THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Livelihood Empowerment Against Poverty Programme
Endline Impact Evaluation Report

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Executive summary

This report presents results from the six-year follow-up evaluation of the Livelihood Empowerment Against Poverty (LEAP) cash transfer programme, Ghana's flagship social protection programme. Baseline data was collected on 699 LEAP households from Brong-Ahafo, Central and Volta Regions prior to their enrolment into the programme in 2010, and 914 comparison households from eight regions across Ghana. Follow-up surveys were conducted with these same households in 2012 (midline) and in 2016 (endline).

LEAP programme operations have improved significantly since 2012. A key finding in the 2012 evaluation was that LEAP payments were sporadic and too low to make a meaningful difference in the lives of beneficiaries. Based on these findings the LEAP Programme took successful steps to increase the value of the transfer and to ensure that payments became more regular. Results from a special module on LEAP operations in 2016 show that payment delivery has stabilized considerably, with payments coming steadily at two-month intervals for nearly three years preceding the 2016 survey, other than a brief period of disruption in the spring of 2016 when transfer delivery was transitioned to electronic payments, delaying payments for a portion of beneficiaries. As a result of these improvements, recipients perceive the programme as more reliable, with the majority expecting to receive a transfer in the next two months and to keep receiving it for at least five more years.

The amount of the transfer has also increased substantially since the 2012 evaluation (with increases in 2013 and 2015), now equivalent to18.3 per cent of pre-programme consumption on average at endline compared to seven per cent at midline (although the median share remains much lower at 13.3 per cent). It is important to note that despite these increases, both the mean and the median are still below 20 per cent share of consumption that, based on experiences of cash transfer programmes across the world, is the appropriate level for ensuring significant impacts across a range of household outcomes.

However, programme operations are not without issues. At the time of data collection in 2016, beneficiaries reported longer travel times to payment points than before, possibly as a result of the transition from manual payments by Ghana Post to payments using biometrically encoded cards, which are now administered by various separate financial institutions. Further, there may be more leakage of the grant, as a higher percentage of respondents report being ever asked for money both at payment points and in the community. Beneficiaries also report feeling less safe during transfer pick-up, and longer travel times to pick up payments.

LEAP households have experienced significant *improvements* across a wide range of indicators. Table 0.1 shows mean values of a range of indicators at baseline in 2010, and then the change in the mean value of the indicator in 2012 and 2016. An asterisk (*) denotes that the change in the mean is statistically different from 2010. Highlights of changes in each area of interest are described briefly below.

Consumption has increased in LEAP households. Specifically, LEAP households have experienced an increase in their monthly consumption per adult equivalent of GH¢75 (in real terms) between 2010 and 2016, which represents an increase of 67 per cent. This is largely driven by food consumption, which doubled over this period. Subjective well-being among LEAP households reflects the improvement in consumption, showing a 18 percentage points increase, with 57 per cent of beneficiaries now reporting they are happy with their life, compared to only 39 per cent at baseline. LEAP households have also improved the diversity of their diet, reducing the proportion of the food budget devoted to starches such as yam and cassava, and increasing the food budget spent on proteins such as meat and chicken, and vegetables.

LEAP households have demonstrated important improvements in their productive activities and financial position. There have been significant increases in the proportion of LEAP households with any productive assets (e.g. implements) or livestock, and fertilizer and seed use has increased by 14 and 11 percentage points respectively, reaching 18 per cent for fertilizer use and 50 per cent for improved seed use. LEAP households are also now more likely than before to operate a non-farm enterprise, and 31 per cent of LEAP households report holding some savings compared to only 20 per cent at baseline.

LEAP has led to limited improvements in schooling. Overall, enrolment levels remained stable for LEAP children between baseline and endline, at over 87 per cent. However, LEAP has led to some improvements in attendance: only about eight per cent of LEAP children missed any school at endline, much lower than a comparable estimate from the GLSS. The percentage of children who were in the correct grade for their age remained the same, though educational expenditures increased slightly from GH¢ 14 to GH¢ 16. The share of children working has remained very low throughout the duration of the study.

There have been important improvements in access to NHIS among adults in LEAP households**.** The per cent of LEAP adults with a valid NHIS card nearly doubled from just 28 at baseline to 52 per cent in 2016, but this is still far from universal coverage. Health conditions improved only slightly among LEAP adults: there was a decline in having an illness or injury in the previous four weeks, from 33 per cent in 2010 to 27 per cent in 2016, but, when ill or sick, a much higher percentage sought care, from 47 per cent in 2010 to 67 per cent in 2016. Interestingly, despite the increase in NHIS coverage and curative care seeking, the average number of times NHIS card holders used their cards in last 12 months has gone down, and health expenditures doubled for adults.

LEAP households also display an increase in NHIS access among children. The percentage of children 0-17 years old in LEAP households with a valid NHIS card more than doubled, from 23 per cent in 2010 to 57 per cent in 2016. The increase among girls was slightly higher than among boys. However, increases in insurance coverage did not translate into improved health outcomes nor reduced out-of-pocket health expenditures for children at endline. The percentage of children in LEAP households reporting being sick and ill in the previous 4 weeks increased from 10.3 per cent at midline to 16.4 per cent at endline. However, health care seeking behaviour improved significantly: when sick or ill, 75 per cent of children sought care in 2016, compared to only 60 per cent in 2012. Congruently, expenditures in health among children increased from GH¢ 2.0 to 3.5, and a slightly larger increase occurred among children under age 5.

Table 0.1: Change in LEAP households in selected indicators between 2010 and 2016

	Baseline Mean (2010)	Change at Midline (2012)	Change at Endline (2016)
Consumption and Well-being			
Real Consumption (GH¢)	112.202	41.580*	75.147*
Food Consumption (GH¢)	66.525	25.956*	66.965*
Cement Walls	0.296	-0.021	0.187*
Electricity	0.327	0.165*	0.328*
Happy with Life	0.387	0.335*	0.187*
Productive Activity			
Had Any Agricultural Assets	0.745	0.064*	0.053*
Had Any Livestock	0.407	0.043	0.131*
Operates Non-farm Enterprises	0.296	0.001	0.072*
Any seeds used	0.399	0.066*	0.109*
Any fertilizers used	0.138	0.095*	0.139*
Any Savings	0.204	0.198*	0.106*
Any Debt	0.239	-0.007	0.111*
NHIS			
HH has any member with valid NHIS	0.416	0.217*	0.352*
All HH members have valid NHIS	0.183	0.112*	0.116*
Adults - valid NHIS card for current year	0.279	0.203*	0.239*
Children - valid NHIS card for current year	0.234	0.255*	0.339*
Health			
Adult self-assessed health	0.729	0.104*	-0.006
Adult sick in last 4 weeks	0.298	-0.055*	-0.025
Child (0-17 years) sick in last 4 weeks	0.097	0.007	0.068*
Child (0-17 years) monthly health expenditure (GH¢)	2.007	-0.175	1.504
Education			
Currently Enrolled in School Children 13-17 years	0.825	0.054*	-0.005
Boy 13-17 years	0.833	0.085*	-0.007
Girl 13-17 years	0.816	0.027	-0.002
Missed Any School in Last Week Children 5-13 years	0.228	-0.182*	-0.161*
Boys 5-13 years	0.247	-0.196*	-0.178*
Girls 5-13 years	0.208	-0.166*	-0.142*
Child (5-17 years) monthly school expenditure (GH¢)	14.399	2.917*	11.028*
Operations		Midline Mean	Endline Mean
Received Payment in Last Two Months		0.50	.76*
Expect to Receive Payment in Next Two Months		0.47	.94*
Feel Safe Collecting Payment		.93	.84*
Travel Time to Payment <30 Minutes		.85	.48*

Notes: All indicators measured in per cent at baseline and percentage point change in 2012 and 2016, unless otherwise indicated. Operational indicators not measured at baseline; values shown are per cent in 2012 and 2016. * indicates that the change between that year and baseline statistically significant at 10 per cent or better. For operational indicators, * indicates change between 2012 and 2016 statistically significant at 10 per cent or better.

It is difficult to establish the portion of the changes described above caused specifically by the Programme. This is normally done by comparing the treated (LEAP) households to the comparison (non-LEAP) households in order to see what would have happened to the treated households without the programme. **These *impacts* are difficult to identify because of concerns with the comparison group**. A group of 914 households from eight regions were selected from a national household survey conducted by the Institute for Statistical, Social and Economic Research of the University of Ghana-Legon (ISSER) in 2010 to serve as a comparison group to evaluate LEAP impacts. These households were selected based on their similarity to LEAP households at baseline using a statistical technique known as propensity score matching. The assumption is that changes in these 'similar' comparison households would reflect what LEAP households would have experienced in the absence of the program, thus any differences in the two groups could be attributed directly to the programme. However, data triangulation with the Ghana Living Standards Survey (GLSS) and other sources suggests that these comparison households may not be an appropriate comparison group for LEAP, as they display extraordinarily large improvements in consumption and other indicators that are ***well above those implied by GLSS or per capita GDP growth*** during this period. As such, using this comparison group to estimate impacts very likely severely underestimates the true impact of LEAP.

To illustrate the point, when using this comparison group we find that the net impact of LEAP on consumption is essentially zero, while using an alternative counterfactual of per capita GDP growth suggests large and positive impacts of LEAP on consumption of between 30 and 37 per cent. Even if the actual impact was just one third of 37 per cent (12 per cent), it still compares favourably to impacts from other mature, established programs such as the Kenya CT-OVC and Mexico's PROGRESA (now called Prospera). These positive impacts in consumption are also more consistent with other findings on indicators of well-being, such as improved housing quality and the subjective measure, happiness. The reason for the poor comparison may be due to several factors, including the fact that treatment and comparison households were located in different communities and regions. Additionally, the comparison communities may have benefited from other programmes or development interventions, or had different income generation practices than treatment areas. ***Using this comparison group risks underestimating the true impact of the LEAP programme on household well-being. While these comparisons are included in the main text of the report, they should be interpreted with caution.***

As a result of the weaknesses with the comparison group, we find limited significant impacts directly attributable to LEAP across various indicators. LEAP has led to some improvements in school attendance for younger children, with an estimated impact of 5.5 percentage points for all younger children, and eight percentage points for younger boys. There were no positive impacts on being in the correct grade for age, and no impacts on educational expenditure, although educational expenditure of LEAP children is higher than among similar children in the GLSS sample. There is also no effect of LEAP on children's paid work nor on the number of days that children work on the household's farm. There are significant positive programme impacts on NHIS access for both adults and children. NHIS enrolment and care seeking behaviour improved significantly among children 0-17 years old in LEAP households during the evaluation period. LEAP has also had a significant impact on the proportion of households holding any savings, and the proportion owning any productive assets.



Acronyms

AE	Adult equivalent
ATT	Average treatment effect on the treated
C	Comparison group
CHPS	Community-Based Health Planning & Services
CLIC/LOC	Community LEAP Implementation Committee/Local Organizing Committee
CPI	Consumer Price Index
DD	Difference-in-differences
DFID	Department for International Development-United Kingdom
DSW	Department of Social Welfare
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GH¢	Ghanaian Cedis
GHIPSS	Ghana Interbank Payment and Settlement Systems
GLSS	Ghana Living Standards Survey
GoG	Government of Ghana
IPW	Inverse Probability Weighting
ISSER	Institute of Statistical, Social and Economic Research, University of Ghana
ITT	Intent-to-treat
LEAP	Livelihood Empowerment Against Poverty (LEAP)
MoGCSP	Ministry of Gender, Children and Social Protection
NHIA	National Health Insurance Authority
NHIS	National Health Insurance Scheme
PC	Per capita
PFI	Participating Financial Institution
PMT	Proxy means test
PP	Percentage point
PSM	Propensity score matching
SCT	Social cash transfer
T	Treatment group
UNC	University of North Carolina at Chapel Hill
UNICEF	The United Nations Children's Fund
USD	United States dollar

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Please note that the appendixes to this report are found in a separate document.

Figures and tables

1. Introduction

This document presents endline results from the impact evaluation of the Livelihood Empowerment Against Poverty (LEAP) Programme of the Ministry of Gender, Children and Social Protection (MoGCSP), Government of Ghana (GoG). The impact evaluation is implemented by a consortium of partners including the Institute for Statistical, Social and Economic Research of the University of Ghana-Legon (ISSER), the UNICEF Office of Research—Innocenti, and the University of North Carolina (UNC) under contract to the Government of Ghana and the United Nations Children's Fund (UNICEF) Ghana. The report documents the changes that have occurred in LEAP households over this six year period since they started receiving transfers. The report also provides impact estimates based on a comparison group that were drawn from a national household survey conducted by ISSER in 2010. A total of 1,350 households were interviewed at endline: 578 LEAP beneficiaries and 772 comparisons. The primary outcomes of interest at the household level are consumption and non-consumption expenditure and enrolment in the NHIS. At the child level, the primary outcomes are school access and health access. The endline report should be read in conjunction with the LEAP Evaluation Baseline Report from 2011 and the LEAP Impact Evaluation Report from 2014 (Handa & Park, 2011, 2014).

2. The Livelihood Empowerment Against Poverty (LEAP) Programme

2.1 Programme introduction and funding

LEAP is a social cash transfer programme which provides cash and free access to health insurance to extremely poor households across Ghana. The programme is the flagship of Ghana's National Social Protection Strategy and is implemented by the Department of Social Welfare (DSW) in the Ministry of Gender, Children and Social Protection. The programme's objectives are to alleviate short-term poverty and encourage long-term human capital development. LEAP started a trial phase in March 2008 and then began expanding gradually in 2009 and 2010, followed by a rapid scale-up in 2015- 2016. As of April 2017, the LEAP programme reaches over 213,000 households across Ghana. The programme is funded from general revenues of the Government of Ghana, donations from the Department for International Development, United Kingdom (DFID) and a loan from the World Bank.

2.2 Programme eligibility

LEAP eligibility at the time of the study roll-out was based on living in extreme poverty and having a household member in at least one of three demographic categories: households with orphan or vulnerable child (OVC), an elderly person (over age 65) without productive capacity, or person with severe disability unable to work (PWD). In 2015, LEAP added a new category of beneficiaries under a pilot initiative called LEAP 1000 (to support children in their first 1000 days of life), which targets extremely poor households with pregnant women and/or children under 12 months old. (This is the subject of a different evaluation and this recent change does not affect this evaluation's sample). At the time of the baseline for this evaluation, selection of households was done through a community-based selection process and

verified centrally with a proxy means test (PMT).[1] An exciting feature of LEAP, unique in the world, is that aside from direct cash payments, beneficiaries are entitled to free health insurance through the National Health Insurance Scheme (NHIS), which began in 2004-2005, allowing card-holders access to basic health services. This is facilitated through a Memorandum of Understanding between the MoGCSP and Ministry of Health, under which funds to cover enrolment in health insurance are transferred directly to the local health authority, who then issues cards to all members of LEAP households. Still, the distribution of NHIS cards in the field faces important operational challenges in reaching all members in LEAP families, including long wait times at National Health Insurance Authority (NHIA) offices, and limited number of NHIA offices in rural areas.

2.3 Transfer amount

The transfer amount has been increased twice since the inception of the Programme. During the initial 24-month period between the baseline and midline evaluations (from April 2010 to April 2012), LEAP households received between 8-15 Ghanaian Cedis (GH¢), or about USD 4-8 at the time, per month depending on the number of eligible beneficiaries per household. The payment amount was tripled in 2013, and then increased again slightly in 2015 to compensate for inflation. Currently, households receive between GH¢ 32-53 per month (about USD 7-12), depending on the number of eligible members. Sections 7.3 and 7.4 in the Operations chapter describe the evolution of the real and nominal value of the transfer, as well as the transfer as a share of consumption.

3. The LEAP conceptual framework

The intention of the LEAP Programme is to trigger a variety of improvements in the lives of beneficiaries, their households, and especially the children in those households. While the 2012 report explored the shorter-term outcomes of the grant, this evaluation aims to look at the medium-term impact. As discussed, the LEAP beneficiaries in this evaluation sample are ultra-poor households within three demographic categories: elderly, disabled, and OVC. LEAP households are poorer than the national rural average, with 51 per cent falling below the national (upper) poverty line and a median per capita daily expenditure of approximately USD 0.85 at baseline. As in most cash transfers targeted to the extreme poor, the immediate impact of the programme is typically to raise spending levels (consumption), particularly on basic needs such as food, clothing, and shelter, some of which will influence children's health, nutrition, and material well-being. Once immediate basic needs are met, and possibly after a period of time, the influx of new cash may then trigger further responses within the household economy, for example, by providing room for investment and other productive activity, the use of services, and the ability to free up older children to attend school.

[1] Targeting methods have evolved over time and recent expansions employed a demand based mobile targeting unit to enable those who were interested to apply. Applications were verified centrally using the PMT. The updated targeting system has proven very effective for reducing inclusion errors, according to the LEAP 1000 baseline study. For a more complete description, see the LEAP 1000 Baseline Report.

Figure 3.1 brings together these ideas into a conceptual framework that shows how LEAP can affect household behaviour, the causal pathways involved, and the potential moderating and mediating[2] factors. The diagram is read from left to right. We expect a direct effect of the cash transfer on household consumption (food security, diet diversity), on the use of services, and possibly even on productive activity after some time. Specifically, receiving an additional steady income will allow for increased spending on food and for purchase of other basic goods, such as clothing. As the more immediate needs are satisfied in the earlier stages of the program, the additional income stream may be invested in productive activities – such as hiring agricultural labourers, purchasing livestock, or investing in assets for income generation – that will multiply the effect of the grant by increasing the amount of additional money available to the household.

This, in turn, has an effect on health and practices of adult/productive members of the household (not depicted). Having additional calories available, reduced stress that comes with a steady income, and availability of free NHIS registration would theoretically improve health of adults in the household, resulting in productivity increases. Purchases of certain assets would have the potential to increase individual productivity as well. Having a monthly source of income would also mitigate the possibility of not meeting basic needs for the household in any given month, thus allowing household members to change their income generating practices and their time use, either by taking on higher financial risks, such as starting a small enterprise, or by switching away from employment that is harmful to one's health. While the complex interplay between increased consumption and productivity is not reflected in the graph (since all arrows are one-directional), improved health and increased productivity, in turn, lead to a higher income and contribute to higher consumption. While we do not measure all of these potential changes at the individual level, we do assess adult health as one of the outcomes.

Sociological and economic theories of human behaviour suggest that the impact of the cash may work through several mechanisms (*mediators*). An important component of LEAP is the free enrolment of participants in the NHIS. This enrolment may itself directly trigger potential behaviour change in terms of inducing households to use health services and is thus considered a potential mediator or mechanism through which the effect of LEAP is felt at the household level. Another possible mediator is social networks—the programme may encourage social interaction among participants which can facilitate the exchange of information and knowledge that could ultimately change behaviour.

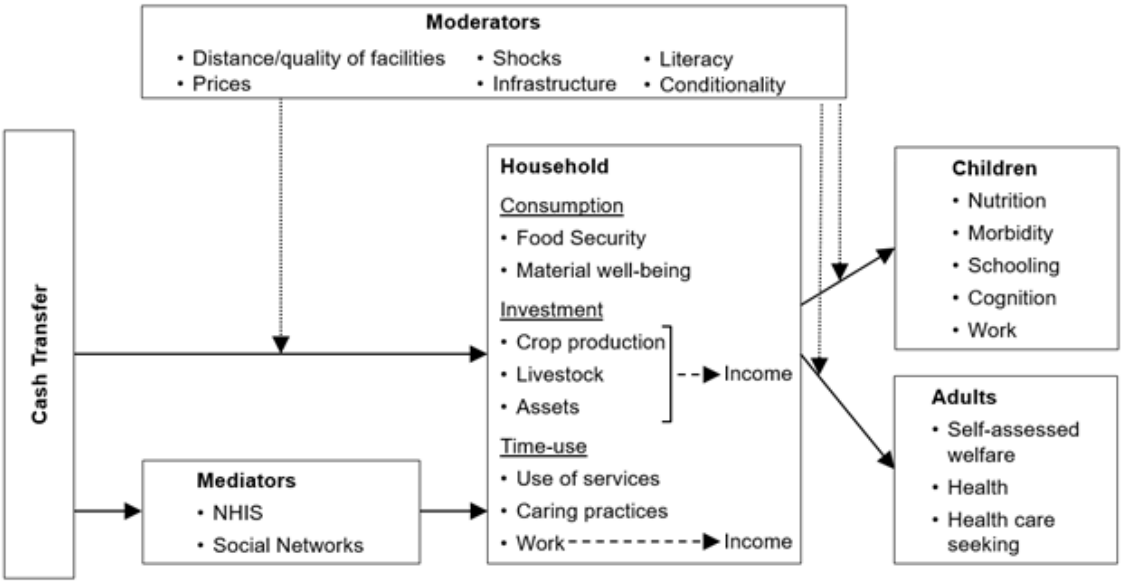
At the far right of the diagram is the effect on children. It is important to recognize that any potential impact of the programme on children must work through the household through spending or time allocation decisions (including use of services). The grant theoretically will impact the nutritional status of both young and older children through increased food consumption at the household level, therefore improving health and cognitive abilities, and reducing illness through ability to resist disease and the reduction in exposure to diseases caused by malnutrition. For older children, an additional source of income in the household is expected to have multiple positive effects. First of all, the grant or additional income from investing the grant can be directly used for school fees and other schooling costs, thus prolonging the child's education. Secondly, higher income may free older children from the necessity of

[2] A mediator is a factor that can be influenced by the programme and so lies directly within the causal chain. A moderator, in contrast, is not influenced by the programme. Thus, service availability is a moderator, whereas NHIS participation is a mediator because it is itself changed by the programme. Parental literacy is a moderator and not a programme outcome, unless the programme inspires caregivers to learn to read and write.

contributing to a household's economic activities, which would both a) enable children to return to or stay in school instead of working; and b) keep children from potentially harmful labour.

