179	0.134
	(0.03)				
N	1,581	407	414	382	378
Received ORT during episode of diarrhoea	0.042	0.594	0.618	0.757	0.730
	(0.05)				
N	1,581	407	414	382	378
Received ORT with continued feeding during episode of diarrhoea	-0.053	0.300	0.269	0.465	0.481
	(0.05)				
N	1,581	407	414	382	378
No treatment for diarrhoea during last episode	-0.018	0.125	0.106	0.077	0.078
	(0.03)				
N	1,581	407	414	382	378
Symptoms of ARI last 2 weeks	0.017	0.045	0.069	0.040	0.047
	(0.01)				
N	4,113	1,012	936	1,114	1,051
Fever last 2 weeks	0.036	0.215	0.238	0.301	0.286
	(0.03)				
N	4,113	1,012	936	1,114	1,051
Safe disposal of child stools	0.004	0.184	0.162	0.410	0.387
	(0.03)				
N	4,113	1,012	936	1,114	1,051
Slept under bednet yesterday	0.030	0.697	0.723	0.796	0.794
	(0.03)				
N	4,113	1,012	936	1,114	1,051

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.3: Impacts on Child Health Indicators (Panel of index children)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
At least one PNC in last 12 months	0.053*	0.638	0.678	0.807	0.794
	(0.03)				
N	3,780	995	910	982	893
Diarrhoea last 2 weeks	0.017	0.400	0.436	0.338	0.357
	(0.03)				
N	3,780	995	910	982	893
Received ORS during episode of diarrhoea	0.019	0.541	0.565	0.645	0.641
	(0.05)				
N	1,447	399	400	331	317
Received recommended home fluid during episode of diarrhoea	0.041	0.010	0.020	0.172	0.144
	(0.03)				
N	1,447	399	400	331	317
Received ORT during episode of diarrhoea	0.023	0.595	0.612	0.749	0.734
	(0.05)				
N	1,447	399	400	331	317
Received ORT with continued feeding during episode of diarrhoea	-0.063	0.300	0.273	0.459	0.491
	(0.05)				
N	1,447	399	400	331	317
No treatment for diarrhoea during last episode	-0.013	0.122	0.110	0.071	0.075
	(0.03)				
N	1,447	399	400	331	317
Symptoms of ARI last 2 weeks	0.009	0.043	0.067	0.036	0.050
	(0.02)				
N	3,780	995	910	982	893
Fever last 2 weeks	0.037	0.216	0.238	0.304	0.289
	(0.03)				
N	3,780	995	910	982	893
Safe disposal of child stools	0.006	0.183	0.157	0.408	0.377
	(0.03)				
N	3,780	995	910	982	893
Slept under bednet yesterday	0.030	0.697	0.720	0.787	0.782
	(0.03)				
N	3,780	995	910	982	893

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.4: Impacts on Child Health Seeking Indicators

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Sought care at public facility for diarrhoea	0.031	0.424	0.463	0.336	0.338
	(0.05)				
N	2,390	679	696	500	515
Sought care at private facility for diarrhoea	-0.018	0.031	0.012	0.010	0.008
	(0.01)				
N	2,390	679	696	500	515
Sought care at pharmacy/drug store/drug vendor for diarrhoea	-0.011	0.433	0.427	0.542	0.548
	(0.05)				
N	2,390	679	696	500	515
Sought no care for diarrhoea	0.000	0.100	0.094	0.091	0.092
	(0.02)				
N	2,390	679	696	500	515
Sought care at public facility for ari	-0.003	0.595	0.570	0.463	0.418
	(0.10)				
N	333	94	99	66	74
Sought care at private facility for ari	0.011	0.021	0.064	0.000	0.026
	(0.04)				
N	333	94	99	66	74
Sought care at pharmacy/drug store/drug vendor for ari	0.013	0.373	0.346	0.464	0.460
	(0.09)				
N	333	94	99	66	74
Sought no care for ari	-0.029	0.000	0.000	0.058	0.081
	(0.05)				
N	333	94	99	66	74
Sought care at public facility for fever	0.059	0.491	0.535	0.440	0.422
	(0.05)				
N	1,714	422	456	428	408
Sought care at private facility for fever	-0.029	0.060	0.043	0.028	0.037
	(0.02)				
N	1,714	422	456	428	408
Sought care at pharmacy/drug store/drug vendor for fever	-0.007	0.432	0.409	0.474	0.463
	(0.05)				
N	1,714	422	456	428	408
Sought no care for fever	-0.027	0.008	0.004	0.050	0.075
	(0.02)				
N	1,714	422	456	428	408

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.5: Impacts on Vaccination Indicators (Panel of children, 24 – 59 months old)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
BCG	-0.004	0.979	0.968	0.988	0.980
	(0.01)				
Polio 0 (at birth)	-0.007	0.866	0.849	0.974	0.957
	(0.02)				
Polio 1	-0.008	0.973	0.949	0.991	0.973
	(0.01)				
Polio 2	-0.014	0.973	0.948	0.986	0.972
	(0.01)				
Polio 3	-0.011	0.964	0.941	0.979	0.963
	(0.01)				
Penta 1	0.001	0.975	0.963	0.984	0.968
	(0.01)				
Penta 2	-0.010	0.972	0.949	0.980	0.962
	(0.01)				
Penta 3	-0.011	0.964	0.943	0.969	0.955
	(0.01)				
Measles	-0.007	0.929	0.915	0.953	0.939
	(0.02)				
Yellow fever	0.001	0.923	0.918	0.946	0.933
	(0.02)				
All basic vaccinations[1]	-0.030	0.911	0.868	0.944	0.921
	(0.02)				
N	3,615	724	680	1,152	1,059

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; [1] BCG, measles, and three doses each of pentavalent (DPT-HepB-Hib) and polio vaccine (excluding polio vaccine given at birth).

Table G.6: Impacts on Vaccination Indicators (index child)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
BCG	-0.016	0.935	0.918	0.988	0.986
	(0.01)				
Polio 0 (at birth)	-0.026	0.796	0.762	0.974	0.965
	(0.02)				
Polio 1	0.014	0.855	0.858	0.990	0.978
	(0.02)				
Polio 2	0.003	0.803	0.797	0.985	0.976
	(0.02)				
Polio 3	-0.000	0.725	0.717	0.975	0.968
	(0.02)				
Penta 1	0.007	0.822	0.822	0.982	0.976
	(0.02)				
Penta 2	-0.005	0.758	0.743	0.975	0.967
	(0.02)				
Penta 3	-0.018	0.692	0.669	0.961	0.958
	(0.02)				
Measles	-0.010	0.408	0.392	0.939	0.934

	(0.02)				
Yellow fever	-0.014	0.398	0.380	0.934	0.931
	(0.02)				
All basic vaccinations[1]	-0.007	0.397	0.376	0.929	0.916
	(0.02)				
N	4,114	1,012	936	1,114	1,052

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; [1] BCG, measles, and three doses each of pentavalent (DPT-HepB-Hib) and polio vaccine (excluding polio vaccine given at birth).

Table G.7: Impacts on Vaccination Indicators (Panel of index children)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
BCG	-0.013	0.935	0.919	0.987	0.983
	(0.01)				
Polio 0 (at birth)	-0.022	0.796	0.763	0.973	0.961
	(0.02)				
Polio 1	0.014	0.858	0.858	0.990	0.976
	(0.02)				
Polio 2	0.004	0.805	0.798	0.985	0.974
	(0.02)				
Polio 3	0.002	0.726	0.719	0.975	0.965
	(0.02)				
Penta 1	0.009	0.823	0.822	0.984	0.974
	(0.02)				
Penta 2	-0.002	0.760	0.744	0.979	0.966
	(0.02)				
Penta 3	-0.013	0.694	0.673	0.966	0.958
	(0.02)				
Measles	-0.004	0.409	0.396	0.949	0.940
	(0.02)				
Yellow fever	-0.007	0.399	0.384	0.944	0.935
	(0.02)				
All basic vaccinations[1]	-0.000	0.399	0.379	0.940	0.920
	(0.02)				
N	3,781	995	910	982	894

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance; [1] BCG, measles, and three doses each of pentavalent (DPT-HepB-Hib) and polio vaccine (excluding polio vaccine given at birth).