The link between the household and children can also be moderated by environmental factors, such as distance to schools or health facilities (as indicated in the diagram), household-level characteristics themselves such as the mother's literacy, and the degree of follow-up from the social welfare workers. Moderating effects are shown with dotted lines that intersect with the solid lines to indicate that they can influence the strength of the direct effect. Note that from a theoretical perspective, some factors cited as mediators may actually be moderators and vice-versa (such as social networks).

Figure 3.1: Conceptual framework for endline impact evaluation of Ghana LEAP



A key assumption underpinning the conceptual framework is that transfer payments are regular and predictable, and are large enough to make a meaningful difference. During the midline evaluation it became clear that neither of these assumptions had been met. Specifically, several transfer payments were missed during the 24-month evaluation period between 2010 and 2012, and a few large lump-sum transfers were made as 'catch-up' payments just before the 2012 midline survey was fielded. These lumpy payments, along with the overall low level of the transfer, are the likely explanation of why the observed pattern of impacts at midline deviated significantly from what was predicted in the conceptual framework. For example, there were limited impacts on consumption, but significant impacts on debt reduction, suggesting that households used the lump-sum transfers to pay down debt or for large expenses they may have normally incurred debt to purchase. Based on the results of the midline, MoGCSP made a concerted effort to both increase the value of the transfer and to regularize payments. The results of these efforts are assessed in the Operations Section (Chapter 7) of the report, and will provide important context for interpreting the results.

4. Evaluation questions

The main objective of the programme is to reduce poverty by increasing consumption and promoting access to services and opportunities among the extreme poor. The programme aims to achieve this through a series of specific objectives, namely: (1) improving basic household consumption and nutrition among children below five years of age, the aged (65 years and above without productive capacity) and people with severe disability; (2) increasing access to health care services among children below five years of age, the aged (65 years and above without productive capacity) and people with severe disability; (3) increasing basic school enrolment, attendance and retention of beneficiary children between five and 15 years of age; and (4) facilitating access to complementary services (such as welfare, livelihoods and improvement of productive capacity) among beneficiary households. Although the study does not explore objective (4) fully, we look at NHIS services enrolment, which is important for facilitating other goals.

The evaluation is focused on measuring these specific objectives in order to assist the Ministry to determine the programme's effectiveness. The main evaluation goals are therefore closely aligned, and are as follows:

1. What are the impacts of LEAP on consumption and non-consumption expenditures, including changes in food security? Have the treatment households' consumption and savings increased, and has the food security improved?
2. What are the effects of the programme on both child and adult health, including NHIS enrolment, morbidity, and use of health services?
3. Does receiving the transfer increase the households' children's enrolment and attendance of school, and decrease child labour?
4. What are the impacts of LEAP on productive activities? This includes the analysis of effects of receiving the transfer on the households' labour, ownership of assets and livestock, crop production, and other household enterprises.

Finally, the evaluation aims to examine the programme's operations to both establish how they feed into the programme's impacts and whether improvements need to be made to them. The intention is to determine whether the programme's disbursement mechanisms have improved, whether the transfers are delivered consistently and accurately, and whether the programme operations face any other issues that need to be addressed (such as the value of the transfer).

5. Evaluation design

5.1 Sample

The original sample interviewed for this study consisted of 699 beneficiary households and 914 comparison households, for a total of 1,613 households. At baseline in 2010, the treatment households (who were to be enrolled on LEAP) were matched to statistically similar comparison households that were not enrolled in LEAP, using a propensity score matching (PSM) design. This comparison sample was drawn from a nationally representative random sample of 5,000 households across Ghana (more details on the comparison group are found in the next section). Both groups were re-interviewed after 24 months (midline survey) to measure short term impacts of the programme. During the midline survey, an additional 215 comparison households were interviewed who were in communities that were already being visited, and who had 'similar' characteristics to LEAP households. These households were added to

the original 699 comparison households (for a total of 914 C households, of which 858 and 772 were interviewed at midline and endline, respectively).

The endline survey re-interviewed treatment and comparison households from the midline, in an effort to evaluate the long term impact of this programme. In total, 1,350 households were surveyed at endline: 578 treatment (LEAP beneficiary) households and 772 comparison households. The sample achieved has a nominal attrition rate of about 16.3 per cent. Attrition is discussed further in Section 6 of this report.

Table 5.1.1: Samples for the evaluation

	Baseline (2010)	Midline (2012)	Endline (2016)
Treatment (LEAP)	699	646	578
Comparison	914	858	772
TOTAL	1613	1504	1350

One important issue to note is that as six years have passed since the original treatment and comparison group assignments, there has been some cross-contamination of the two groups. As discussed in more detail in Chapter 7, some households in the treatment group report that they do not receive the LEAP transfers, whereas a small percentage of households in the comparison group reports that they are now beneficiaries of LEAP. In order to explore whether this cross-contamination affects impact estimates, we conducted an analysis of the average treatment effects on the treated (ATT) analyses for all indicators (as discussed further in Section 8.1), which are presented in the Appendixes A.4-A.8. However, there are few to none notable differences between the intent-to-treat (ITT) and the ATT results, and these are highlighted where they exist.

5.2 Analytical approach and viability of comparison group

Technical details of the selection of the comparison group and statistical methods are presented in the Appendix. These are summarized briefly in this section.

An ideal evaluation would randomize a set of programme-eligible households into treatment and comparison arms but this is often not possible in large-scale programmes that are ongoing. In the present study the comparison households were selected from an existing national household survey conducted in 2010 by the Institute for Statistical, Social and Economic Research of the University of Ghana-Legon (ISSER) and Yale University (USA) using propensity score matching (PSM). These households come from different communities because the ISSER sample was drawn randomly and did not include LEAP communities selected for the evaluation. Slightly more than half of the matched sample is also drawn from different regions (Western, Eastern, Ashanti, and Northern) because there were not enough good matches in the ISSER sample in the same regions as the LEAP households. The details of the PSM application in this evaluation are summarized in Appendix A.1.1.

As reported in the Baseline and Midline Evaluation Reports, there are a few differences between the comparison sample (unweighted) and the treatment sample. In particular, we could not perfectly balance all the characteristics of the matched comparison households with treatment households because treatment households are very unique due to LEAP eligibility categories, and as the ISSER survey was a national survey, it did not have enough households that were exactly similar to LEAP households in the same geographical locations (for more details, please see Table 2.2 in the 2014 Midline Evaluation Report).

To address the fact that comparison households are not identical to treatment households, we used the technique of inverse probability weighting (IPW) to reweight the comparison households (Soares, Ribas,

& Hirata, 2010; Imbens & Wooldridge, 2009; Wooldridge, 2007; Hirano et al., 2003). This technique uses the propensity score for each comparison household as a 'weight' in the statistical analysis to reflect how similar it is to a treatment household (the higher the score, the more similar, and the greater the weight). With the re-weighting, the characteristics among the two groups are fully balanced.

The statistical approach we take to derive average treatment effects of LEAP is the difference-in-differences (DD) estimator. This entails calculating the change in an indicator such as food consumption between baseline (prior to programme initiation—2010) and endline (2016) for treatment and comparison households, and comparing the magnitude of these changes. Table 5.2.1 illustrates how the estimate of DD between treatment (T) and comparison (C) groups is computed. The top row shows the baseline and endline values of the indicator and the last cell in that row depicts the change or difference in the value of the outcome for treatment units. The second row shows the value of the indicator at baseline and endline for the comparison group units and the last cell illustrates the change, or difference, in the value of this indicator over time. The difference between these two differences, shown in the shaded cell in Table 5.2.1, is the difference-in-differences or double-difference estimator.

Table 5.2.1: The difference-in-differences (DD) estimator

	Baseline (2010)	Endline (2016)	1st difference
Treatment (T)	T_{2010}	T_{2016}	$\Delta T=(T_{2016}-T_{2010})$
Comparison (C)	C_{2010}	C_{2016}	$\Delta C=(C_{2016}-C_{2010})$
			Difference-in-differences $DD = (\Delta T - \Delta C)$

The critical assumption behind the DD (called the *parallel trends assumption*) is that general trends are common for both the intervention and comparison households. In this evaluation, because the comparison group comes from different districts and regions, the 'parallel trends' assumption may not hold perfectly. A key threat to the internal validity of the evaluation is the assumption that the evolution of indicators in the comparison group is identical to what the evolution would have been in the treatment group without the programme. It is this assumption that allows us to use the comparison group as the standard by which we can judge the effectiveness of LEAP and its impacts on households.

Figure 5.2.1 shows the evolution of per adult equivalent (AE) consumption in LEAP (grey dashed) and LEAP comparison (purple dashed) households from the evaluation study (these and all series in this figure are deflated to 2016 GH¢). At baseline in 2010 the two groups are equivalent. However, the LEAP comparisons grow at a much faster rate between 2010 and 2012 so that mean consumption in 2012 is slightly higher than in treatment households,[3] while between 2012 and 2016 treatment households 'catch-up' so that by 2016 they are again equivalent to the comparison households. The parallel assumption states that the trend in consumption among comparison households is what it would have been in LEAP

[3] This is reported in the Midline Evaluation Report.

households absent the treatment. This assumption implies that the steep growth in consumption between 2010 and 2012 in the comparison group is what would have happened in treatment households without the programme. This, however, appears unrealistic given other national evidence (described below), highlighting the necessity to further examine how and to what extent it is applicable to compare the consumption improvements in treatment households to that of the comparison group.

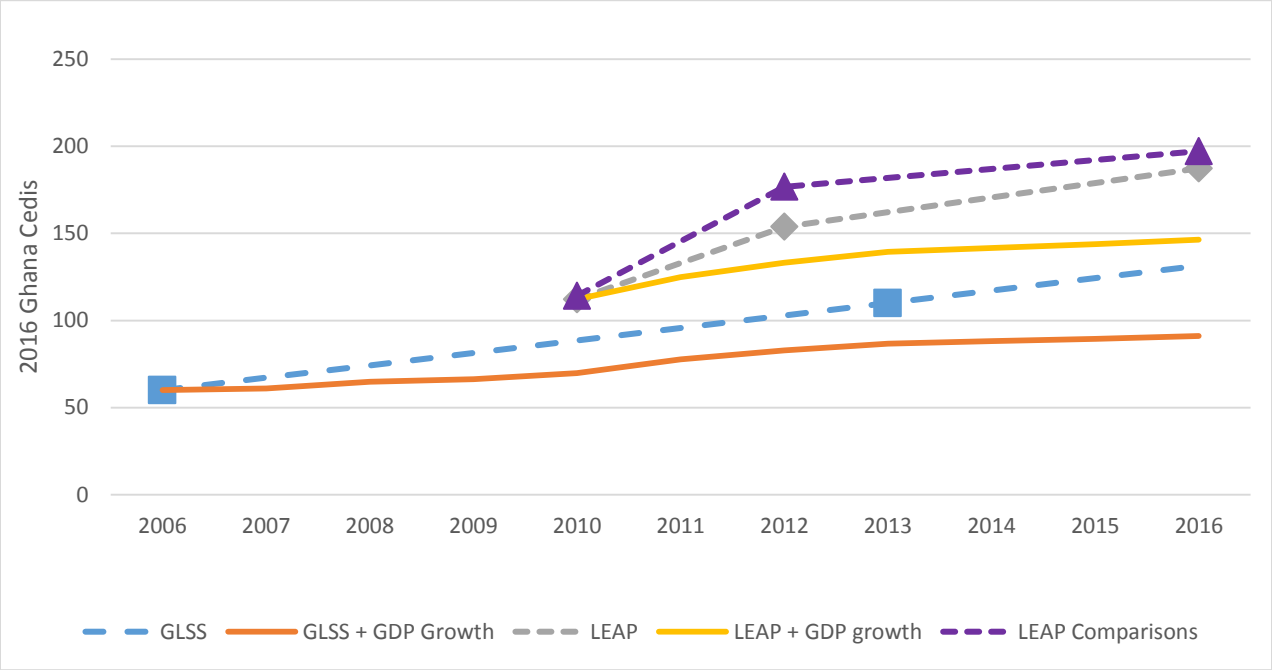
To appreciate the significance of the high rate of consumption growth among comparison households, we consider two additional data sources. First, Figure 5.2.1 shows the two actual data points from Ghana Living Standards Survey 5 (GLSS5, 2005/2006) and GLSS6 (2012/2013) for the poorest quintile in rural areas in the same regions as the treatment households in the evaluation survey (Brong-Ahafo, Volta and Central). These are households who are poor enough to be eligible for LEAP if they met the demographic criteria. Notable is the fact that consumption growth among these households is lower than that in either treatment or comparison households.

Secondly, we can simulate the consumption growth in the evaluation sample since baseline assuming it had followed GDP growth perfectly, shown in gold. Thus, if growth in Ghana had been neutral (though in reality it heavily favoured the rich, widening the inequality gap), consumption in the evaluation survey should have grown at a significantly slower pace than what we actually observe among comparison households. **Both scenarios suggest that the growth in consumption in comparison households is significantly higher than would reasonably be expected** given the other data sources, if indeed these comparison households were representative of extreme poor rural households in Ghana. In fact, the trends imply that consumption growth in the comparison households was *double* that of the consumption growth of the poorest quintile of rural households according to GLSS, and *over three times* that of overall GDP growth during that same period. The latter figure contrasts sharply with recent analysis from GLSS5 and GLSS6 which shows that growth was not pro-poor in Ghana over this period, and in fact, consumption growth among the richest decile was *40 per cent higher* than that of the poorest decile[4] (Cooke, Hague & McKay, 2016). This leads us to conclude that the significantly faster pace of consumption growth in the comparison households were due to unique factors that we were unable to observe and control for, and which were not necessarily experienced by other rural poor with similar economic status as LEAP households.

The triangulation with other data sources, plus the fact that the non-experimental study design led to some demographic and geographic differences from the start between the LEAP treatment group and the comparison group, suggests that the **parallel trends assumption may not hold and that the evolution of consumption, and by extension the evolution of other indicators in the comparison group, do not represent an accurate counterfactual for LEAP households**. In particular, the triangulation suggests that the comparison group did much better than what we would expect from a typical ultra-poor household in rural Ghana over this period. This has important implications for the interpretation of results using the DD approach. Consequently, in our analysis of results, we will also discuss the **'change'** among LEAP households only during the period 2010-2016. Change, in this report, estimates the variation of selected indicators in LEAP treatment, from baseline to endline. We will also use alternative benchmarks for the counterfactual when discussing the impacts of monetary outcomes such as consumption.

[4] GDP consumption growth among the poorest decile was half that of the richest decile (Cooke, Hague & McKay, 2016)

Figure 5.2.1: Consumption growth – alternative data sources



5.3 Data collection and field work

Twelve field teams, each comprising four enumerators and a supervisor began fieldwork on July18th, 2016. The teams were expected to complete 1,504 interviews of households located in 235 communities in 78 districts across eight administrative regions (Western, Central, Eastern, Volta, Ashanti, Brong-Ahafo and the Northern regions) of Ghana.

Fieldwork also included tracking of those households that had relocated. Enumerators for tracking were dispatched to follow up on the 61 trackable cases. Additionally, the teams were also tasked with following up on 13 randomly selected cases out of 84 reported as collapsed single-member households in order to confirm their non-existence. Retention was reasonable given a six year follow-up timeframe, and is discussed further in Section 6.

Generally, the fieldwork proceeded smoothly, except for the usual challenges of tracking that are associated with undertaking panel surveys.

6. Attrition

Attrition occurs when households from the baseline sample are missing in the follow-up samples. Attrition may be caused by a variety of events such as refusals, migration, death, dissolution of households or any other circumstances related to the household or to the survey operations that make it difficult to locate a household during the follow-up data collection. Attrition is important for estimating programme impact because it not only decreases the available sample size, leading to less precise impact estimates, but it could also introduce bias into the sample. If attrition is selective – that is, if 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 examine both selective overall attrition and differential attrition from the 2010 baseline to the 2012 and 2016 surveys. Overall attrition refers to the total share of observations missing at the follow-up surveys from the original baseline sample. If overall attrition is selective, it can change the characteristics of the remaining sample, rendering it non-representative of the population from which it was obtained. In that sense, overall attrition could affect our ability to generalize the evaluation results to the population of interest. Differential attrition occurs when the treatment and control samples differ in the types of households that leave the sample. Differential attrition can create biased samples and impact estimates by increasing the differences between the programme and comparison groups obtained at baseline.

Table 6.1 shows information on the number of households in the three surveys, attrition rates and the retention rate in the panel of analysis (those households interviewed in the three surveys). The overall attrition rate between baseline and endline was moderate at 16.3 per cent, with very small variation in the treatment (17.3 per cent attrition) and the comparison groups (15.5 per cent). Overall attrition was about 5.4 per cent every two years, which is in line with results observed in other Transfer Project surveys, and expected given a 6-year follow-up endline survey.

Table 6.1: Households in the three evaluation, attrition and retention rates

Groups	2010 Baseline (Households)	2012 Midline (Households)	Attrition rate by 2012 (%)	2016 Endline (Households)	Attrition rate 2010-2016 (%)	Retention in the panel rate (%)
Total sample	1,613	1,504	6.8	1,350	16.3	83.7
Treatment group	699	646	7.6	578	17.3	82.7
Comparison group	914	858	6.1	772	15.5	84.5

We examined whether overall attrition was selective by comparing the average baseline values on 48 indicators of those that remained in the panel to those lost to follow up (See tables in Appendix A.2). We found that 22 out of 48 indicators were statistically different at the 5 per cent significance level. These results indicate that overall attrition was selective in the analysis sample.

We investigated if differential attrition affected the balance between the treatment and comparison groups using baseline data on the panel of households, that is, those included in the 2010 baseline, midline and endline surveys (see differential attrition tables in Appendix A.2). We found balance in 42 out of 45 indicators. These results indicate that balance between T and C groups has not deteriorated as result of the attrition rate.

In order to deal with selective overall attrition we used inverse probability weighting to adjust the survey weights. To implement the procedure, we estimated a model of remaining in the panel using household-level background characteristics and outcome measures as explanatory variables, and then adjusted the weights using the predicted probabilities of being in the panel obtained from the model. Additionally, we included several control variables and fixed effects at the cluster level in the impact estimation models to account for any persistent differences between the treatment and comparison groups. Thus, the estimates in this report correct for the selective attrition. In addition, because the sample used in this report is different from the sample used in the midline report (due to attrition), the impact estimates at midline reported here will not be exactly the same as those presented in the midline report.

7. Operational analysis

7.1 Introduction

This section discusses the operations of the LEAP Programme based on an operations module that was included in the midline and endline surveys for the LEAP impact evaluation, as well as on programme records obtained from the LEAP Management Secretariat. The module contains information on a range of topics related to the administration of the LEAP Programme, including beneficiary satisfaction, targeting, communication and information, and payment delivery.

At the start of the operational module, the person most knowledgeable about LEAP in each of the 1,350 households interviewed at endline were asked a filter question on whether they had heard of LEAP. At the time of the survey, almost all treatment households (98.5 per cent) were aware of the LEAP Programme, as were 33.7 per cent of the comparison group. This demonstrates that awareness of the programme has spread since the 2012 midline evaluation, during which nearly 90 per cent of the comparison group respondents reported no knowledge of LEAP. The number of households originally designated as treatment that have not heard of LEAP has also decreased, from 7.4 per cent at midline to only 1.5 per cent at endline.

Both T and C households that had knowledge of LEAP were then asked whether they had ever received a LEAP payment. Ninety-one per cent of T households had received a LEAP transfer at some point in time. Altogether, 9.4 per cent of households in the treatment group (who are supposed to be current or past programme beneficiaries according to initial programme records) had either never heard of the programme or had heard of the programme but have never received a LEAP payment. Nonetheless, this is an improvement on the recipient status of households from the survey in 2012, when 15.5 per cent of households in the treatment group had either never heard of or had never received LEAP payments.

OPERATIONAL ANALYSIS TAKE-AWAYS

- Payment delivery has stabilized, with payments coming steadily at two-month intervals for nearly three years preceding the latest survey
- The amount of the transfer has increased substantially since the 2012 evaluation, making up 18.3 per cent of consumption on average at endline compared to seven per cent at midline
- The median share remains much lower at 13.3 per cent, and the transfer is still below the desired 20 per cent share of consumption, which is the appropriate level for ensuring significant impacts across a range of household outcomes.
- Decline of real value of transfer puts the real value below value of 2013 increase
- Some problems with the administration remain, including longer travel times to payment points than at midline. More respondents report being ever asked for money both at payment points and in the community, feeling less safe during transfer pick-up and longer travel times to pick up payments.

Additionally, while the majority of the comparison households have not heard of LEAP, 5.6 per cent of the comparison group reported having received LEAP payments, indicating a small degree of contamination. This degree of contamination has increased slightly since the midline survey, when 2.8 per cent of comparison households reported receiving LEAP payments. This may be due to factors such as large-scale expansion of the programme, or emergency entry into LEAP. Table 7.1.1 summarizes the number and percentage of cases in each of the categories described above.

Table 7.1.1: Awareness of and beneficiary status of the LEAP Programme

	Midline		Endline	
	Treatment	Comparison	Treatment	Comparison
Ever heard of LEAP	92.6	11.4	98.5	33.7
Ever received payment from LEAP	84.5	2.8	90.6	5.7
Current beneficiary of LEAP	83.9	2.8	85.7	5.6
Total number	646	858	578	772

The operations module only asked detailed questions of LEAP households who considered themselves current recipients, so the majority of this section only uses data for those 497 LEAP households (85.7 per cent of the designated LEAP household sample). However, the administrative data presented uses all households from the LEAP sample, regardless of the current self-reported grant receipt status.

7.2 Timeline and coverage of payments

Operational module results from 2012 showed that payments in the earlier years of the programme were irregular and unpredictable, although the programme also had many positive attributes such as short waiting times during transfer pick-up. The newest data suggests that the reliability and timeliness of payments have improved dramatically since the 2012 survey, and that respondents have come to expect regular payments. The entire system has recently shifted from manual payments from Ghana Post to payments using biometric encoded cards, administered by Ghana Interbank Payment and Settlement Systems (GhIPSS), in partnership with local financial institutions. This generated sporadic interruptions in services in March through July 2016, directly before the survey was fielded.

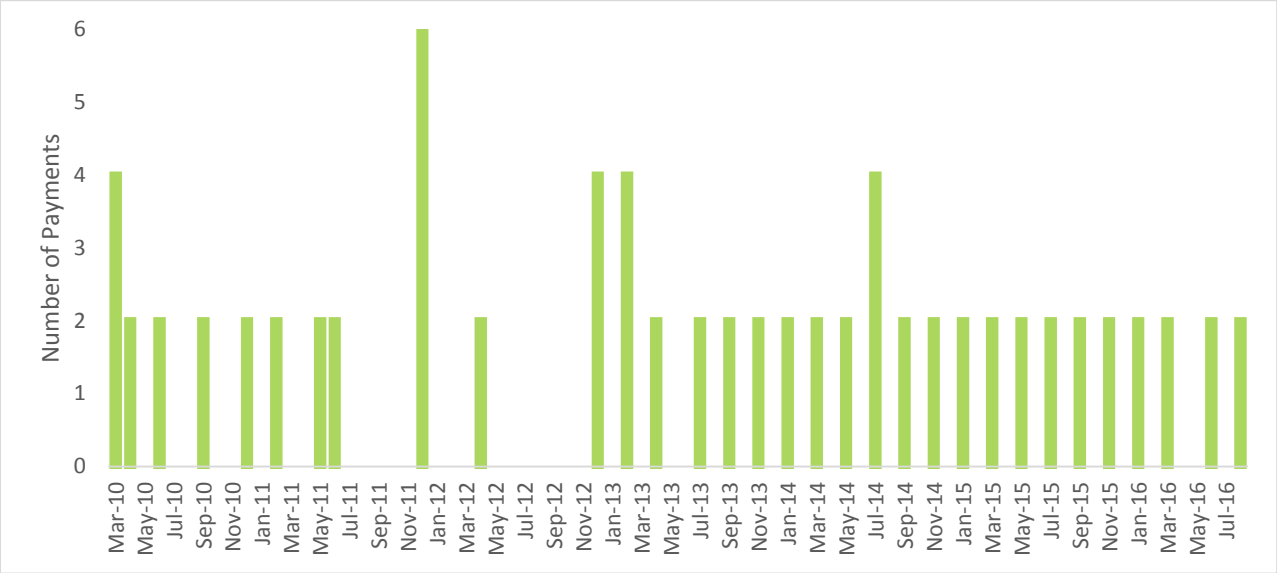
In the field survey, respondents were asked about details of the last payment, such as the date of last payment received and payment amount, as well as about their expectations for the next payment. LEAP programme data was also obtained to provide the supply-side picture. More details are below.

7.2.1 Programme payment records

The LEAP Programme has shared administrative information on transfer distribution for the treatment group with the researchers, including the payment dates, number of payments, and status of each payment (where information was available). As seen in Figure 7.2.1, payment frequency and consistency have improved considerably in the last three years of the programme. While payments were sporadic prior to July 2013, disbursements have since mid-2013 taken place on a regular basis, every two months, and the vast majority of beneficiaries are paid on time. Some small disruptions in payment regularity took place immediately preceding the survey in early 2016, as not all beneficiaries were registered onto the new e-payment system by the time manual payments were discontinued, so some households received a few payments with a delay or had not yet received them at the time of the survey.

Unfortunately, not all programme data were readily obtainable for analysis. The data from early 2013 was not entirely complete (we received thorough regional aggregates, but not information on our specific sample at the time of compiling this report), and based on this data it is likely that more than two months' worth of payment was released during the March through May 2013 payment period. Additionally, the programme was in the midst of switching from cash to electronic payments for four months prior to the survey, and the monitoring system data for the electronic payments are thus not yet available. For latest periods when data is available (all of 2015), we see that the percentage of beneficiaries paid out of those reporting ever being beneficiaries is consistently high, in the 96-98 per cent range.

Figure 7.2.1: Timeline of payments



7.2.2 Payment receipt and expectations

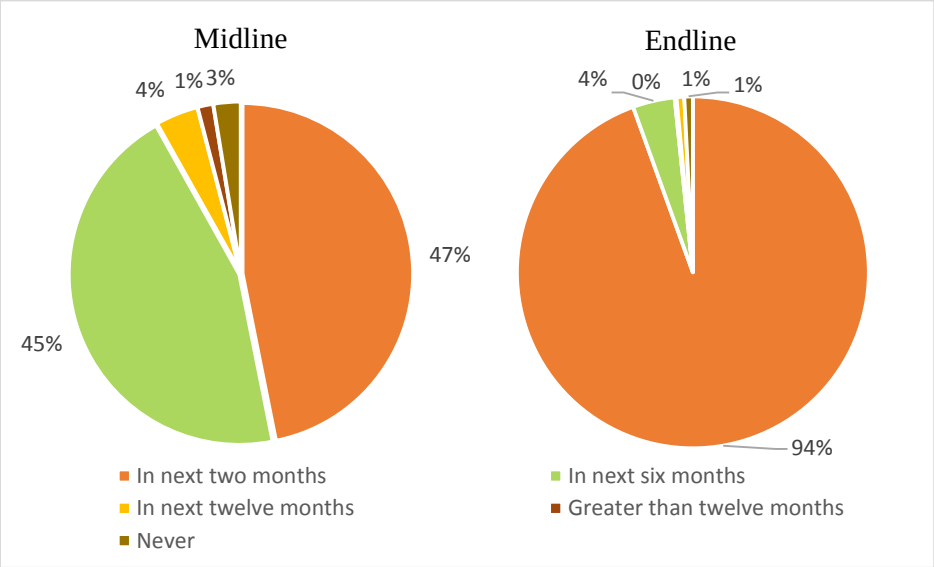
We see a corresponding improvement in self-reported payment receipt between 2012 and 2016. Over three quarters of the respondents who consider themselves current beneficiaries reported receiving the latest LEAP payment in the past two months before the survey, and an additional sixteen per cent received the payment in the past three to four months (Table 7.2.1). This is in sharp contrast with the previous evaluation, when less than half of the current beneficiaries received a payment in the past two months, and nearly thirteen per cent had not received a payment in five or more months.

Table 7.2.1: Number of months since last payment was received (percentage)

Months	Midline	Endline
0-2 months	49.6	75.5
3-4 months	37.7	16.0
5-9 months	10.8	6.5
10 or more months	1.9	2.1
Total	100.0	100.0

This increased regularity of payment is reflected in the beneficiaries' expectations for the next payment. As seen in Figure 7.2.2, 94 per cent of recipients at endline expected the next payment to arrive in the next two months, compared with only 47 per cent at midline. The shares of those expecting the payment in the next six months, twelve months, more than twelve months, and never have all declined, showing increased trust in the regularity of LEAP payments.

Figure 7.2.2: Expectations by current beneficiaries for next payment



The expectations of beneficiaries for the duration of future transfers have also altered slightly, with 96 per cent of current beneficiaries now expecting to receive LEAP transfers for more than five years or the rest of their life, compared to 90 per cent in 2012. Fewer beneficiaries also expect to receive it for six months more or less (two per cent compared to four per cent in 2012). This suggests that the transfer is coming to be seen as a reliable and long-term fixture in the households' income. The stability of the grant is very important to its effectiveness, as beneficiaries can smooth their consumption better if they know they can count on bi-monthly income, and can also better plan their future spending and investment, allowing them to maximize benefits from the grant.

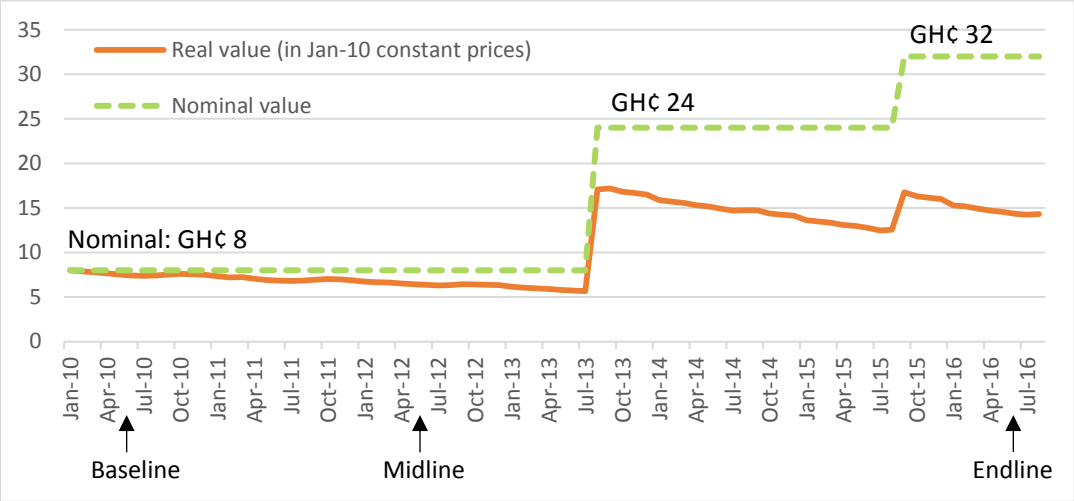
7.3 Transfer amount

The transfer amount has risen both in nominal and real terms since the 2012 evaluation of the grant, as seen in Figure 7.3.1. The amount was first increased substantially from GH¢ 8 to 24 per month for a one beneficiary household in 2013, and then increased again in October 2015 to keep the real value of the grant steady. As discussed in the background section (Section 2.3), households with one eligible member currently receive GH¢ 32.00 per month. Those with two, three, or four or more eligible members receive GH¢ 38.00, GH¢ 44.00 and GH¢ 53.00 respectively.

Respondents report receiving an average payment of GH¢ 81.5 per household during the last grant disbursement, which covered two months of benefits. The average monthly benefit per household is therefore GH¢ 40.8; the median transfer is similar at GH¢ 36.5 a month. The average amount disbursed at the last two-month payment according to the administrative LEAP Programme data was GH¢ 76 (i.e. GH¢ 38 per month), slightly lower than reported by beneficiaries.[5]

[5] The average reported transfer in this survey is a decrease from the average amount reported in 2012 – GH¢ 181.5 – but this is explained by the fact that at the time of the 2012 survey, large lump-sum payments of arrears were being paid out

Figure 7.3.1: Transfer amounts for households with one beneficiary 2010-2016 (in GH¢), real and nominal



Although the transfer, in nominal terms, has been increased twice (2013 and 2015), it is more important to look at its real value, adjusted for inflation (i.e. in real terms). When the nominal amount remains steady (green dotted line), the real value declines (shown by the solid orange line in Figure 7.3.1). As seen in the figure, the transfer value needs regular increases to keep its value, as ***it is currently of lower value than it was in July 2013***, when the first decision to raise the transfer considerably was made. It is important to either tie the transfer value to inflation, or to implement a mechanism to periodically review the transfer amount to make sure its value does not decline.

7.4 Transfer as a share of consumption

The value of the transfer as a share of households' consumption at baseline has increased notably since the 2012 evaluation: the LEAP transfer now makes up as much as 18.3 per cent of consumption on average, compared to only seven per cent at midline. However, the median share is much lower than the mean and, at 13.3 per cent, is well below the target of 20 per cent share of consumption (Davis & Handa, 2015) in fact, more than two thirds (68.8 per cent) of the current recipients remain below this target. Both the mean and the median also remain low compared to government cash transfer programmes in other countries (Figure 7.4.1).

due to interruption in routine payments in the months prior. As seen in Figure 7.2.1, skipped payment periods were followed by the disbursement of four or even six months' worth of benefits in 2012. The regularity of payments achieved from 2013 to 2016 ensured that only two monthly payments at a time were disbursed, as prescribed for routine operations.

Figure 7.4.1: Transfer as a share of consumption across countries (mean)

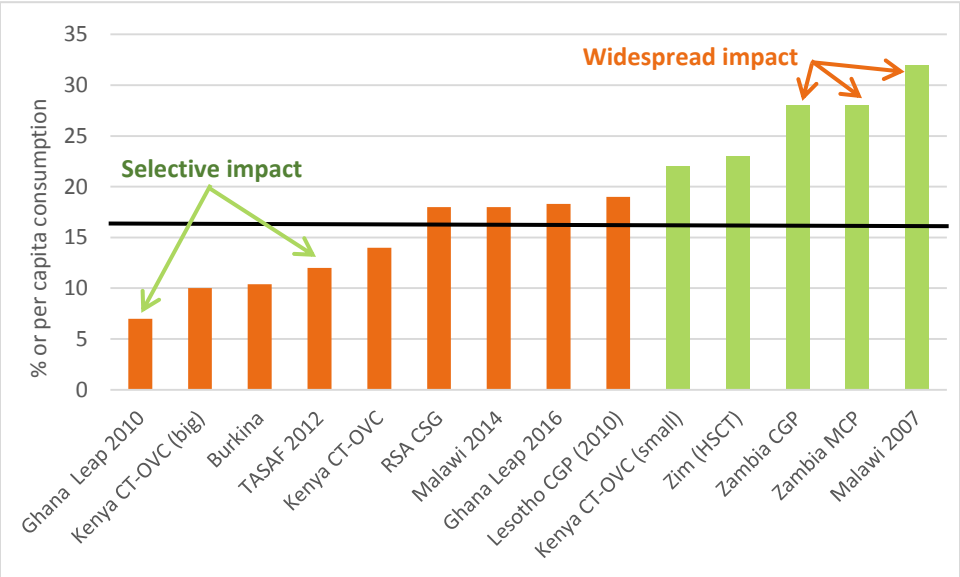
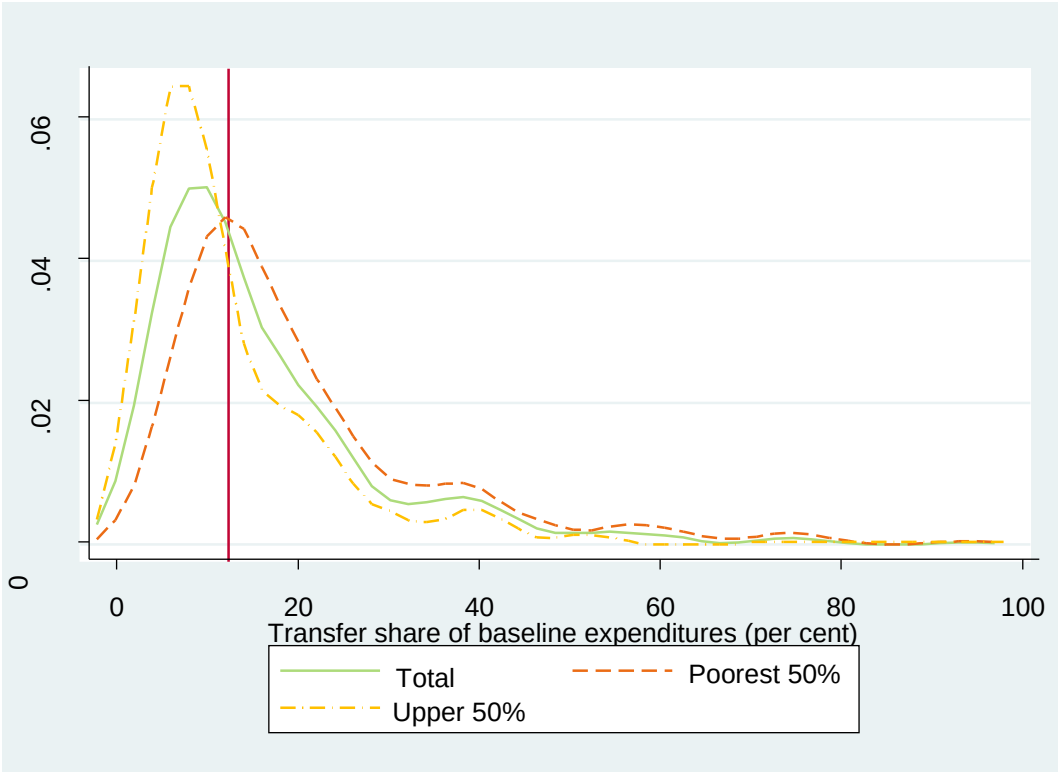


Figure 7.4.2 displays the distribution of the transfer share by the household's baseline consumption level. Notice that for the poorest 50 per cent of households (dashed red line) the graph is shifted noticeably to the right—the transfer share is much larger among these households. However, even for these households the median remains at 16.5 per cent, and for 60.3 per cent of the poorest households the transfer share of consumption remains lower than the desired 20 per cent. For the entire cohort, 68.8 per cent are under the desired 20 per cent level of share of consumption.

Figure 7.4.2: LEAP transfer as a share of baseline consumption levels



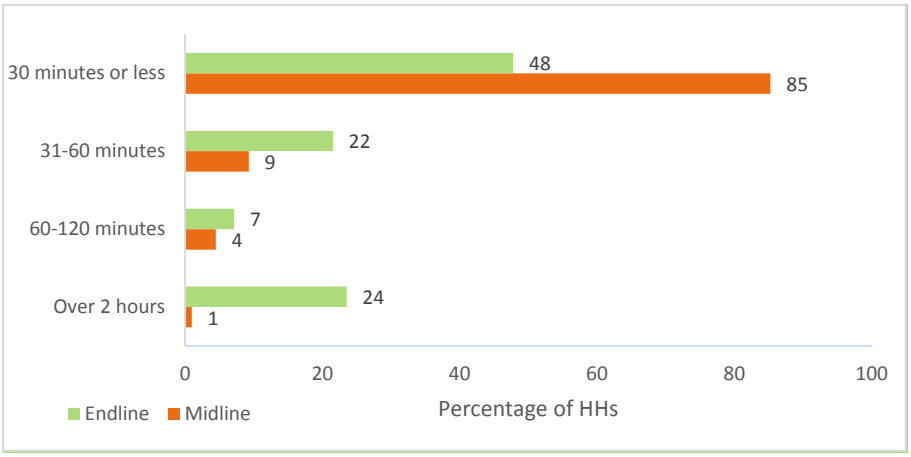
7.5 Programme administration

7.5.1 Travel time costs

Typically when a programme implements e-payments, there is an expectation that the time and transportation costs of collecting and distributing payments will decline. However, this depends greatly on the mode of electronic payment, and the accessibility of related financial services. In LEAP's case, a national e-payment service provider, Ghana Interbank Payment and Settlement Systems (GhIPSS) has been contracted to manage electronic payments using 'e-zwich' cards (banking cards which are encoded with biometric data that allow withdraw at a payment point or in any e-zwich ATM using your fingerprint). Participating Financial Institutions (PFIs) travel out to payment points in communities and, using an electronic device, allow caregivers designated by LEAP beneficiaries to withdraw funds on behalf of the beneficiary household. One limitation of this approach is that PFIs are often located far from the communities, and there is little access to e-zwich bank machines in rural areas. Therefore, while e-payment has provided increased accountability in the payment system and additional safeguards for beneficiaries, payments are still generally being made at the same payment locations where manual payments were administered, which limits the improvements that recipients may experience in terms of reduced time and transport costs for collecting payments. Moreover, as the endline evaluation survey was conducted within a few months of the rollout of e-payments to all LEAP households, the change-over in systems and payment providers seems to have led to reduced performance in certain operational areas as compared to 2012.

For example, we find that travel times have increased significantly, with a quarter of households travelling over two hours to and from the payment point (up from only one per cent in 2012). This may be due to the switch to e-payments by financial institutions, which led to some changes in payment points.

Figure 7.5.1: Travel time costs of collecting most recent payment (round trip)



On the positive side, almost half the LEAP sample (47 per cent) indicated that they prefer to be paid through mobile banks or mobile money. However, as the system is rolling out, travel times to collect payments have increased significantly on average since the midline; while it is likely that this change is temporary, it is not guaranteed. When asked about the acceptable time required to travel to and from the collection point, beneficiaries' responses averaged about 29 minutes. As demonstrated in Figure 7.5.1, in 2012, 85 per cent of recipients reported spending 30 minutes or less to travel to and from the collection of the most recent payment; in 2016 that percentage dropped to slightly less than half of the recipients. The percentage of households traveling over two hours to the disbursement location increased from one per

cent to 24 per cent. These increases in travel time are significant and require further exploration by the LEAP Management Secretariat (LMS) to ensure a minimum threshold on the quality of service to the beneficiaries. However, despite the unexpected increases in travel times, the vast majority of households (89 per cent) were happy with the current method of payment, which, at the time of the survey, had transitioned to exclusively e-payment using biometric encoded cards at payment points.