Table G.8: Impacts on Nutritional Status (0 - 23 Months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.019	-0.722	-0.650	-0.865	-0.818
	(0.15)				
Stunted (HAZ < -2 SD)	-0.012	0.228	0.220	0.219	0.221
	(0.04)				
Severely Stunted (HAZ < -3 SD)	0.002	0.107	0.112	0.070	0.076
	(0.03)				
N	2,172	808	710	313	341

Weight-for-length/height z-score	-0.001	-0.536	-0.460	-0.868	-0.797
	(0.13)				
Wasted (WHZ < -2 SD)	0.005	0.187	0.161	0.182	0.155
	(0.04)				
Severely Wasted (WHZ < -3 SD)	0.018	0.066	0.060	0.067	0.047
	(0.02)				
N	2,169	807	712	312	338
Weight-for-age z-score	-0.006	-0.841	-0.726	-1.093	-0.979
	(0.11)				
Underweight (WAZ < -2 SD)	0.004	0.183	0.144	0.212	0.168
	(0.03)				
Severely Underweight (WAZ < -3 SD)	-0.027	0.072	0.039	0.057	0.052
	(0.02)				
N	2,173	807	710	314	342

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.9: Impacts on Nutritional Status (24 - 59 Months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.001	-1.632	-1.685	-1.450	-1.518
	(0.08)				
Stunted (HAZ < -2 SD)	0.006	0.355	0.364	0.312	0.321
	(0.03)				
Severely Stunted (HAZ < -3 SD)	-0.024	0.140	0.126	0.082	0.095
	(0.02)				
N	3,422	600	575	1,178	1,069
Weight-for-length/height z-score	-0.143	-0.381	-0.407	-0.502	-0.380
	(0.10)				
Wasted (WHZ < -2 SD)	0.039*	0.106	0.135	0.058	0.049
	(0.02)				
Severely Wasted (WHZ < -3 SD)	0.006	0.054	0.055	0.013	0.008
	(0.01)				
N	3,409	609	577	1,168	1,055
Weight-for-age z-score	-0.092	-1.255	-1.278	-1.160	-1.098
	(0.07)				
Underweight (WAZ < -2 SD)	0.048**	0.208	0.229	0.185	0.161
	(0.02)				
Severely Underweight (WAZ < -3 SD)	0.012	0.073	0.068	0.045	0.029
	(0.02)				
N	3,411	609	575	1,170	1,057

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.10: Impacts on Nutritional Status (Boys 0 - 83 Months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.095	-1.256	-1.231	-1.355	-1.420
	(0.10)				
Stunted (HAZ < -2 SD)	-0.007	0.303	0.318	0.290	0.312
	(0.03)				

Severely Stunted (HAZ < -3 SD)	-0.025	0.139	0.131	0.084	0.102
	(0.02)				
N	3,335	701	633	1,052	949
Weight-for-length/height z-score	-0.170	-0.490	-0.497	-0.617	-0.463
	(0.11)				
Wasted (WHZ < -2 SD)	0.020	0.161	0.161	0.095	0.078
	(0.02)				
Severely Wasted (WHZ < -3 SD)	0.021	0.065	0.071	0.032	0.020
	(0.02)				
N	2,796	709	632	767	688
Weight-for-age z-score	-0.015	-1.110	-1.073	-1.180	-1.127
	(0.07)				
Underweight (WAZ < -2 SD)	0.016	0.201	0.204	0.186	0.173
	(0.03)				
Severely Underweight (WAZ < -3 SD)	-0.011	0.076	0.067	0.045	0.046
	(0.02)				
N	3,326	709	629	1,046	942

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.11: Impacts on Nutritional Status (Boys 0 - 23 Months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.258	-0.926	-0.815	-0.937	-1.023
	(0.23)				
Stunted (HAZ < -2 SD)	-0.051	0.263	0.254	0.237	0.271
	(0.06)				
Severely Stunted (HAZ < -3 SD)	-0.017	0.126	0.132	0.077	0.099
	(0.04)				
N	1,073	395	349	168	161
Weight-for-length/height z-score	-0.155	-0.538	-0.535	-0.938	-0.820
	(0.21)				
Wasted (WHZ < -2 SD)	0.017	0.200	0.175	0.178	0.149
	(0.05)				
Severely Wasted (WHZ < -3 SD)	0.043	0.067	0.070	0.078	0.043
	(0.03)				
N	1,068	398	346	166	158
Weight-for-age z-score	-0.089	-0.964	-0.893	-1.236	-1.068
	(0.18)				
Underweight (WAZ < -2 SD)	0.029	0.192	0.173	0.265	0.220
	(0.05)				
Severely Underweight (WAZ < -3 SD)	-0.029	0.074	0.047	0.066	0.073
	(0.03)				
N	1,072	398	345	168	161

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.12: Impacts on Nutritional Status (Boys 24 - 59 Months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	-0.024	-1.681	-1.745	-1.534	-1.568