7.5.2 Payment collection practices

The latest survey suggests that while the delivery of the payments has become a lot more timely and reliable, some other administrative issues potentially increased since 2012. At endline, only 84 per cent of current recipients of the grant reported feeling safe during collection, compared to 93 per cent at midline (as seen in Table 7.5.1). This may also be an unintended consequence resulting from the shift to e-payment. Whereas previously Ghana Post provided armed guards at the majority of payments, the many PFIs under the e-payment system are each responsible for providing armed guards at every payment. Unfortunately we do not have data on whether an armed guard was present to gauge whether this is a direct cause of the decrease in feeling secure at payments. This may also be related to some households experiencing longer travel times for payment, as they could be moving to locations they are not familiar with to receive payments.

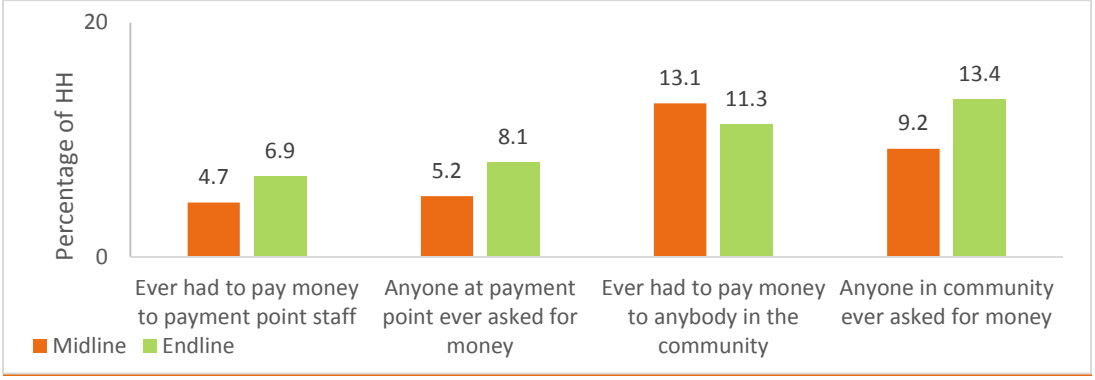
The vast majority of respondents at endline reported feeling happy with the treatment by payment point staff (91 per cent) and by LEAP Programme representatives (94 per cent), these figures are about the same as reported at midline. However, the percentage of beneficiaries reporting *ever* having to share their payment increased. As seen in Figure 7.5.2, seven per cent of recipients reported that they ever *had to pay* money to payment point staff,[6] and eight per cent that they had been *asked for money* by the payment staff (although the amounts paid are reported to be fairly small, less than GH¢ 4 on average, making up less than five per cent of the bi-monthly transfer value).

Table 7.5.1: Satisfaction with payment collection *(percentage)*

	Midline	Endline
Feel safe collecting money from payment point	92.8	84.4
Feel happy with treatment by payment point staff	92.6	91.2
Feel happy with treatment by LEAP representatives	94.5	94.2

[6] Payment point staff refers to the person(s) at the point where beneficiaries pick their payments. For instance, if payments are transferred to a post office, then the staff at the relevant unit of the post office from where the beneficiaries will pick their cash is considered to be 'payment point staff'.

Figure 7.5.2: Reported transfer leakages at payment point and in community



Before the payment is made, beneficiaries should be informed of the payment schedule. Our survey asked beneficiaries how they were notified of payment readiness the last time they received a transfer. We found that beneficiaries were typically notified about payment readiness in public (71 per cent), rather than in private (Table 7.5.2). Word was primarily passed through informal leadership: LOC/CLIC member notified beneficiaries approximately half of the time and community leaders performed the function almost a fifth of the time, whereas chiefs or payment point staff informed less than ten per cent of beneficiaries. LEAP payment information is also spread by word of mouth: about a fifth of all beneficiaries learned about the next payment from another beneficiary, another community member, a family member, or simply through seeing others going to collect the payment. Overall, the current notification manner is fairly consistent with the preferences of beneficiaries, as seen in the last column of Table 7.5.2, except for the fact that only one per cent of beneficiaries were notified by mobile phone, when 20.5 per cent expressed a preference for notification by mobile phone. We recommend that notification by mobile phone be considered, as it would enable the payment collection to remain more private and potentially prevent leakages from community members asking the beneficiary for money after the transfer had been picked up.

Table 7.5.2: Method of notification that payment is ready for collection ((percentage)

Method	In public	In private	Total	Future Preference
Community leader (elder/non-government)	16.5	1.6	18.1	18.2
Chief (government representative)	3.4	0.0	3.4	3.2
Another beneficiary	8.1	5.9	14.1	5.9
Other community member	3.7	0.5	4.3	1.2
Family member	1.9	0.6	2.4	0.9
Payment point staff	3.5	1.2	4.6	4.0
LOC/CLIC member[1]	33.9	16.4	50.3	43.1
Mobile phone			1.0	20.5
Saw others going to collect the payment			0.2	0.0
Other/don't know			1.8	2.9
Total	70.9	26.2	100.0	100.0

[1] Local Organizing Committee (LOC), which is now known as Community LEAP Implementation Committee (CLIC)

Finally, our survey reinforced the importance of LEAP allowing for the transfer to be picked up by a beneficiary's representative (or caregiver). Given the categories for selection into the programme, LEAP beneficiaries are vulnerable and potentially have limitations that could prohibit them from collecting payments themselves. As such, the programme requires the household to name a primary and secondary 'caregiver'. Beneficiaries who are able can serve as their own caregivers, or name another trusted individual. More than three quarters (75.7 per cent) of beneficiaries have identified such a representative (or caregiver), and 42 per cent report sending a representative to pick up the transfer for them at some point in the past. This is especially important since beneficiary households that have not picked up three or more consecutive payments are flagged to be reviewed, as they are likely to need support in changing caregivers in order to pick the money more regularly, or if they are intentionally not picking the money, they may no longer be in need.

Additionally, beneficiaries are not well aware that a missed payment can be received together with a future disbursement: only 35 per cent were aware that this was a possibility, while 36 per cent thought that a missed payment would be lost, and 25 per cent were unsure. This also indicates the need to further educate beneficiaries on their right to receive payments at a later date in order to ensure fair treatment of beneficiaries and receipt of entitlements. E-payment has also been an important advancement in ensuring beneficiaries are paid all cumulative benefits, as the money is credited each and every cycle and the full balance is shown when a recipient scans their fingerprint. Also, due to the biometric security measures, no unauthorized individuals are able to fraudulently collect payment on behalf of a beneficiary who is not present.

7.6 Perception of the grant

All those who reported that they had ever received LEAP benefits were asked whether they saw the selection process for the programme as fair and thought its eligibility criteria were clear. Current beneficiaries of the grant have an overwhelmingly positive view of the programme's fairness and clarity: as seen in Table 7.6.1, 93 per cent agree that the programme is fair and 91 per cent think that the eligibility criteria are clear. Although the sample size of the group is too small to draw reliable conclusions (26 households), nearly a quarter of those who have reported receiving the grant at some point in the past but are no longer receiving it disagree or strongly disagree with the statement that LEAP eligibility is fair, and nearly 30 per cent think the LEAP criteria are not clear. This could indicate the need for better communication when suspending or terminating benefits, so that the programme is not viewed in a negative light by former recipients. Unfortunately, we cannot establish using the available data whether the beneficiaries who consider themselves currently ineligible are accurate in their perceptions, or if they remain eligible. Regardless, one possible way we would recommend improving programme operations is to establish better tracking and communication with formerly eligible and potentially eligible participants, possibly through a change in case management structures. We also have no way of establishing how the programme is perceived by those who are aware of the transfer but have never received it, as we only asked these questions to those who self-reported having received benefits.

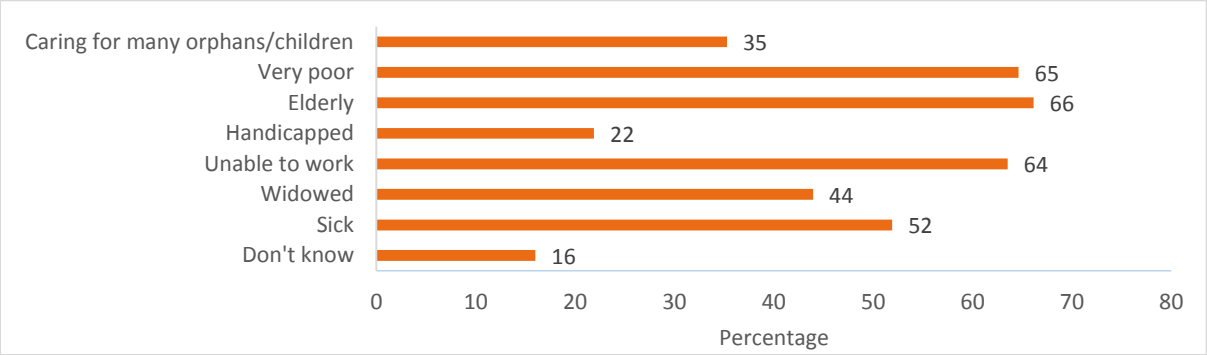
As noted in Section 2.2 of this report, the grant eligibility criteria for those in this sample include living in extreme poverty and having a household member in at least one of three demographic categories: households with OVC, an elderly person (over age 65) without productive capacity, or person with severe disability unable to work (PWD). As seen in Figure 7.6.1, current beneficiaries have a somewhat accurate perception of why they may have been selected to receive the grant. However, only 65 per cent accurately identify extreme poverty as a criterion, which is an eligibility requirement for all categories. Further, 66 per cent think their household is receiving the grant because they have an elderly member, 35 per cent because they are caring for orphans, 64 per cent because a household member is unable to work,

Table 7.6.1: Perceptions of the LEAP grant criteria (percentage)

	LEAP is fair			LEAP criteria are clear		
	Former beneficiaries (currently not receiving)	Current beneficiaries	Total	Former beneficiaries (currently not receiving)	Current beneficiaries	Total
Strongly agree	23.9	49.8	48.5	27.6	47.8	46.8
Agree	47.7	43.1	43.3	42.8	43.6	43.5
Neither agree nor disagree	4.0	4.4	4.4	0.0	6.5	6.2
Disagree	21.3	1.7	2.7	29.6	1.9	3.4
Strongly disagree	3.1	1.0	1.1	0.0	0.2	0.2
N	26	497	523	26	497	523

and 22 per cent because a household member is handicapped. An additional 52 per cent also report being in the programme because they are "sick", which is a vague expression sometimes used to express disability or serious illness, including HIV/AIDS infection. However, almost half also have an inaccurate impression that they receive LEAP because the household has a widow, which is not a criterion, and a further 16 per cent say they do not know why they were selected for the programme. This indicates that while LEAP is overwhelmingly perceived as a fair programme with clear eligibility, some work remains to be done to make its beneficiaries, communities, and the public at large fully familiar with reasons they are receiving the transfer.

Figure 7.6.1: Perceived reasons for programme selection

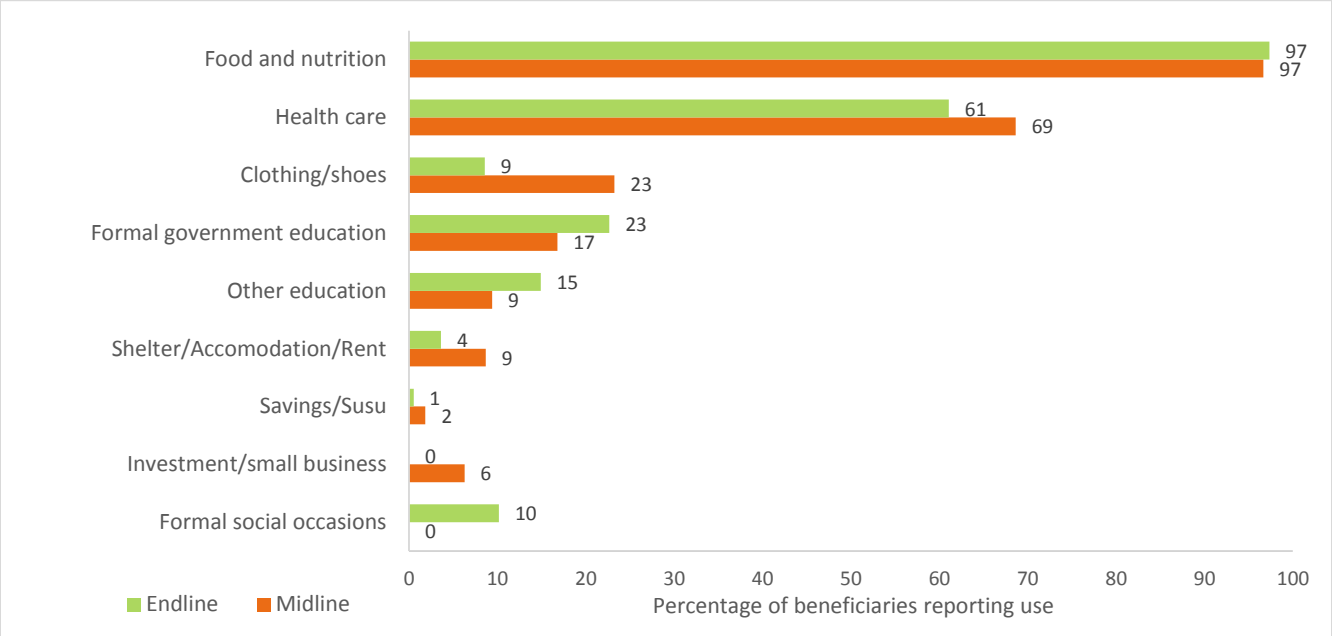


7.7 Use of transfers

Both the current survey and the survey in 2012 asked about the main uses to which households put their LEAP payments. As seen in Figure 7.7.1, payments are overwhelmingly used for food (97 per cent of households in both survey rounds) and healthcare (the percentage reporting use for healthcare declined from 69 per cent at midline to 61 per cent at endline). Interestingly, households report less money spent on clothing and housing, and more investment in formal and other types of education. We also see a decrease in savings and investment, and an increase in spending on social occasions.

Unsurprisingly, given the uses of the grant, nearly 81 per cent of households report that all household members benefit from the transfer payments. A further 11 per cent of households say that only adults benefit from the LEAP payment. Finally, in six per cent of households the transfer is only reportedly used for either children or OVCs.

Figure 7.7.1: Main uses of transfer payments



7.7 Summary

LEAP has increased in reach and prominence since the last impact survey in 2012, and more households are reporting knowledge of the programme in both the treatment and comparison groups. Payment delivery has also stabilized considerably, with payments coming steadily at two-month intervals for nearly three years preceding the latest survey, other than a period of disruption in the spring of 2016 when manual transfer delivery was transitioned to electronic payments and some beneficiaries were late in being registered for the new system. As a result, recipients perceive the programme as more reliable, with the majority expecting to receive a transfer in the next two months, and to keep receiving it for at least five more years.

The amount of the transfer has also increased substantially since the 2012 evaluation, making up 18.3 per cent of consumption on average at endline compared to seven per cent at midline (although the median share remains much lower at 13.3 per cent). It is important to note that despite these increases, both the mean and the median are still below the target of 20 per cent share of consumption, the commonly accepted threshold for widespread impacts across several domains. It is also lower than similar large programmes in sub-Saharan Africa. Recipients continue to report using the grants primarily for food, healthcare, and education.

However, despite some important advances, programme operations are not without issues. Beneficiaries report significantly longer travel times to payment points, which is possibly a result of the switch to e-payment being administered by PFIs. Further, beneficiaries report feeling less safe during payment, although generally satisfaction rates on treatment `were very high. Finally, 6.9 per cent of recipients also report having to pay money to pay-point staff and 11.3 per cent to community members, which may be worth further investigation.

The next sections report on impacts and improvements in LEAP households. Refer to Box 1 for important information on how to interpret the results in the next sections.

Box 1. The results in context

A key assumption behind the conceptual framework for the LEAP programme is that transfers are predictable and regular, and are large enough to represent a meaningful increase in income. The previous section documented that LEAP has indeed managed to regularize transfer payments since 2013, but despite several large adjustments in the size of the transfer, its value as a share of beneficiary (pre-program) consumption still remains low relative to best practice. This reality of programme operation must condition our expectation of impacts—it is unlikely that we should expect to see strong impacts across a range of domains given the size of the transfer.

A second issue to consider is that LEAP is effectively an unconditional transfer in the sense that it is not tightly linked to specific behaviours with monitoring and sanctions. However, because LEAP also comes with automatic eligibility for free enrolment onto NHIS, there may be an implicit message that LEAP transfers should support health spending. Notwithstanding this, the unconditional aspect of LEAP implies that households are free to spend the money in the way that best addresses their own individual constraints or needs. Thus, those with many school-age children may spend most of the transfer on school related items, while households with health problems (who have more elderly residents, for example) may devote most of the transfer to health expenditures. Still other households may choose to pay down debt or to invest in agriculture or livestock. Since our sample size is relatively small compared to many other large-scale cash transfer impact evaluations, when benefits are diffused, as they very likely could be in LEAP, it becomes much more difficult to identify statistically significant impacts in any domain. Instead, there may be small impacts across a wide set of domains, none of which reach statistical significance. These realities must be kept in mind when interpreting the results.

A third issue we face is the fact that many households in the treatment group—a full 14 per cent as reported in column 3 of Table 7.1.1—claim to not be receiving transfers. Meanwhile, six per cent of households in the comparison group claim to be in the programme. If this is true, it obviously dampens the impacts estimates because an important share of the supposed treatment group is not actually receiving transfers. In studies where such ‘crossovers’ exist – that is, where treated units do not receive treatment or control units do receive treatment – the standard approach is to maintain each household in its original designated group. This is known as the ‘intention to treat’ (ITT) estimate, and this is what we report in the main text of the report. However, when the number of crossovers is as large as it is in this sample (9 per cent of the sample are crossovers) the ITT significantly under-estimates the potential treatment effect. The alternative is to designate each household according to their actual status at endline—this is known as the average treatment effect on the treated (ATT). In the appendix we present impact estimates for all outcomes using the ATT as a point of comparison. Where there are important differences in the estimates between ITT and ATT we highlight them in the text.

8. Impacts on consumption and well-being

8.1 Consumption

Figure 8.1.1 shows the distribution of monthly consumption expenditures per adult equivalent across the three survey waves by study arm (data points further to the right indicate higher consumption). Consumption expenditures do not include non-consumption spending such as farm inputs, loan repayments, savings, burial societies or gifts. The consumption portion of total expenditure, the portion reported in this section, represents about 90 per cent of total expenditure of LEAP households. As we saw in section 5, at baseline consumption was at the same level across the two arms, but there was a sharp increase in consumption in the C group at midline (darker line is to the right of the lighter line) which surpassed the more modest growth in the treatment group. However, by endline (2016) consumption in the treatment group had essentially caught up to the comparison.

As referred to earlier in Chapter 5, LEAP households saw tremendous growth in consumption over the study period. Table A.3.1 in the appendix shows that consumption among LEAP households was GH¢75 greater at endline than at baseline, representing a 67 per cent increase. Growth in food consumption was even larger at 100 per cent (from GH¢67 at baseline to GH¢133 at endline).

Figure 8.1.1 shows the distribution of consumption among LEAP households at baseline and endline. Close to 70 per cent of the overall consumption budget goes to food, as we would expect given the poverty level of beneficiary households. However, at midline, it was 60 per cent, further ***indicating the erosion of the real value of the transfer***. The second largest share of the budget goes to health and hygiene, followed by education and clothing. Figure 8.1.2 shows that there has been a small shift in consumption patterns at endline, with slightly less of the budget share devoted to fuel, clothing, and rent, in favour of food. Figure 8.1.3 depicts the budget shares within food consumption. At baseline (green bars), the highest shares are taken by starches (cassava, yams) and cereals (rice, maize), which together comprise close to 45 per cent of the overall food budget. At endline the budget shares have shifted way from starch and towards cereals, meats and vegetables, and pulses. This suggests an improvement in the diet, with less consumption of yams and cassava, and more proteins and micronutrients.

CONSUMPTION AND WELL-BEING TAKE-AWAYS

- LEAP households have experienced an increase of 67 per cent in their consumption between 2010 and 2016.
- The increased consumption among LEAP households is significantly higher than the estimated trend in consumption among the poorest quintile taken from GLSS, suggesting an impact of LEAP on consumption of approximately 30 per cent.
- Subjective well-being among LEAP households mirrors the improvement in consumption, with 57 per cent of beneficiaries now reporting they are happy with their life, compared to only 39 per cent at baseline, a 48 per cent increase.
- LEAP households have doubled food consumption and improved the diversity of their diet, reducing the proportion of the food budget devoted to starches, and increasing the food budget spent on proteins and vegetables.