	(0.12)				
Stunted (HAZ < -2 SD)	0.030	0.354	0.396	0.347	0.355
	(0.05)				
Severely Stunted (HAZ < -3 SD)	-0.042	0.155	0.129	0.098	0.115
	(0.03)				
N	1,709	306	284	593	526
Weight-for-length/height z-score	-0.197	-0.429	-0.451	-0.532	-0.363
	(0.15)				
Wasted (WHZ < -2 SD)	0.050	0.110	0.143	0.073	0.058
	(0.03)				
Severely Wasted (WHZ < -3 SD)	0.019	0.061	0.072	0.020	0.013
	(0.02)				
N	1,704	311	286	587	520
Weight-for-age z-score	-0.098	-1.298	-1.293	-1.198	-1.102
	(0.11)				
Underweight (WAZ < -2 SD)	0.060	0.213	0.241	0.186	0.155
	(0.04)				
Severely Underweight (WAZ < -3 SD)	0.029	0.080	0.091	0.048	0.032
	(0.03)				
N	1,704	311	284	588	521

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.13: Impacts on Nutritional Status (Girls 0 - 83 Months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.004	-0.966	-0.995	-1.190	-1.228
	(0.10)				
Stunted (HAZ < -2 SD)	-0.015	0.261	0.252	0.232	0.238
	(0.03)				
Severely Stunted (HAZ < -3 SD)	-0.006	0.103	0.106	0.056	0.066
	(0.02)				
N	3,312	707	652	987	966
Weight-for-length/height z-score	0.041	-0.449	-0.378	-0.529	-0.488
	(0.10)				
Wasted (WHZ < -2 SD)	-0.003	0.144	0.139	0.071	0.069
	(0.02)				
Severely Wasted (WHZ < -3 SD)	-0.011	0.057	0.046	0.015	0.015
	(0.01)				
N	2,833	707	657	741	728
Weight-for-age z-score	0.036	-0.928	-0.877	-1.099	-1.081
	(0.07)				
Underweight (WAZ < -2 SD)	-0.009	0.187	0.161	0.171	0.152
	(0.02)				
Severely Underweight (WAZ < -3 SD)	-0.019	0.069	0.038	0.044	0.032
	(0.01)				
N	3,313	707	656	989	961

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.14: Impacts on Nutritional Status (Girls 0 - 23 Months)

Dependent	Program	Baseline Treated	Baseline Control	Endline Treated	Endline Control

Variable	Impact (1)	Mean (2)	Mean (3)	Mean (4)	Mean (5)
Length/height-for-age z-score	-0.139	-0.530	-0.491	-0.783	-0.635
	(0.19)				
Stunted (HAZ < -2 SD)	0.011	0.194	0.186	0.197	0.177
	(0.05)				
Severely Stunted (HAZ < -3 SD)	0.014	0.089	0.093	0.061	0.056
	(0.03)				
N	1,099	413	361	145	180
Weight-for-length/height z-score	0.165	-0.535	-0.389	-0.790	-0.777
	(0.19)				
Wasted (WHZ < -2 SD)	-0.004	0.174	0.147	0.186	0.159
	(0.05)				
Severely Wasted (WHZ < -3 SD)	-0.007	0.065	0.051	0.055	0.050
	(0.03)				
N	1,101	409	366	146	180
Weight-for-age z-score	0.125	-0.723	-0.570	-0.928	-0.900
	(0.13)				
Underweight (WAZ < -2 SD)	-0.034	0.176	0.116	0.151	0.122
	(0.04)				
Severely Underweight (WAZ < -3 SD)	-0.026	0.070	0.032	0.047	0.034
	(0.02)				
N	1,101	409	365	146	181

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.15: Impacts on Nutritional Status (Girls 24 - 59 Months)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.037	-1.580	-1.626	-1.367	-1.470
	(0.11)				
Stunted (HAZ < -2 SD)	-0.024	0.355	0.334	0.276	0.289
	(0.04)				
Severely Stunted (HAZ < -3 SD)	-0.006	0.124	0.123	0.066	0.076
	(0.03)				
N	1,713	294	291	585	543
Weight-for-length/height z-score	-0.093	-0.331	-0.363	-0.473	-0.395
	(0.14)				
Wasted (WHZ < -2 SD)	0.031	0.101	0.128	0.044	0.041
	(0.03)				
Severely Wasted (WHZ < -3 SD)	-0.006	0.046	0.038	0.005	0.004
	(0.02)				
N	1,705	298	291	581	535
Weight-for-age z-score	-0.081	-1.210	-1.264	-1.122	-1.095
	(0.10)				
Underweight (WAZ < -2 SD)	0.037	0.204	0.217	0.185	0.166
	(0.03)				
Severely Underweight (WAZ < -3 SD)	-0.003	0.066	0.045	0.043	0.027
	(0.02)				
N	1,707	298	291	582	536