Figure 8.1.1: Distribution of monthly consumption per adult equivalent across three survey waves, by study arm

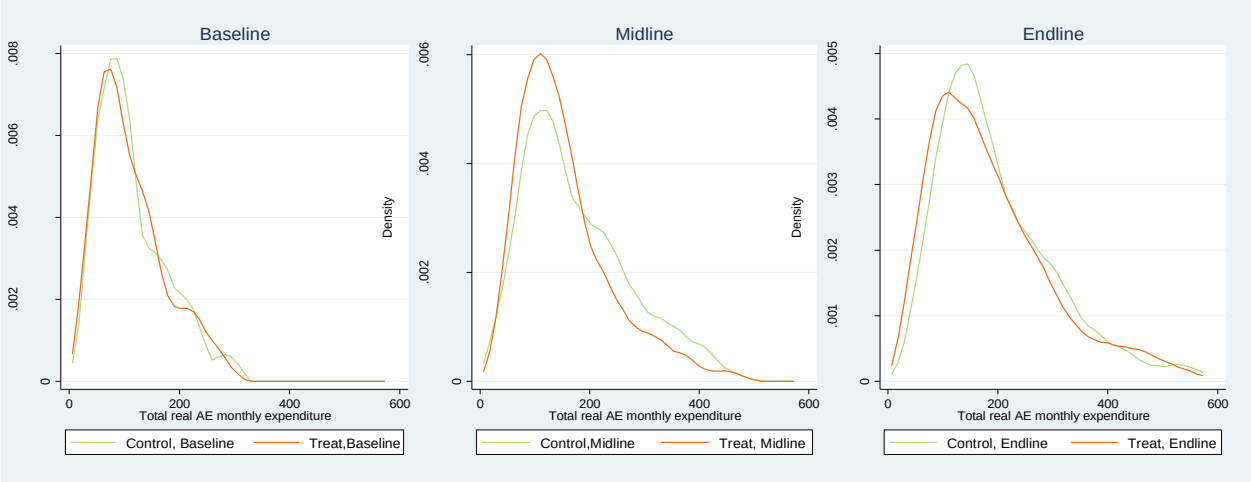
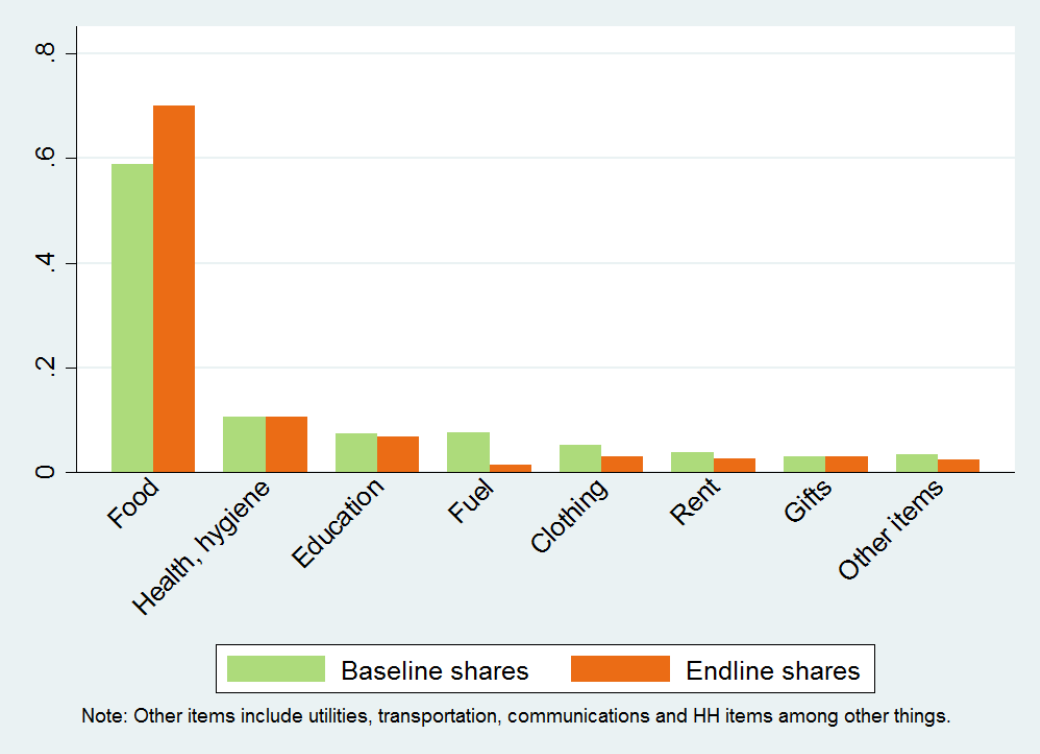
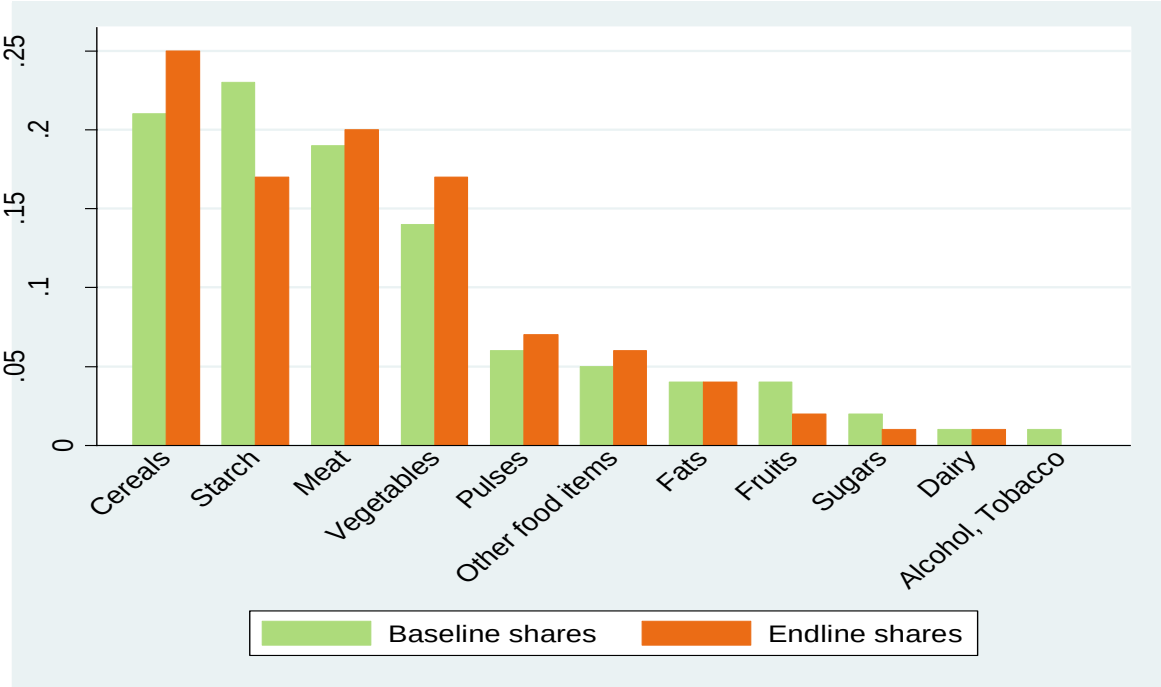


Figure 8.1.2: Share of total consumption across different items, for the treatment group at baseline and endline



Formal estimates of the impact on consumption are presented in Table 8.1.1. These are DD estimates, so they compare the change (growth) in consumption across this time period between the two groups. In this and subsequent tables, we compare not only the change between baseline and endline but also the change between midline and endline, as there were significant improvements in the delivery of LEAP, in terms of both payment frequency and the overall value of the transfer. These might have led to sharper improvements in the period between midline and endline, relative to the comparison group.

Figure 8.1.3: Share of total food consumption across different items, for treatment group at baseline and endline



Column 1 shows the endline impact, which compares the growth in consumption between 2010 and 2016. There is no statistical significance in this change, which confirms what the graphical analysis also indicates, that by 2016 LEAP households had fully caught up with the comparisons. Column 2 indicates that in 2012 the change in consumption among LEAP households was lower than the change in the comparisons, leading to a net negative impact of LEAP of GH¢29. Column 3 tests the difference in growth between 2012 and 2016 and this **shows a positive and significant impact of LEAP of GH¢20**, consistent with the graphs which also show a more rapid increase in consumption among LEAP households during this period, relative to the comparisons. The other rows in Table 8.1.1 show impacts for food and non-food consumption. Most of the 'catch-up' in overall consumption between 2012 and 2016 comes from food consumption— GH¢17 of the GH¢ 20 net impact comes from food consumption (column 3). Indeed mean food consumption is actually now *higher* among LEAP households than comparison households as indicated by the mean values in columns (5) and (6). These results are unchanged when using the ATT.

Table 8.1.1: Household real monthly consumption expenditure per adult equivalent

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Total	-9.062	-28.942***	19.880**	112.202	187.348	197.183
	(-1.07)	(-3.82)	(2.23)			
Food	-0.233	-16.785***	16.552**	66.525	133.490	121.181
	(-0.04)	(-2.81)	(2.52)			
Non-food	-8.829*	-12.157**	3.328	45.677	53.859	76.002
	(-1.72)	(-2.08)	(0.60)			
N	3,834	3,834		552	547	721

Notes: t stats in parentheses. * 10% significance ** 5% significance; *** 1% significance; cluster fixed effects included

As mentioned in Section 5, the strong growth in consumption in the comparison group and the fact that the comparison differs from the LEAP group on several important household characteristics (such as the demographic structure of household residents), suggests that the comparison group may not be an appropriate representation of the counterfactual for this evaluation study. That is, the evolution of consumption in the comparison group probably does not represent what would have happened to LEAP households had they not received the transfer. Note that between 2010 and 2012 the growth in consumption was actually significantly higher in the comparison group compared to LEAP implying a negative impact of LEAP on consumption. Our triangulation with other data sources in Section 5 suggests that the growth in the comparison group is nearly three times the rate of growth that would be expected based on GDP per capita growth during this time period assuming that growth was neutral. In fact, evidence from GLSS5 and GLSS6 indicates that growth was actually not neutral but favoured the rich, thus the enormous growth in consumption in the LEAP comparison group is even more unusual and not therefore likely to represent the counterfactual of interest.

What is a plausible alternative measure of the counterfactual? One obvious approach is to assume that in the absence of LEAP, growth in consumption would have closely followed the overall growth in the economy as represented by GDP per capita. This is still an over-estimate of the counterfactual as growth was not neutral (it favoured the rich), but it represents a conservative estimate of the counterfactual. The top half of Table 8.1.2 shows the evolution of consumption in LEAP households had they experienced normal growth equal to overall GDP per capita in Ghana. We use these figures to construct alternative counterfactuals and show the resulting DD estimates in the table. These tell a very different story from Table 8.1.1. Using this approach, LEAP appears to have had a large GH¢ 21 positive impact on consumption at midline, which rises to GH¢ 41 at endline. This represents a 37 per cent increase over baseline consumption, implausibly high given the size of the transfer in Ghana.

Table 8.1.2: Impact estimates on consumption using alternative counterfactuals

Year:	2010	2012	2016
LEAP Actual	112	154	187
Counterfactual 1: LEAP+GDP	112	133	146
Single Difference	0	21	41
		$DD_{2010-12} = +21$	$DD_{2010-16} = +41$
			$DD_{2012-16} = +20$
LEAP Actual	112	154	187
Counterfactual 2: GLSS6+GDP	89	103	131
Single Difference	23	51	56
		$DD_{2010-12} = +28$	$DD_{2010-16} = +33$
			$DD_{2012-16} = +5$

The bottom half of Table 8.1.2 uses data from the GLSS6 to construct an alternative counterfactual based on the monthly consumption per adult equivalent of households in the bottom quintile in rural areas in the three evaluation regions (Brong-Ahafo, Central and Volta). Again we use per capita GDP growth to extrapolate forward and backwards from 2013 (the year of GLSS6) to construct counterfactuals, and compare them to LEAP households. Using this approach, the DD impact at endline is GH¢ 33, or about 30 per cent of baseline consumption. This is still high given the size of the transfer, but together the two exercises highlight that even these conservative estimates based on plausible counterfactuals that invoke sensible assumptions about the growth of consumption yield scenarios where the impact of LEAP on consumption is large and positive.

The truth is likely somewhere between no impact at endline if using the original evaluation comparison group, and the 37 per cent impact derived by simply inflating the baseline consumption by GDP growth per capita. However, if the actual impact was just one third of 37 per cent (12 per cent), it still compares favourably to impacts from other mature, established programs such as the Kenya CT-OVC (10 per cent) and Mexico's PROGRESA (now called Prospera) (14 per cent).

8.2 Impacts on housing conditions

In this section we report the impact of LEAP on the housing conditions of beneficiaries. The indicators used to describe the quality of housing situations are: access to electricity, cement walls, cement floor, improved source of water, and an improved sanitation facility (flush or pit toilet). Table A.3.1 in the appendix indicates significant improvements among LEAP households in several dimensions of housing quality. For example the proportion of LEAP households with electricity increased from 33 per cent to 66 per cent, while those with a floor made of cement increased from 61 to 87 per cent between baseline and endline, and those with cement walls likewise increased from 30 to 48 per cent.

Table 8.2.1: Impact of LEAP on housing characteristics

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Main source of lighting is electricity	0.046	0.076	-0.030	0.327	0.655	0.666
	(0.73)	(1.33)	(0.54)			
Outer walls of cement	0.037	0.052	-0.014	0.296	0.483	0.503
	(0.77)	(1.15)	(0.28)			
Floor made of cement	0.120**	-0.055	0.174***	0.611	0.874	0.854
	(2.16)	(-0.88)	(3.24)			
Improved source of drinking water	0.029	0.009	0.020	0.773	0.807	0.797
	(0.67)	(0.21)	(0.44)			
Flush or pit toilet	-0.280***	-0.208***	-0.072	0.384	0.312	0.478
	(-4.59)	(-3.18)	(0.99)			
N	4,050	4,050		578	578	772

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

The estimated impact on these indicators is presented in Table 8.2.1. The only statistically significant impact is for cement floors where the effect is 12 percentage point net improvement of LEAP households over C households. Having access to an improved source of water[7] increased slightly for LEAP households, but there is no significant impact when the comparison group's progress is taken into account. For improved sanitation, however, we observe a strong negative impact. This means that fewer LEAP households have access to an improved sanitation facility in relation to the comparison group. This is a strange result, and it seems to be driven by the presence of pit toilets (result not shown), which have increased among comparison households but decreased (by 7 percentage points) in LEAP households.

[7] Improved sources include: indoor plumbing, inside stand pipe, piped in neighboring household, private outside standpipe, public standpipe, sachet/bottled water, borehole, protected well or rain water.

8.3 Subjective well-being

There is increasing interest in directly measuring the effect of public policies on subjective well-being. Subjective well-being can capture important dimensions of the human condition that are not necessarily reflected in material deprivation or income, such as mental health, uncertainty, personal safety, and affect or emotional states. While it is assumed that at very low levels of income material needs are the primary determinant of individual well-being, even among the very poorest, and perhaps especially among the very poorest, non-material concerns such as environmental degradation, exposure to pollution, personal safety, and uncertainty due to climate change or price fluctuations, can be important factors in one's well-being. These other factors are more likely to be captured in a measure of subjective well-being, where the individual is allowed to consider all these factors and decide the relative weight they have in their own well-being.

The main respondent to the questionnaire was asked the question "Are you happy with your life?" with two response codes (yes or no). Table 8.3.1 shows the impact of LEAP on the likelihood of responding positively to that question. LEAP had a significant impact on happiness at midline, and this positive impact persists at endline with LEAP respondents 12 percentage points more likely to say they are happy with their life than respondents from the comparison group.

Table 8.3.1: Being happy

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Happy with life	0.118*	0.207***	-0.089	0.387	0.573	0.641
	(1.79)	(2.90)	(1.56)			
N	4,050	4,050		578	578	772

Notes: t stats in parentheses. * 10% significance ** 5% significance; *** 1% significance; cluster fixed effects included

For all the indicators reported in this chapter, we have also performed estimates on the poorest 50 per cent of households at baseline, and among smaller households. In both these types of households, the per person value of the transfer is likely to be higher, hence we might expect larger positive effects of the programme. In fact, there is no systematic evidence that impacts are stronger and more positive in these two sub-groups. We also investigated impacts among female headed households and also did not find systematic differences from the full sample results.

8.4 Summary

LEAP households have experienced significant growth in consumption over the six-year study period. Using plausible counterfactuals we find very large impacts of LEAP on consumption, ranging from 30 to 37 per cent of baseline consumption. These are likely too high given the size of the LEAP transfer, but even if we were to reduce these estimates by three-quarters, so that they ranged from 10 to 12 per cent, they would still represent large impacts compared to other established programmes in Africa and beyond.

The trends in other dimensions of well-being in LEAP households has also improved significantly over the study period. LEAP households have more access to electricity, and a much larger proportion have a cement wall or floor. And 57 per cent of LEAP households report that they are happy with their life, an increase from just 39 per cent prior to the start of the programme. One negative result is that fewer treatment households have flush or pit latrines (31 per cent at endline versus 38 per cent at baseline), indicating that treatment households are not investing in sanitation facilities.

9. Impacts on productive activities and financial assets

This section of the report discusses the changes in and impacts of LEAP on households' productive activities and financial transactions. We start by examining the changes in paid and hired labour, then look at productive assets (agricultural and non-agricultural assets), savings and financial assets, and finally at livestock ownership and home enterprises. In addition to investigating long term impacts of LEAP on the aggregated sample, we also look separately at subgroups of households defined by poverty status of the household, gender of the household head, and size of household.

9.1 Impacts on paid and hired labour

The indicators used to capture productivity of labour in relation to the LEAP programme include: whether any household member did any work for pay in the seven days before the interview; the number of days households hired outside labour for agriculture (one or multiple labourers); whether household engaged in agricultural activities in the last 12 months; whether households used any fertilizers; whether households used any seeds; whether households used any improved seeds; the value of seeds; the total man-days provided by casual labour; number of days of family labour used for agriculture activities; and the total number of days used for farming by households (both family labour and hired labour); and value of crop yields.

We find a significant and positive impact of LEAP on both the number of days provided by family labour on the farm and on the total number of days of farm labour, which includes both family and hired labour (Table 9.1.1), although the increases in total days of farm labour seem to be driven primarily by less poor households (see subgroup analyses in Appendix A.5.2). We also observe endline increases in days provided by casual labour among less poor and female-headed households. In fact, the only negative impact on labour at endline is for small households for the indicator reflecting whether the household hired any outside labour. Our estimates also show that the programme had a positive impact in the long-term on the value of crop yields from the farms of the LEAP beneficiaries (Table 9.1.1); subgroup analysis shows that these positive impacts on crop yields values are strongest in less poor, male-headed and large households.

PRODUCTIVE ACTIVITIES AND FINANCIAL ASSETS TAKE-AWAYS

- The economic position of LEAP households has improved considerably over the study period. Crop production value has almost doubled, ownership of an agricultural implement has increased by seven per cent and the households with any livestock holdings has increased by 32 per cent.
- The increase in crop production value is due in part to increased use of seeds and fertilizer, as well as more household labour devoted to own-farm activities
- The financial position of LEAP households is mixed, with households with any savings increasing by 46 per cent, but the proportion with any outstanding debt also increasing by an equal percentage. On the other hand, the number of LEAP households extending credit to others increased by 24 per cent, and the number sending gifts to other households increased by 48 per cent. This highlights the complexity of social networks and financial obligations in these communities.

LEAP households also increased the use of seeds and fertilizer on household plots, although there is no evidence that the seeds used were of the improved variety. Sub-group analysis (Appendix A.5.2) shows that the positive changes in the use of any seeds are concentrated among less poor, large and male-headed households. There was an overall positive impact on seed use, and the negative impact of LEAP on fertilizer use seen at midline is no longer present at endline.

Table 9.1.1: Labour productivity

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Comparison Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Household had any members work for pay	-0.020	0.004	-0.023	0.085	0.126	0.148
	(-0.74)	(0.15)	(0.74)			
Household hired any outside labour for agricultural activities	-0.054	0.002	-0.057	0.391	0.379	0.437
	(-1.06)	(0.05)	(1.58)			
Household engaged in agricultural activities last 12 months	-0.023	-0.122**	0.099**	0.514	0.508	0.589
	(-0.47)	(-2.57)	(2.35)			
Household used any fertilizer	-0.040	-0.110***	0.070	0.138	0.277	0.363
	(-0.84)	(-2.74)	(1.37)			
Household used any seeds	0.113**	0.031	0.082**	0.399	0.508	0.589
	(2.25)	(0.62)	(2.10)			
Household used any improved seeds	-0.007	0.049*	-0.056**	0.019	0.039	0.095
	(-0.20)	(1.68)	(2.37)			
Value of seeds	71.796	0.741	71.055	65.635	358.253	231.893
	(0.85)	(0.03)	(0.80)			
Value of seeds (deflated)	106.666	15.027	91.639	126.482	398.385	231.893
	(1.30)	(0.39)	(0.98)			
Total days provided by casual labour	3.488	3.151	0.337	7.909	5.571	5.611
	(1.09)	(1.04)	(0.20)			
Total days provided by family labour	30.308***	15.782	14.526*	26.965	23.416	28.900
	(3.54)	(1.41)	(1.92)			
Days of labour on farm (hired and family labour)	33.796***	18.933	14.862*	34.874	28.987	34.511
	(3.18)	(1.47)	(1.73)			
Crop yield value	139.924	-27.028	166.952	198.685	659.187	677.308
	(1.19)	(-0.38)	(1.50)			
Crop yield value (deflated)	265.869**	12.761	253.107**	382.878	733.030	677.308
	(2.11)	(0.11)	(2.09)			
N	4,050	4,050		578	578	772

Notes: t stats in parentheses. * 10% significance ** 5% significance; *** 1% significance; cluster fixed effects included

9.2 Productive assets (agricultural and non-agricultural assets)

We find an increase in ownership of any agricultural assets among LEAP households between baseline and endline, from 75 per cent to 80 per cent. Ownership of almost every agricultural asset listed in Table 9.2.1 increased during the evaluation period, with the exception of axes and rakes, which remained unchanged. More notable increases in ownership in the LEAP group were reported for spraying machines (from 4 per cent to 17 per cent) and cutlasses (from 67 per cent to 76 per cent). The impact results are not significant for most assets because similar increases occurred in the comparison group, with the exception of cutlasses where a positive significant impact is estimated. Additionally, subgroup analysis suggests that the poorest and male-headed households face no increases and some declines in ownership.

Table 9.2.1: Productive assets

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Comparison Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Any agricultural asset ownership	0.117***	0.039	0.077**	0.745	0.798	0.855
	(3.49)	(1.19)	(2.10)			
Any specific asset ownership:						
Hoes	-0.049	0.010	-0.059	0.579	0.609	0.649
	(-1.05)	(0.27)	(1.23)			
Axes	-0.015	-0.028	0.012	0.274	0.250	0.266
	(-0.34)	(-0.58)	(0.27)			
Rakes	-0.037**	-0.094***	0.057	0.054	0.053	0.048
	(-2.13)	(-2.87)	(1.51)			
Shovels	-0.058**	-0.041	-0.017	0.062	0.090	0.170
	(-2.33)	(-1.63)	(0.66)			
Picks	-0.046	0.004	-0.051**	0.066	0.070	0.138
	(-1.61)	(0.16)	(1.97)			
Sickles	-0.007	0.023	-0.031	0.036	0.042	0.099
	(-0.20)	(0.88)	(1.25)			
Cutlasses	0.134***	0.066**	0.068*	0.674	0.759	0.825
	(3.32)	(2.05)	(1.72)			
Spraying machines	-0.038	-0.003	-0.035	0.037	0.165	0.236
	(-1.20)	(-0.13)	(0.96)			
Number of specific assets owned:						
Hoes	-0.048	-0.122	0.074	1.733	1.894	1.688
	(-0.24)	(-0.77)	(0.32)			
Axes	-0.065	-0.180**	0.115	0.387	0.324	0.349
	(-1.13)	(-2.03)	(1.28)			
Rakes	-0.052**	-0.127***	0.075*	0.062	0.057	0.056
	(-2.44)	(-3.41)	(1.76)			
Shovels	-0.113**	-0.055	-0.057	0.084	0.121	0.291
	(-2.30)	(-1.50)	(1.17)			
Picks	-0.061*	0.004	-0.065	0.081	0.092	0.174
	(-1.78)	(0.12)	(1.62)			
Sickles	0.008	0.040	-0.032	0.064	0.073	0.150
	(0.16)	(0.88)	(0.92)			
Cutlasses	-0.104	-0.167	0.063	1.427	1.492	1.897
	(-0.80)	(-1.20)	(0.44)			
Spraying machines	-0.073	-0.005	-0.068	0.043	0.225	0.335
	(-1.40)	(-0.15)	(1.23)			
N	4,050	4,050		578	578	772

Notes: t stats in parentheses. * 10% significance ** 5% significance; *** 1% significance; cluster fixed effects included

9.3 Savings, transfers, credit, and debt

We find two main results on savings and transfers to and from households (Table 9.3.1). First, LEAP participation significantly increased the percentage of households having any savings at both midline and endline, although the magnitude of the impact is larger at endline (with the proportion of households with any savings increasing by 52 per cent). Secondly, the probability that LEAP beneficiaries received transfers (cash or in kind gifts from outside the household other than the LEAP transfer) significantly decreased at endline, but not midline. A possible explanation is that over the long term the fact that beneficiaries receive a government transfer becomes more widely known and, consequently, beneficiaries

receive less support from informal sources, such as family and friends. It may also indicate that LEAP households no longer need to ask others or depend on begging to get by. Interestingly, the percentage of LEAP households extending credit to others increased by 24 per cent, and the percentage sending gifts to other households increased by 48 per cent (Appendix Table A.3.2), though the impact is not significant, potentially indicating that though LEAP households are still poor, they are able to reengage in complex social and economic financial networks in their communities.

Table 9.3.1: Savings and transfers

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Comparison Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Household has any savings (at home or at institution)	0.153**	0.111*	0.042	0.204	0.310	0.298
	(2.50)	(1.88)	(0.58)			
N	4,050	4,050		578	578	772
Savings amount (GH¢)	-74.848*	9.027	-83.875	54.757	92.606	191.396
	(-1.90)	(0.20)	(1.63)			
N	4,050	4,050		578	578	772
Household received transfer in last 12 months	-0.258***	0.002	-0.259***	0.624	0.464	0.596
	(-5.62)	(0.03)	(4.66)			
N	4,050	4,050		578	578	772
Transfers received amount (GH¢)	-114.342	-49.902	-64.439	274.212	398.879	548.658
	(-1.37)	(-0.74)	(0.68)			
N	4,050	4,050		578	578	772
Household gave transfer in last 12 months	-0.018	-0.041	0.022	0.235	0.347	0.379
	(-0.43)	(-0.77)	(0.36)			
N	4,050	4,050		578	578	772
Transfers sent amount (GH¢)	-39.731	-75.075**	35.344	94.153	231.343	231.251
	(-0.72)	(-2.12)	(0.60)			
N	4,050	4,050		578	578	772

Notes: t stats in parentheses. * 10% significance ** 5% significance; *** 1% significance; cluster fixed effects included

Curiously, the regression results show that LEAP has a negative impact on the value of savings of the household (Table 9.3.1), even though the average savings amount in LEAP households increased from baseline to endline (Appendix A.3). In other words, the LEAP programme impacted positively on the probability of households saving and LEAP households are saving more than at baseline (on average, GH¢38 more), but the amount that the households saved did not increase as much as that of the comparison group, possibly because there were more new LEAP savers who tend to have accumulated lower total savings, and due to the previously described issues with the comparison households. As such, LEAP households' savings as compared to the comparison group was about GH¢75 lower in real terms.[8]

Households also show signs of increased engagement with financial systems, taking on additional debt, as seen in Table 9.3.2. The average credit amount increased from 24 to 58.4 cedi on average from baseline to endline, but the amount of credit paid has also doubled. Similarly, although the percentage of households that have debt increased from 23.9 per cent to 34.9 per cent, and the average debt amount increased fourfold, the average debt paid amount nearly quadrupled as well. However, the impact on credit and debt

[8] This is about GH¢101 in nominal terms. Please see Appendix 5.1 for a table with nominal values.

is not statistically significant, owing to similar increases in the comparison group. There is one exception: an analysis of sub-groups shows that female headed households at endline experienced a decrease in their real debt amounts and real outstanding debt.

Table 9.3.2: Household financial assets - real values

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Household is owed money or goods	-0.005	-0.013	0.008	0.090	0.112	0.122
	(-0.16)	(-0.43)	(0.27)			
N	4,050	4,050		578	578	772
Credit amount (GH¢)	2.526	-0.005	2.532	23.942	58.411	57.233
	(0.13)	(-0.00)	(0.16)			
N	4,050	4,050		578	578	772
Credit paid amount (GH¢)	-18.159	101.471	-119.629	26.255	60.278	104.853
	(-0.16)	(0.82)	(1.46)			
N	471	471		56	67	106
Household has debt	-0.032	-0.054	0.021	0.239	0.349	0.336
	(-0.68)	(-1.29)	(0.50)			
N	4,050	4,050		578	578	772
Debt amount (GH¢)	-49.547	20.570	-70.117	84.583	236.768	278.998
	(-0.91)	(0.62)	(1.24)			
N	4,050	4,050		578	578	772
Debt paid amount (GH¢)	-74.904	219.382	-294.285**	52.467	183.805	206.247
	(-0.86)	(1.64)	(2.32)			
N	1,071	1,071		139	207	225
Outstanding debt amount (GH¢)	-57.694	29.458	-87.152	77.211	206.397	257.675
	(-1.07)	(1.11)	(1.55)			
N	4,050	4,050		578	578	772

Notes: t stats in parentheses. * 10% significance ** 5% significance; *** 1% significance; cluster fixed effects included

9.4 Livestock ownership and non-farm enterprises

In terms of livestock ownership, there was a notable increase in ownership of any sheep, goats or chickens among LEAP households, from 41 per cent in 2010 to 54 per cent in 2016 (Appendix A.3, Table A.3.2). The negative impact estimate at midline indicates larger increases in the comparison group, but those dissipate by the endline. Increased ownership of livestock is mainly due to owning any goats (6.6 pp increase in households owning any goats between baseline and endline) and any chickens (13.8 pp increase). However, while the average number of goats owned by households increases, there is a decrease in the average number of chickens owned and we estimate a negative impact for number of chickens, (possibly because the households that have started owning chickens more recently have fewer chickens, bringing down the average number) (Table 9.4.1). Subgroup analysis suggests these decreases primarily take place for the less poor half of the sample and small households. We also find a decline in the number of sheep owned by large households at endline. There is no clear reason as to why households are not investing in livestock; one possibility is that certain livestock is used as a coping mechanism, and once minimum consumption is guaranteed, households invest more money into alternatives, such as food crop production. Regardless of the reason, one potential way to increase productive livelihood investments of LEAP transfers, and livestock investments specifically, is to link LEAP households to agricultural programs.

We find that the proportion of households who own a business increased over the study period, from a baseline value of about 30 per cent to about 37 per cent at endline (Appendix A.3). However the impact of the programme on the probability of a household owning a non-farm enterprise was negative (Table 9.4.1), since comparison households' probability of owning a non-farm enterprise saw a larger increase than that of LEAP, although this decline is not found for large households (Appendix A.5.2). Again, the variation in consumption growth discussed in Box 1 may indicate that comparison households had more resources available for investing in livestock and non-farm enterprises.

Table 9.4.1: Livestock and non-farm enterprises

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Own any sheep/goat/chicken	-0.001	-0.097**	0.096	0.407	0.537	0.528
	(-0.02)	(-2.30)	(1.62)			
Own any chicken	0.021	-0.134***	0.155**	0.274	0.411	0.431
	(0.44)	(-2.98)	(2.39)			
Own any sheep	-0.010	-0.023	0.013	0.122	0.137	0.087
	(-0.42)	(-0.98)	(0.51)			
Own any goats	0.048	-0.039	0.087	0.195	0.261	0.229
	(0.80)	(-0.95)	(1.51)			
Number of chickens	-1.986**	-1.976**	-0.011	3.850	3.700	5.556
	(-2.35)	(-2.05)	(0.01)			
Number of sheep	-0.177	-0.083	-0.094	0.689	0.689	0.631
	(-0.94)	(-0.45)	(0.58)			
Number of goats	0.283	-0.358	0.640**	1.065	1.409	1.229
	(0.97)	(-1.65)	(2.11)			
Own a non-farm enterprise	-0.145***	-0.057	-0.088	0.296	0.368	0.422
	(-3.03)	(-1.56)	(1.49)			
N	4,050	4,050		578	578	772

Notes: t stats in parentheses. * 10% significance ** 5% significance; *** 1% significance; cluster fixed effects included

9.5 Summary

The economic position of LEAP households has improved considerably over the study period. The value of crop production has almost doubled, the number of households owning an agricultural implement has increased by seven per cent and the number of households with any livestock holdings has increased. Results show a positive impact of the LEAP programme on the value of crop yields of beneficiaries. This increase in the value of crop production is explained in part due to increases in probability of use of seeds on plots and the beneficiaries committing more family labour and total labour to their farms. Although we find a positive impact of LEAP on the probability that a household owns any agricultural assets that result seems to be driven by a particular tool (cutlass).

The financial position of LEAP households is mixed, with the number of households with any savings increasing by 52 per cent, but the proportion with any outstanding debt also increasing by 46 per cent. However, the increased credit and debt, combined with a rise in LEAP households providing transfers to others, suggests ***increased engagement in financial networks***. Although LEAP households are saving more in real terms than at baseline, when compared to the C group, the average value of savings was GH¢75 lower, possibly because new savers likely save smaller amounts on average, and LEAP has increased the proportion of households who save. On the other hand, the number of LEAP households extending credit to others increased by 24 per cent, and the number sending gifts to other households

increased by 48 per cent. Additionally, sub-group analysis suggests that some beneficiary households, such as female headed households, decreased their indebtedness as a result of the programme.

The proportion of treatment group households that own livestock increased for most types of livestock, but we find no significant programme impacts, except a negative impact on the number of chickens owned. Finally, the proportion of households engaged in non-farm enterprise increased in both LEAP and comparison households, though the relative increase was larger in the comparison group.

10. Impacts on education and child's work

This chapter of the report discusses the impacts of LEAP on education and children's work. We start by discussing the effects on school enrolment, attendance, grade progression and educational expenditures. Then, we turn to the impact of LEAP on the incidence of children performing any paid work activities.

10.1 Impacts on enrolment

In principle, public basic education in Ghana (pre-primary through junior high school) is free of charge. However, substantial out-of-pocket costs for schooling remain, particularly for basic necessities such as notebooks and uniforms, which present a significant barrier to sending children to school for poor families (UNICEF Ghana, 2010), especially for secondary school children who, at the time of this study, were still required to pay fees. If LEAP is able to alleviate budget constraints related to schooling, we may see an impact on schooling indicators. In addition, as LEAP provides consistent, although relatively small income to the household, the time allocation of children in the household might change, for example, from income generation to schooling.

We use the self-reported enrolment status of children, reported by the main household respondent. Enrolment is being defined as being enrolled in school at any time in the current (at the time of the survey) school year. The mean values of school enrolment by treatment status and wave are depicted in Figure 10.1.1. The height of the bars shows that enrolment rates are quite similar between treatment and comparison children at midline and endline, but comparison children have a somewhat lower enrolment rate at baseline. This imbalance at baseline has implications for the impact estimates. Since the baseline value for the comparison group is lower than the treatment group, and the overall enrolment rates are quite high already, there is little room for improvements in the

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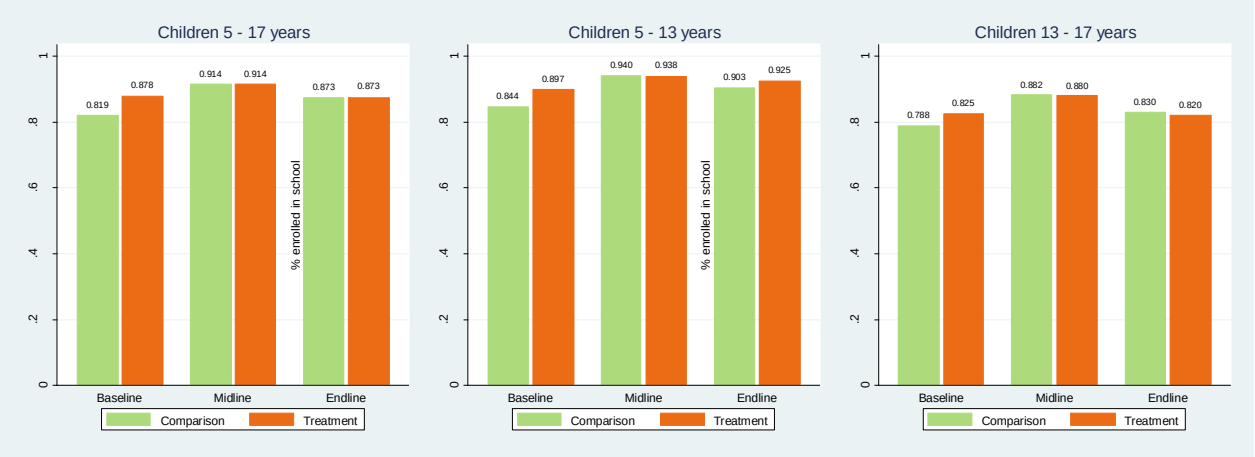
- Overall, enrolment levels remained stable for LEAP children between baseline and endline at over 87 per cent. The school enrolment rate among LEAP children is somewhat higher than in our GLSS comparison group, except for older children.
- LEAP has led to some improvements in attendance. Only about 8 per cent of LEAP children missed any school at endline, much lower than a comparable estimate from the GLSS. For younger children, the impact of 5.5 pp on school attendance is significant, as well as for younger boys (8 pp).
- The share of LEAP children being in the correct grade for age did not increase over the study period, and educational expenditure increased slightly from GH¢ 14 to GH¢ 16. Educational expenditure of LEAP children is higher than among similar children in the GLSS sample.
- There is no change in children's paid work and no change in the number of days children work on the household's farm.

treatment group, which is known as a 'ceiling effect'. Hence, most of the effects we observe are likely 'catch-up' from the comparison group.

Figure 10.1.1: Current enrolment by treatment status and wave, age-disaggregated



This is consistent with the impact estimates for the full sample of children 5 – 17 years old, shown in Tables 10.1.1. The effect of LEAP on enrolment in the full sample is not significant. We also don't observe any differential impact by sex of the child. We further disaggregate the impact by age group. In the younger age group, there is a negative effect of 6 percentage points at midline, which is significant at the 10 per cent level, but at endline the effect is no longer significant. However, columns five and six show that the enrolment rate in this age group is actually higher in the treatment group, suggesting that these negative effects are entirely driven by a catch-up effect in the comparison group. Disaggregating by sex furthermore shows that this effect is larger among boys, and insignificant among girls. Among the older children, the overall impact on enrolment is also insignificant.[9]

We further break down the impacts by household subgroups: female-headed versus male-headed households, small (4 or fewer members) versus large households and poorest 50 per cent of households according to their baseline consumption versus the 50 per cent less poor (Appendix A.6.1). There are a few negative impacts at midline for younger children in large households (8.3 pp), but these effects disappear at endline. The strongest subgroup impacts are observed in the upper 50 per cent of households based on their baseline consumption. In these households, LEAP had an impact of 10.7 pp on enrolment among children aged 13 – 17 years. Effects are also large among girls in these households, 13.9 pp on enrolment. This positive impact is primarily driven by a reduced enrolment rate in the comparison group, while enrolment among LEAP children remained stable across the years. This suggests that LEAP is able to prevent drop-out among this group of children in less poor households. The ATT effects show that continued receipt of LEAP increases enrolment between midline and endline, especially among younger children. The ATT effects are also stronger in male-headed and less poor households.

[9] Note that we include children age 13 in both groups because the transition from primary to junior secondary school may vary depending on age of school entrance, and may occur at slightly older ages among children with lower access to schooling.

Table 10.1.1: The impact of LEAP on school enrolment

Dependent Variable	Endline Impact (1)	Midline Impact (2)	Impact Diff (EL-ML) (3)=(1)-(2)	Baseline Treated Mean (4)	Endline Treated Mean (5)	Endline Control Mean (6)
All children 5 - 17 years						
Current enrolment	-0.031	-0.032	0.001	0.878	0.873	0.873
	(-0.89)	(-0.89)	(0.03)			
N	5,693	5,693		886	837	974
Boys 5 - 17 years						
Current enrolment	-0.032	-0.039	0.007	0.889	0.876	0.855
	(-0.64)	(-0.82)	(0.14)			
N	2,984	2,984		464	420	533
Girls 5 - 17 years						
Current enrolment	-0.025	-0.027	0.003	0.865	0.870	0.894
	(-0.51)	(-0.64)	(0.07)			
N	2,709	2,709		422	417	441
All children 5 - 13 years						
Current enrolment	-0.033	-0.059*	0.026	0.897	0.925	0.903
	(-0.70)	(-1.77)	(0.68)			
N	3,930	3,930		617	533	684
Boys 5 - 13 years						
Current enrolment	-0.046	-0.078*	0.032	0.915	0.927	0.890
	(-0.75)	(-1.79)	(0.68)			
N	2,029	2,029		317	263	366
Girls 5 - 13 years						
Current enrolment	0.024	0.006	0.018	0.879	0.922	0.918
	(0.53)	(0.14)	(0.43)			
N	1,901	1,901		300	270	318
All children 13 - 17 years						
Current enrolment	0.041	0.074	-0.032	0.825	0.820	0.830
	(0.89)	(1.64)	(0.80)			
N	2,199	2,199		345	370	364
Boys 13 - 17 years						
Current enrolment	0.032	0.025	0.007	0.833	0.826	0.804
	(0.57)	(0.33)	(0.10)			
N	1,181	1,181		188	189	207
Girls 13 - 17 years						
Current enrolment	0.001	0.018	-0.017	0.816	0.814	0.860
	(0.01)	(0.30)	(0.28)			
N	1,018	1,018		157	181	157

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

To provide some more context, we also use the trend in enrolment rate observed in the GLSS surveys as an alternative counterfactual for our LEAP sample (Table 10.1.2). At baseline in 2010, LEAP children had higher enrolment rates than children in similar households in the GLSS four years earlier. At endline, the full sample of LEAP children (5 – 17 years) and the young sample (5 – 13 years) recorded higher enrolment rates than the comparable GLSS sample in 2013. Only the group of older LEAP children was falling behind the enrolment rate observed in the GLSS sample (0.865 in GLSS versus 0.820 in LEAP).

In sum, the main intent-to-treat impacts of LEAP on school enrolment are not significant. There is a minor negative effect among younger children (5 – 13 years old), driven by boys, but this is most likely reflective of a catch-up effect in the comparison group. Effects at the secondary level are positive but fail to reach any conventional level of statistical significance. Positive impacts are found when disaggregating by household type, particularly among male-headed households and less poor households. Compared to the GLSS sample, the full sample of LEAP children and the younger sample record higher enrolment rates than their counterparts in the GLSS. The older age group (13 – 17 years) shows a lower enrolment rate than the GLSS counterfactual.