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.16: Impacts on Nutritional Status (Panel)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.077	-1.109	-1.115	-1.339	-1.427
	(0.06)				
Stunted (HAZ < -2 SD)	-0.017	0.281	0.284	0.266	0.288
	(0.02)				
Severely Stunted (HAZ < -3 SD)	-0.014	0.121	0.120	0.071	0.085
	(0.02)				
N	5,967	1,368	1,237	1,757	1,605
Weight-for-length/height z-score	-0.063	-0.478	-0.429	-0.496	-0.381
	(0.08)				
Wasted (WHZ < -2 SD)	0.009	0.153	0.150	0.061	0.050
	(0.02)				
Severely Wasted (WHZ < -3 SD)	0.001	0.061	0.060	0.011	0.010
	(0.01)				
N	4,960	1,375	1,243	1,228	1,114
Weight-for-age z-score	0.032	-1.022	-0.970	-1.144	-1.124
	(0.05)				
Underweight (WAZ < -2 SD)	-0.000	0.195	0.181	0.174	0.160
	(0.02)				
Severely Underweight (WAZ < -3 SD)	-0.017	0.074	0.053	0.042	0.037
	(0.01)				
N	5,957	1,375	1,239	1,751	1,592

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.17: Impacts on Nutritional Status (Index child)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.067	-0.662	-0.590	-1.495	-1.495
	(0.08)				
Stunted (HAZ < -2 SD)	-0.009	0.220	0.208	0.327	0.325
	(0.03)				
Severely Stunted (HAZ < -3 SD)	0.000	0.098	0.106	0.088	0.097
	(0.02)				
N	3,567	763	677	1,091	1,036
Weight-for-length/height z-score	0.021	-0.554	-0.428	-0.538	-0.425
	(0.10)				
Wasted (WHZ < -2 SD)	-0.021	0.191	0.154	0.077	0.062
	(0.02)				
Severely Wasted (WHZ < -3 SD)	-0.005	0.066	0.060	0.014	0.013
	(0.02)				
N	3,540	761	678	1,079	1,022
Weight-for-age z-score	0.043	-0.822	-0.682	-1.201	-1.099
	(0.07)				
Underweight (WAZ < -2 SD)	-0.013	0.182	0.133	0.200	0.162
	(0.02)				
Severely Underweight (WAZ < -3 SD)	-0.014	0.067	0.035	0.050	0.031
	(0.01)				

N	3,545	761	677	1,083	1,024

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;

Table G.18: Impacts on Nutritional Status (Panel of index children)

Dependent Variable	Program Impact (1)	Baseline Treated Mean (2)	Baseline Control Mean (3)	Endline Treated Mean (4)	Endline Control Mean (5)
Length/height-for-age z-score	0.060	-0.666	-0.613	-1.503	-1.521
	(0.08)				
Stunted (HAZ < -2 SD)	-0.011	0.222	0.214	0.327	0.333
	(0.03)				
Severely Stunted (HAZ < -3 SD)	0.005	0.100	0.109	0.087	0.092
	(0.02)				
N	3,258	751	660	966	881
Weight-for-length/height z-score	0.040	-0.553	-0.415	-0.497	-0.390
	(0.10)				
Wasted (WHZ < -2 SD)	-0.028	0.191	0.156	0.066	0.059
	(0.02)				
Severely Wasted (WHZ < -3 SD)	-0.007	0.066	0.061	0.009	0.012
	(0.02)				
N	3,232	749	662	954	867
Weight-for-age z-score	0.052	-0.824	-0.685	-1.182	-1.092
	(0.07)				
Underweight (WAZ < -2 SD)	-0.012	0.182	0.136	0.194	0.158
	(0.02)				
Severely Underweight (WAZ < -3 SD)	-0.017	0.067	0.036	0.044	0.030
	(0.01)				
N	3,235	749	661	957	868

Notes: standard error in parentheses. * 10% significance ** 5% significance; *** 1% significance;