Table 10.1.2: Comparison of enrolment rate among LEAP children to GLSS

	2006	2010	2012	2013	2016
Children 5 - 17 years					
GLSS	0.815			0.856	
	[506]			[1,408]	
LEAP		0.878	0.914		0.873
		[886]	[812]		[837]
Children 5 - 13 years					
GLSS	0.827			0.856	
	[378]			[1,057]	
LEAP		0.897	0.938		0.925
		[617]	[577]		[533]
Children 13 - 17 years					
GLSS	0.804			0.865	
	[160]			[455]	
LEAP		0.825	0.880		0.820
		[345]	[304]		[370]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of children in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets.

10.2 Attendance

Next, we turn to school attendance. Since enrolment rates are already quite high in Ghana, as shown in the previous section, LEAP may not have been able to affect the school enrolment (apart from certain subgroups). However, LEAP may have had an impact on regular attendance for those children that are enrolled in school. This might happen if the LEAP Programme is able to alleviate the need for children to participate in agricultural or other income-generating activities that take them away from school, or facilitate the household's ability to pay routine term and exam fees throughout the year, allowing the children to attend school regularly. We measure attendance as missing any school during the week before the survey. The indicator is coded with '1' meaning any school missed, and we are thus interested in observing reductions in this indicator.

Table 10.2.1: The impact of LEAP on school attendance (children 5 - 17 years)

Dependent Variable	Endline Impact (1)	Endline Treated Mean (2)	Endline Control Mean (3)
All children 5 - 17 years			
Missed any school	-0.026	0.080	0.091
	(-1.04)		
N	1,293	619	674
Boys 5 - 17 years			
Missed any school	-0.044	0.075	0.081
	(-1.37)		
N	666	313	353
Girls 5 - 17 years			
Missed any school	-0.019	0.084	0.101
	(-0.51)		
N	627	306	321
All children 5 - 13 years			
Missed any school	-0.055*	0.077	0.105
	(-1.85)		
N	932	429	503
Boys 5 - 13 years			
Missed any school	-0.080*	0.079	0.091
	(-1.95)		
N	470	212	258
Girls 5 - 13 years			
Missed any school	-0.044	0.075	0.120
	(-1.01)		
N	462	217	245
All children 13 - 17 years			
Missed any school	0.024	0.079	0.050
	(0.90)		
N	478	251	227
Boys 13 - 17 years			
Missed any school	0.016	0.073	0.057
	(0.36)		
N	254	131	123
Girls 13 - 17 years			
Missed any school	0.022	0.086	0.045
	(0.69)		
N	224	120	104

Notes: Estimations use cross-sectional modelling at endline among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance

However, there are some issues with this indicator at baseline and midline. At baseline, more than 60 per cent of the children have missing information for absence at school. The midline was fielded during a school break in April/May and we have therefore very little information about attendance during the week prior to the survey. Hence we resort to computing cross-sectional differences at endline for this

indicator.[10] Results of this exercise (Table 10.2.1) indicate a small and insignificant impact of LEAP on school attendance for the full sample of children (5 – 17 years old). However, there is a significant negative effect of 5.5 pp among the younger age group, and particularly among younger boys (8.0 pp).

Next, we again make a comparison to a similar group of children from the GLSS sample (Table 10.2.2). Absence in the GLSS sample is more than twice as high as in the LEAP sample, at 17 per cent for children 5 – 17 years old, compared to only 8 per cent for LEAP children. The same holds when breaking down the sample by age group. This, together with the impact estimates presented above, suggests that LEAP children are missing less school than children in similar non-LEAP households

Table 10.2.2: Comparison of school attendance (any missed school) among LEAP children to GLSS

	2013	2016
Children 5 - 17 years		
GLSS	0.172	
	[868]	
LEAP		0.080
		[619]
Children 5 - 13 years		
GLSS	0.172	
	[666]	
LEAP		0.077
		[429]
Children 13 - 17 years		
GLSS	0.166	
	[272]	
LEAP		0.079
		[251]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of children in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets.

10.3 Grade progression

In addition to enrolment and attendance, we are interested in the effect of LEAP on grade progression. If LEAP is able to keep children in school, we may observe quicker grade progression among children in LEAP households. As a measure of grade progression, we use whether the child is in the correct grade according to his or her age. For example, a child aged seven years old is supposed to start primary school and therefore be in grade one.[11] This indicator is coded as one if the child is in the correct (or higher)

[10] At endline, 17% of children reported to be on vacation from school and so we only use the sample of children that were not on vacation at the time of the survey.

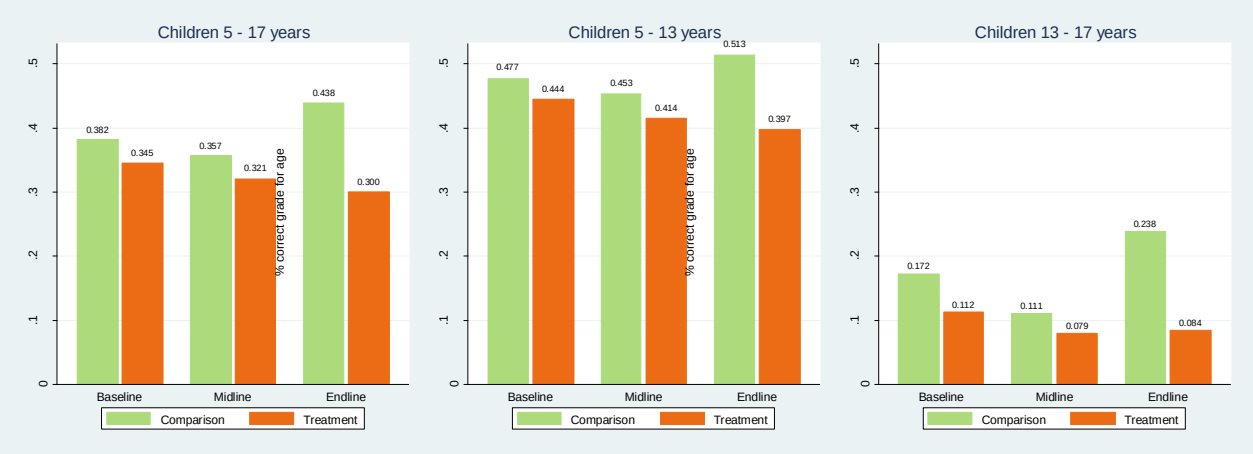
[11] We use the following conversion for age and grade:

Age	5	6	7	8	9	10	11	12	13	14	15	16	17
Grade	pre-school	pre-school	P1	P2	P3	P4	P5	P6	JSS1	JSS2	JSS3	SSS1	SSS2

grade, and zero otherwise. It is only observed for those children currently in school. Over time, this indicator can be impacted if i) children enter school at the right age, or ii) fewer children repeat grades.

Figure 10.3.1 shows the percentage of children who are in the correct grade for their age by treatment status and survey wave. It shows that overall, less than 40 per cent of children 5 – 17 years in LEAP households were in the correct grade for their age at baseline and this share is declining over time. This share is higher among younger children than older children. For comparison group children, this rate is slightly higher at baseline and midline, and much higher at endline. The difference at endline seems most profound for older children 13 – 17 years old. (See Box 1 – economic position of comparison households over time may shed light on these disparities.)

Figure 10.3.1: Grade-for-age by treatment status and wave, age-disaggregated



The impact estimates, presented in Table 10.3.1, show an insignificant effect of the LEAP Programme on the correct grade-for-age of the entire sample of children and for boys. We find a marginally significant negative effect of 10 pp for girls. Breaking down the sample by age group and by sex, we observe insignificant estimates for the younger age group, and a significant negative impact of nearly 13 pp for the older cohort of children, primarily due to the impact on older boys (-18 pp).

Table 10.3.1: The impact of LEAP on grade-for-age

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
All children 5 - 17 years						
Correct grade for age	-0.053	0.008	-0.060	0.345	0.300	0.438
	(-1.18)	(0.17)	(1.57)			
N	4,838	4,838		754	697	767
Boys 5 - 17 years						
Correct grade for age	-0.016	-0.040	0.024	0.358	0.297	0.382
	(-0.29)	(-0.79)	(0.50)			
N	2,536	2,536		401	348	413
Girls 5 - 17 years						
Correct grade for age	-0.103*	0.053	-0.157**	0.331	0.302	0.499
	(-1.67)	(0.87)	(2.60)			
N	2,302	2,302		353	349	354

Table 10.3.1: The impact of LEAP on grade-for-age (continued)

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
All children 5 - 13 years						
Correct grade for age	-0.066	0.005	-0.072	0.444	0.397	0.513
	(-1.20)	(0.09)	(1.56)			
N	3,478	3,478		542	480	572
Boys 5 - 13 years						
Correct grade for age	0.027	-0.046	0.073	0.468	0.387	0.426
	(0.34)	(-0.64)	(1.17)			
N	1,790	1,790		285	235	301
Girls 5 - 13 years						
Correct grade for age	-0.066	0.087	-0.153**	0.418	0.405	0.607
	(-0.95)	(1.21)	(1.99)			
N	1,688	1,688		257	245	271
All children 13 - 17 years						
Correct grade for age	-0.128**	0.003	-0.131**	0.112	0.084	0.238
	(-2.17)	(0.06)	(2.29)			
N	1,757	1,757		271	281	261
Boys 13 - 17 years						
Correct grade for age	-0.179**	-0.100*	-0.079	0.120	0.107	0.236
	(-2.53)	(-1.78)	(1.17)			
N	955	955		149	144	149
Girls 13 - 17 years						
Correct grade for age	-0.031	0.058	-0.089	0.103	0.060	0.240
	(-0.41)	(0.69)	(1.26)			
N	802	802		122	137	112

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. Sex/age group subgroups use region fixed effects instead of cluster fixed effects. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

The alternative comparison to GLSS is presented in Table 10.3.2. About one-third of the children 5 – 17 years old in the GLSS comparison sample were in the correct grade according to their age in 2006. This rate was much higher among the younger age group then among the older cohort (42 per cent versus 5 per cent). The share of children in the correct grade for age increase slightly between the two GLSS surveys to 36 per cent for the full sample, 46 per cent for the young children and nearly seven per cent for the older children. Overall, the share of LEAP children (ages 5-17) in the correct grade for their age decreased over time from about 35 per cent to 30 per cent and is therefore lower than the GLSS counterfactual. However, the share of LEAP children in the appropriate grade for age is higher for the older age group (ages 13-17), compared to the GLSS comparison sample.

Table 10.3.2: Comparison of grade for age among LEAP children to GLSS

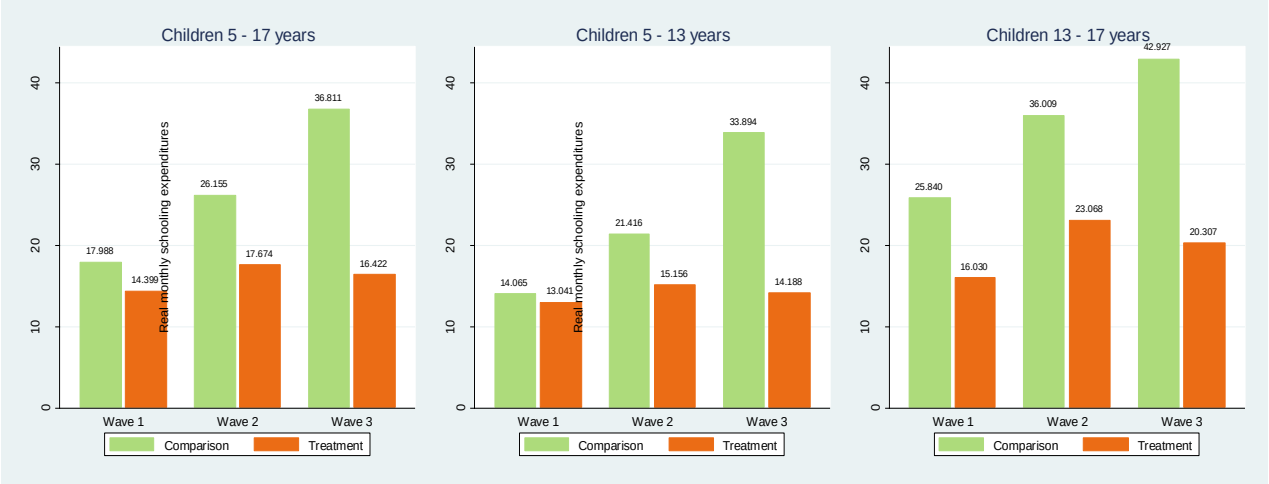
	2006	2010	2012	2013	2016
Children 5 - 17 years					
GLSS	0.326			0.362	
	[401]			[1,204]	
LEAP		0.345	0.321		0.300
		[754]	[736]		[697]
Children 5 - 13 years					
GLSS	0.419			0.460	
	[305]			[920]	
LEAP		0.444	0.414		0.397
		[542]	[540]		[480]
Children 13 - 17 years					
GLSS	0.045			0.066	
	[125]			[377]	
LEAP		0.112	0.079		0.084
		[271]	[262]		[281]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of children in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets.

10.4 Expenditure on education

One reason for the general lack of impact on educational outcomes for children could be the relatively low value of the transfer (please see Section 7.4 for details). As discussed in the introduction to this chapter, we would expect to see impacts on education if LEAP is able to lift the budget constraint associated with schooling or can change the time allocation of members in the household. Therefore, we also investigated the impacts of LEAP on educational expenditures, to test the hypothesis whether LEAP households are spending more on education than their non-LEAP counterparts. The survey identified several out-of-pocket schooling expenditures, such as schooling fees, uniforms, books, etc. We summarize the expenditures for each individual and convert them to real values, making them comparable across waves and between treatment and comparison group. The means of the total educational expenditures are given in Figure 10.4.1. Among the full sample of children, while expenditures between treatment and comparison were relatively similar at baseline, expenditure in the comparison group increased considerably over the waves, while that of the treatment group remained relatively steady. This is true for both the younger and older age groups. This is consistent with the higher overall consumption levels found in the C group, but also may again point to the potential mismatch of the comparison group as a good counterfactual. We therefore also compare our findings to GLSS, which shows that LEAP households spend more than comparable households from GLSS.

Figure 10.4.1: Real educational expenditure by treatment status and wave, age-disaggregated



These considerably different trends are reflected in the impact estimates, shown in Table 10.4.1. There is a strong negative effect on schooling expenditure associated with LEAP treatment status. While the comparison group nearly doubled its spending on schooling, LEAP children remained at a similar level of spending. This holds for both boys and girls, although spending on boys is much higher than on girls in the comparison group, while it is equal among LEAP children. Disaggregating these results by age, we continue to observe significant negative impacts on educational spending, although there is less significance among the older age group. The negative impacts on educational expenditure persist when breaking the results down by type of household (Appendix A.6.1). The comparison to our GLSS counterfactual shows a different picture, however (Table 10.4.2). Educational expenditure of children in LEAP households is consistently higher than among children in the GLSS sample, for every age group.

Table 10.4.1: The impact of LEAP on schooling expenditures

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
All children 5 - 17 years						
Real monthly schooling expenditures	-14.774** (-2.09)	-8.759*** (-2.89)	-6.016 (0.84)	14.399	16.422	36.811
N	5,693	5,693		886	837	974
Boys 5 - 17 years						
Real monthly schooling expenditures	-12.641** (-2.02)	-9.393** (-2.50)	-3.249 (0.57)	14.448	16.566	43.632
N	2,984	2,984		464	420	533
Girls 5 - 17 years						
Real monthly schooling expenditures	-9.127* (-1.72)	-9.271** (-2.40)	0.144 (0.03)	14.347	16.278	28.978
N	2,709	2,709		422	417	441

Table 10.4.1: The impact of LEAP on schooling expenditure (continued)

Dependent Variable		Endline Impact (1)	Midline Impact (2)	Impact Diff (EL-ML) (3)=(1)-(2)	Baseline Treated Mean (4)	Endline Treated Mean (5)
All children 5 - 13 years						
Real monthly	-15.983**	-11.712***	-4.270	13.041	14.188	33.894
schooling expenditures	(-2.21)	(-4.00)	(0.76)			
N	3,930	3,930		617	533	684
Boys 5 - 13 years						
Real monthly	-19.715**	-8.114***	-11.601	12.882	13.907	43.718
schooling expenditures	(-2.24)	(-2.85)	(1.38)			
N	2,029	2,029		317	263	366
Girls 5 - 13 years						
Real monthly	-7.366**	-9.986***	2.620	13.206	14.458	23.035
schooling expenditures	(-2.46)	(-3.98)	(0.71)			
N	1,901	1,901		300	270	318
All children 13 - 17 years						
Real monthly	-16.758*	-7.506	-9.252	16.030	20.307	42.927
schooling expenditures	(-1.78)	(-0.96)	(0.96)			
N	2,199	2,199		345	370	364
Boys 13 - 17 years						
Real monthly	-12.128	-14.906**	2.778	16.179	20.476	40.792
schooling expenditures	(-1.57)	(-2.21)	(0.31)			
N	1,181	1,181		188	189	207
Girls 13 - 17 years						
Real monthly	-19.891	-5.430	-14.462	15.854	20.133	45.423
schooling expenditures	(-1.50)	(-0.54)	(1.03)			
N	1,018	1,018		157	181	157

Notes: Estimations use DD, cluster FE modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. Sex/age group subgroups use region FE instead of cluster FE. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for midline and endline. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

Table 10.4.2: Comparison of educational expenditures among LEAP children to GLSS

	2006	2010	2012	2013	2016
Children 5 - 17 years					
GLSS	7.886			11.466	
	[506]			[1,408]	
LEAP		14.399	17.674		16.422
		[886]	[812]		[837]
Children 5 - 13 years					
GLSS	6.764			9.347	
	[378]			[1,057]	
LEAP		13.041	15.156		14.188
		[617]	[577]		[533]
Children 13 - 17 years					
GLSS	10.843			16.665	
	[160]			[455]	
LEAP		16.030	23.068		20.307
		[345]	[304]		[370]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of children in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets.

10.5 Impacts on children's work

To complete this chapter, we report the impact of LEAP on children's work, since education and work compete for time, and thus usually go hand in hand. In addition to limiting the household's ability to cover basic school needs, poverty can lead households to pull children out of school to help in income generation. Hence, if a programme such as LEAP is able to alleviate poverty, it can decrease the need for children to work for pay or participate in the household's income generating activities.

We collected information on paid employment during the seven days before the survey from each member in the household aged seven years and older. We define child work as working for pay for households members aged 7 – 17 years old. In addition, if a household member reported any paid employment in the seven days before the survey, the number of weeks performing the job during the previous 12 months was solicited. We estimate the DD impact of LEAP on these two indicators. Furthermore, in waves two and three, we also collected information on paid employment of each household member during the 12 months prior to the survey, and the number of weeks engaged in the job, if any. Because we have no reliable baseline for these indicators, we estimate cross-sectional differences at both waves as a measure of impact due to LEAP. Results for the full sample of 7 – 17 year old children are presented in Tables 10.5.1 and 10.5.2. Before turning to the results, we have to note that our instrument was not specifically designed to capture all aspects of children's work. For example, children may assist on the household farm or non-farm activities. Our indicator only captures paid work, and this will likely underestimate the true value of children's economic activities in the sample.

The results in Tables 10.5.1 and 10.5.2 indicate that LEAP had no significant impact on children's paid work. At baseline, less than one per cent of children were engaged in any paid work in the seven days before the survey. Six years later, again, a very small proportion of children (less than two per cent) in both the treatment and comparison group did any work for pay. A similar story emerges when looking at paid work during the 12 months prior to the survey (Table 10.5.2) – a very small percentage of children were engaged in paid work at baseline, and this share remained small at endline. We also do not observe any impact on the number of weeks worked for pay.

We estimate the impact of LEAP on children's paid work on several subsamples of children: by age group (7 – 12 years, 13 – 17 years) and by sex, but we find no significant impacts of LEAP on the incidence of children's work nor the number of weeks worked for pay (Appendix A.6.1). There are also very few noteworthy impacts among further subgroups by household headship, size or baseline consumption (Appendix A.6.1).[12]

[12] The ATT effects on the other hand, tell a different story (Appendix A.6.2). We find a significant increase at midline in paid work in the full sample of LEAP children 7 – 17 years old of 1.5 pp and a significant increase in weeks worked at both midline and endline (0.22 and 0.42 weeks respectively). These effects appear to be driven by younger children 7 – 12 years and girls. Younger children exhibit a positive endline impact of 1.7 pp on paid work in the last seven days, with an endline impact on weeks worked of 0.36 weeks. Girls show an impact of 1.7 pp on work for pay at midline, and no significant impact at endline. Weeks worked is positively impacted at midline and endline for girls, with 0.32 and 0.49 weeks respectively.

Table 10.5.1: The impact of LEAP on children's paid work in the last 7 days (children 7 - 17 years)

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Paid work last 7 days	-0.002	0.001	-0.004	0.007	0.017	0.010
	(-0.29)	(0.21)	(0.44)			
Weeks worked (job last 7 days)	0.160	-0.029	0.189	0.135	0.377	0.104
	(0.82)	(-0.26)	(1.10)			
N	4,939	4,939		769	750	839

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

Table 10.5.2: The impact of LEAP on children's paid work in the last 12 months (children 7 - 17 years)

Dependent Variable	Endline Impact	Midline Impact	Midline Treatment Mean	Midline Control Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)	(4)	(5)	(6)
Paid work last 12 months	0.005	-0.002	0.002	0.003	0.020	0.016
	(0.56)	(-0.53)				
Weeks worked (job last 12 months)	0.005	-0.045	0.003	0.046	0.202	0.190
	(0.05)	(-0.93)				
N	1,589	1,592	704	888	750	839

Notes: Estimations use cross-sectional modelling at midline and endline among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

10.6 Summary

This chapter has presented an impact analysis of LEAP on education and work for children. We hypothesized that if LEAP is able to alleviate household poverty and provide sufficient funds to cover out-of-pocket schooling expenses, we may see an improvement in schooling outcomes and a reduction in child's work. Unfortunately, we did not find a significant ITT effect on school enrolment as a result of LEAP, except for certain subgroups, such as children in less poor households. The school enrolment rate among LEAP children is somewhat higher than in our GLSS comparison group, except for older children. We found a positive effect on attendance for younger children, in particular boys. LEAP children were also missing school less often than a comparable sample from the GLSS. In terms of grade progression, very few children are in the correct grade for their age, suggesting either late school entry or grade repetition. We find a negative effect on this indicator, particularly for older children. Comparison to the GLSS indicates that LEAP children are less likely to be in the correct grade for their age, except for older children, who were more often in the right grade compared to older children in the GLSS.

In addition, we did not find any effect of LEAP on the incidence of children's paid work; yet, this is likely due to the fact that children's work is very low in our sample and our instrument was not specifically designed to measure child's work.

ADULT HEALTH TAKE-AWAYS

- NHIS enrolment among LEAP adults aged 18+ doubled between baseline and endline. However, coverage is not universal: just over half of LEAP adults had a valid NHIS card in 2016. This level is higher than in our GLSS rural-poor group, though.
- The prevalence of reporting being sick or injured in the previous 4 weeks remained stable around 25 per cent of LEAP adults, a level higher than in the GLSS group. However, seeking health care when sick or injured increased significantly among LEAP adults, from 47 per cent in 2010 to 67 per cent in 2016.
- Health expenditures among LEAP adults more than doubled, particularly among women and among those aged 55 or more (almost tripled in this group).
- The average number of times an NHIS card was used in last 12 months has decreased, despite increases in curative care seeking and NHIS enrolment.

A potential explanation for the lack of consistent effects on education is the relatively low value of the LEAP transfer. The analysis showed that while the comparison group was able to double their schooling expenditure, the household spending on children's education in the treatment group was about the same as six years ago. Despite the fact the LEAP children had higher educational expenditures than our alternative GLSS counterfactual, the lack of growth in educational expenditures may be an indication that the LEAP transfer was not sufficient to cover rising educational expenses. These findings are in line with a recent report, based on experiences of 2,400 LEAP recipients, which found that over 80 per cent of respondents claimed that the main reason for school absenteeism was 'extra demands from teachers such as printing fees, extra classes' or 'inadequate education materials or school supplies' (CDD-Ghana, 2016). It appears that LEAP hasn't been able to overcome this budget constraint, except in a few subgroups.

11. Impacts on adult health

This chapter presents the impacts of LEAP on National Health Insurance Scheme (NHIS) participation and on adult health. We start by discussing the effects on NHIS enrolment. Then, we turn to self-reported health and activities of daily living measures. Finally, we examine morbidity, health care seeking behaviour and health expenditures.

11.1 Impacts on NHIS enrolment and usage

For households, we examine the following indicators: whether at least one member of the household has ever had NHIS insurance, whether all household members have ever had NHIS insurance, whether at least one household member has valid a NHIS insurance card for the current year, whether all household members have valid NHIS insurance card, and whether any member of the household has ever benefited from NHIS. Beneficiaries of LEAP are entitled to free enrolment in NHIS and so we expected to find improvements in these indicators. However, as noted before, certain barriers to enrolment may still exist, including distance to National Health Insurance Authority (NHIA) offices in rural areas, waiting times, and misperceptions about the program, or perceptions of care at facilities that accept NHIS.

The results presented in Table 11.1.1 are as we hypothesized. There have been notable increases in LEAP households ever having NHIS enrolment and having a valid NHIS card for

current year, reaching a level of 95.5 per cent and 76.9 per cent, respectively, by endline. This is confirmed by the impact results. Among panel households, we find an 8.8 pp positive impact by the midline on households with at least one household member ever having NHIS insurance, and a 13.3 pp endline impact on households with all household members ever having NHIS insurance. Regarding currently having a valid NHIS insurance card, we find that LEAP has had an 18.2 pp positive endline effect on households with at least one household member having valid NHIS insurance, but no significant endline impact on all household members having valid NHIS insurance. There is also a 9.2 pp increase in households with at least one household member who ever benefited from NHIS.

We break down the household-level NHIS impacts by type of household (see Appendix A.7). The impacts on NHIS enrolment appear to be more significant and/or of higher magnitude among female-headed households, larger households, and the poorest 50 per cent of households.[13]

Table 11.1.1: Household NHIS Enrolment

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
HH has at least one member ever NHIS insurance	0.060 (1.37)	0.088** (2.12)	-0.028 (0.92)	0.725	0.955	0.890
HH with all members ever NHIS insurance	0.133** (2.41)	0.054 (1.37)	0.079* (1.86)	0.411	0.666	0.547
HH has at least one member with valid NHIS insurance card	0.182*** (3.89)	0.166*** (2.61)	0.015 (0.29)	0.416	0.769	0.706
HH has all members with valid NHIS insurance card	0.051 (1.07)	0.051 (1.18)	-0.000 (0.01)	0.183	0.299	0.326
HH with member who ever benefited from NHIS	0.092* (1.93)	0.156*** (3.82)	-0.064* (1.77)	0.537	0.884	0.827
N	4,050	4,050		578	578	772

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

[13] The ATT analysis (presented in Appendix A.7) shows fewer strong impacts of LEAP on NHIS enrolment, other than, in the full sample at endline, we find a 9.1 pp increase in having at least one member with a valid NHIS insurance.

Using the information on NHIS enrolment collected for every household member, we examine the following indicators for adults aged 18 and higher: ever enrolled in the NHIS, having a NHIS card valid for the current year, and the number of times the person used NHIS in the last 12 months (see Table 11.1.2). There has been a notable increase in NHIS coverage among treatment group adults between baseline and endline, but NHIS coverage is still not universal: by endline, ever being enrolled in NHIS was reported by 83.2 per cent of treatment group adults, and just over half of them (51.8 per cent) reported having a NHIS card valid for the current year. Impact results indicate an eight pp positive impact by endline on having a valid NHIS card for the current year. However, among individuals with a valid NHIS card, we observe a significant negative impact of LEAP on the number of times the card was used in the previous 12 months, ***indicating that cardholders are using NHIS less frequently than before***.

Table 11.1.2: Individual NHIS enrolment - All adults (aged 18+)

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Individual ever enrolment in NHIS	0.066	0.041	0.025	0.552	0.832	0.765
	(1.58)	(1.09)	(0.78)			
N	9,055	9,055		1,239	1,407	1,751
Has valid NHIS insurance for current year	0.080*	0.092**	-0.012	0.281	0.518	0.517
	(1.88)	(2.05)	(0.30)			
N	9,055	9,055		1,239	1,407	1,751
Number of times used NHIS card in last 12 months	-1.415***	-0.383	-1.032*	2.808	2.165	3.013
	(-2.68)	(-0.66)	(1.94)			
N	3,788	3,788		354	743	823

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

We disaggregate these impacts by age group (18 – 54, 55 and above). The LEAP impacts on NHIS enrolment are significant only for the younger age group. At endline, adults aged 18 to 54 in LEAP households have an 15.6 pp increase in NHIS ever enrolment and a 12.1 pp increase in currently having a valid NHIS card (Table 11.1.3). We don't find any significant LEAP impacts on current NHIS enrolment among older adults, aged 55 or higher (Table 11.1.4). There is an important increase in the coverage of NHIS insurance in this age group but it is of a similar magnitude in the LEAP and the comparison groups. The negative effect on usage of the NHIS card seems to be driven by older adults, as this effect is not significant for adults 18 – 54 years old.[14]

[14] The ATT effects (shown in Appendix A.7) on individual NHIS enrolment are not significant, in aggregate or when broken down by age group. The exception is a weakly significant reduction on NHIS enrolment among older adults of 8.8 percentage points at endline. The ATT findings on the usage of the NHIS card are in line with the ITT estimates.

Table 11.1.3: Individual NHIS current enrolment - Adults aged 18-54

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Individual ever enrolment in NHIS	0.156***	0.121***	0.035	0.442	0.791	0.683
	(3.09)	(2.68)	(0.88)			
N	5,530	5,530		662	850	1,120
Has valid NHIS insurance for current year	0.104*	0.140**	-0.035	0.194	0.459	0.442
	(1.92)	(2.42)	(0.80)			
N	5,530	5,530		662	850	1,120
Number of times used NHIS card in last 12 months	-0.651	-0.451	-0.200	2.037	1.728	1.922
	(-1.09)	(-0.84)	(0.50)			
N	1,949	1,949		131	395	450

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

Table 11.1.4: Individual NHIS current enrolment - Adults aged 55 or more

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
Individual enrolment in NHIS	-0.012	0.010	-0.022	0.667	0.892	0.882
	(-0.26)	(0.20)	(0.58)			
N	3,525	3,525		577	557	631
Has valid NHIS insurance for current year	0.079	0.069	0.010	0.373	0.604	0.622
	(1.39)	(1.13)	(0.17)			
N	3,525	3,525		577	557	631
Number of times used NHIS card in last 12 months	-2.016***	-0.309	-1.707**	3.231	2.652	4.104
	(-2.76)	(-0.43)	(1.99)			
N	1,839	1,839		223	348	373

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

In addition, to provide some context, we compare the NHIS enrolment indicators of the LEAP individuals to similar indicators in the GLSS (see Table 11.1.5). LEAP individuals are more insured and more likely to have a valid NHIS card for the current year than the general population (see table footnote).

Table 11.1.5: Comparison of NHIS enrolment among LEAP adults to GLSS

	2006	2010	2012	2013	2016
All adults					
GLSS					
Ever enrolled in NHIS	0.061			0.568	
Valid NHIS card for current year	n/a [542]			0.402 [1,570]	
LEAP					
Ever enrolled in NHIS		0.552	0.736		0.832
Valid NHIS card for current year		0.281 [1,239]	0.481 [1,354]		0.518 [1,407]
Adults 18 - 54 years					
GLSS					
Ever enrolled in NHIS	0.046			0.544	
Valid NHIS card for current year	n/a [446]			0.373 [1,259]	
LEAP					
Ever enrolled in NHIS		0.442	0.682		0.791
Valid NHIS card for current year		0.194 [662]	0.439 [772]		0.459 [850]
Adults 55+					
GLSS					
Ever enrolled in NHIS	0.138			0.671	
Valid NHIS card for current year	n/a [96]			0.523 [311]	
LEAP					
Ever enrolled in NHIS		0.667	0.803		0.892
Valid NHIS card for current year		0.373 [577]	0.533 [582]		0.604 [557]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of adults in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets. n/a= not available.

While participation in LEAP provides an automatic entitlement to free enrolment in the NHIS, Table 11.1.5 indicates that NHIS enrolment among LEAP individuals is not universal. Table 11.1.6 presents the reasons reported for never registering with the NHIS. Surprisingly, "cannot afford premium" is consistently reported as the most prevalent answer, with 63.4 per cent of never-registered respondents still reporting this in 2016. This result indicates a lack of accurate information about LEAP-related entitlements and eligibility for NHIS. Other prevalent answers are "don't need health insurance" (18 per cent) and "NHIS does not cover health insurance needs of the individual" (10.9 per cent), the latter

Table 11.1.6: Reasons never registered with NHIS – LEAP, all adults

Why never registered:	2010	2012	2016
Cannot afford premium	0.752	0.838	0.634
Don't need health insurance	0.058	0.105	0.180
NHIS does not cover health insurance needs	0.050	0.045	0.109
Don't understand NHIS	0.039	0.015	0.057
Not heard of NHIS	0.037	0.002	0.011
Missing/not reported	0.092	0.000	0.020
N	660	381	224

pointing to either lack of information on or confusion about the range of services offered by NHIS, potential issues with how NHIS is being implemented, or shortcomings in NHIS coverage.

To access NHIS benefits it is necessary for individuals to have a valid NHIS card on hand, which has to be renewed every 12 months. As reported above, only 48 per cent in 2012 and 52 per cent of LEAP adults have a valid card for the current year. Table 11.1.7 presents the reasons for not renewing the card for the current year. Interestingly, the most consistent prevalent response is "premium is expensive" (60 per cent in 2016) despite the fact that LEAP entitles its beneficiaries to free NHIS enrolment, followed by "other" reasons (22 per cent), and "not been sick" (9 per cent in 2016).

Table 11.1.7: Reasons NHIS card has not been renewed for current year – LEAP, all adults

Why card has renewed:	2010	2012	2016
Premium is expensive	0.431	0.583	0.595
Has not been sick	0.028	0.040	0.086
Waiting time for card too long	0.093	0.064	0.051
Card has not expired[1]	0.012	0.032	0.016
Poor quality care for insurance card holders	0.017	0.002	0.015
Preferred services not covered	0.009	0.010	0.013
Use clinics/traditional practitioners not covered	0.000	0.009	0.005
Other	0.133	0.183	0.219
Missing/not reported	0.277	0.076	0.000
N	362	364	439

[1]'Card has not expired' refers to the physical NHIS card, which is valid for renewal for a period of five years. However, individuals are required to renew coverage for NHIS annually to maintain valid insurance.

11.2 Self-reported health status

In order to assess health, the household's main respondent was asked to rate the general health of each household member on a four-point scale (does the person consider him/her to be healthy, somewhat healthy, somewhat unhealthy, or unhealthy) and to gauge ability to conduct activities of daily living by asking whether the member has difficulties carrying heavy loads. Household members are considered healthy if they reported to be healthy or somewhat healthy. As Table 11.2.1 shows, for adults, LEAP had a significant impact of 11.1 percentage point in self-assessed health at midline, but no effect at endline. In terms of activities of daily living, we examine if household members could easily carry a heavy load (a size 34 bucket of water) without any help for 20 meters. We find significant and positive effects of LEAP on conducting this activity. The effect is of 8.6 percentage points at midline and it increases to 12.7 percentage points by endline.

We disaggregate these results by age, gender and degree of poverty (see Tables 11.2.2-11.2.4). While prime-aged adults (aged 18 – 54) experience bigger significant positive impacts on health status than older adults, we found similar positive impacts of LEAP among both men and women, and among members of poorest and less poor households.[15]

[15] The ATT effects are similar in magnitude to the ITT impacts (Appendix A.7). Also disaggregated by age group, we find that the ATT impacts are stronger among younger adults and not significant among older adults, but significant for both men and women. For poor and richer households, we find similar ATT effects, with significant positive LEAP effects on being healthy by midline but no effect by endline, and a significant positive ATT effect on easily carrying a heavy load by endline.

Table 11.2.1: Self-reported Health Status – Adults aged 18 or higher

Dependent Variable	Endline Impact (1)	Midline Impact (2)	Impact Diff (EL-ML) (3)=(1)-(2)	Baseline Treated Mean (4)	Endline Treated Mean (5)	Endline Control Mean (6)
Self-assessed healthy	-0.013	0.111***	-0.124***	0.729	0.724	0.804
	(-0.37)	(3.68)	(3.10)			
N	8,965	8,965		1,176	1,406	1,748
Can easily carry a heavy load	0.127***	0.086***	0.041	0.553	0.600	0.641
	(3.69)	(3.58)	(1.28)			
N	8,890	8,890		1,115	1,406	1,748

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

Table 11.2.2: Self-reported health status, by adult age group

	Adults aged 18-54						Adults aged 55 or older					
Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)	(7)	(8)	(9)=(7)-(8)	(10)	(11)	(12)
Self-assessed healthy	0.059**	0.126***	-0.067**	0.854	0.911	0.963	-0.053	0.128**	-0.181***	0.602	0.449	0.581
	(2.30)	(5.59)	(2.51)				(-0.96)	(2.36)	(2.88)			
N	5,466	5,466		622	849	1,117	3,499	3,499		554	557	631
Can easily carry a heavy load	0.231***	0.273***	-0.042	0.707	0.878	0.924	0.025	-0.076**	0.101**	0.401	0.193	0.243
	(7.08)	(8.53)	(1.55)				(0.47)	(-2.00)	(2.03)			
N	5,414	5,414		579	849	1,117	3,476	3,476		536	557	631

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

Table 11.2.3: Self-reported health status, by sex

	Adult females						Adult males					
Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)	(7)	(8)	(9)=(7)-(8)	(10)	(11)	(12)
Self-assessed healthy	-0.012	0.134***	-0.146***	0.696	0.693	0.769	-0.009	0.064**	-0.073*	0.784	0.775	0.873
	(-0.27)	(3.71)	(3.06)				(-0.22)	(1.99)	(1.79)			
N	5,515	5,515		725	873	1,050	3,450	3,450		451	533	698
Can easily carry a heavy load	0.131***	0.088***	0.044	0.525	0.551	0.579	0.140***	0.093***	0.047	0.597	0.683	0.760
	(3.14)	(3.31)	(1.12)				(3.66)	(2.61)	(1.62)			
N	5,469	5,469		687	873	1,050	3,421	3,421		428	533	698

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

Table 11.2.4: Self-reported health status, by baseline consumption

	Adults in 50% poorest households						Adults in 50% less poor households					
Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)	(7)	(8)	(9)=(7)-(8)	(10)	(11)	(12)
Self-assessed healthy	0.007	0.088***	-0.081*	0.761	0.738	0.831	-0.017	0.149***	-0.166***	0.691	0.708	0.769
	(0.15)	(2.87)	(1.86)				(-0.43)	(3.15)	(3.32)			
N	4,750	4,750		649	741	883	4,215	4,215		527	665	865
Can easily carry a heavy load	0.146***	0.105***	0.041	0.586	0.634	0.682	0.122***	0.053	0.070*	0.511	0.563	0.587
	(3.16)	(2.96)	(1.09)				(3.33)	(1.32)	(1.92)			
N	4,708	4,708		621	741	883	4,182	4,182		494	665	865

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

11.3 Morbidity, health care seeking behaviour and health expenditures

We examine the following indicators of morbidity and health seeking behaviour: whether individuals suffered any illness or injury in the past four weeks, and whether those who were sick sought any care. Since the measures that were collected on these indicators from the treatment and comparison households at baseline pertain to different recall periods (two weeks), we conduct cross-sectional analyses on the indicators separately at midline and endline.

Despite increases in valid NHIS enrolments, Table 11.3.1 shows that we find no significant impacts on health status or use of health services at either midline or endline. There are also few impacts disaggregated by sex and age group, except a positive effect at midline on curative care seeking for older (55+) adults of 14.4 percentage points, yet we see a reduction of 12.5 percentage points in this indicator in the younger age group (see Appendix A.7). LEAP also resulted in a reduction of 6.7 percentage points in the incidence of illness among females at endline.[16]

Table 11.3.1: Adult morbidity and service use

Dependent Variable	Endline Impact	Midline Impact	Midline Treatment Mean	Midline Control Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)	(4)	(5)	(6)
Any illness or injury in past four weeks	-0.033	-0.031	0.243	0.264	0.273	0.310
	(-1.23)	(-0.95)				
N	3,158	3,076	1,354	1,722	1,407	1,751
Sought care if ill or sick (curative)	0.053	0.050	0.625	0.581	0.666	0.633
	(0.91)	(0.89)				
N	870	667	309	358	373	497

Notes: Estimations use cross-sectional modelling at midline and endline among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

Compared to the GLSS results (see Table 11.3.2), LEAP adults are sick more often. However, on a positive note, they are more likely to seek health care when sick or injured, which is consistent with the higher enrolment in NHIS among LEAP adults. The higher use of health care services by LEAP adults relative to the general population is more pronounced for those aged 55 or higher.

[16] The ATT analysis, however, shows that current LEAP beneficiaries have a 5.3 percentage point lower incidence of illness than non-LEAP households (Appendix A.7). This effect is also significant in the younger age group (18 – 54 years) and among females.

Table 11.3.2: Comparison of morbidity and use of health services among LEAP adults to GLSS

	2006	2010	2012	2013	2016
All adults					
GLSS					
Sick/injured last 2 weeks	0.200			0.147	
	[544]			[1,574]	
Sought curative care if sick/injured	0.495			0.521	
	[118]			[217]	
LEAP					
Sick/injured last 4 weeks*		0.297	0.243		0.273
		[1,175]	[1,354]		[1,407]
Sought curative care if sick/injured*		0.466	0.625		0.666
		[333]	[309]		[373]
Adults 18 - 54 years					
GLSS					
Sick/injured last 2 weeks	0.150			0.134	
	[447]			[1,262]	
Sought curative care if sick/injured	0.545			0.535	
	[74]			[158]	
LEAP					
Sick/injured last 4 weeks*		0.192	0.122		0.185
		[619]	[772]		[850]
Sought curative care if sick/injured*		0.504	0.526		0.688
		[119]	[95]		[154]
Adults 55+ years					
GLSS					
Sick/injured last 2 weeks	0.452			0.204	
	[97]			[312]	
Sought curative care if sick/injured	0.410			0.482	
	[44]			[59]	
LEAP					
Sick/injured last 4 weeks*		0.405	0.391		0.403
		[556]	[582]		[557]
Sought curative care if sick/injured*		0.447	0.663		0.651
		[214]	[214]		[219]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of adults in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets.
*: In the 2010 LEAP baseline survey the period of reference was two week; in the 2012 and 2016 survey, it was four weeks.

We next look at hospitalization. Because of a lack of comparable data for the comparison group at baseline, we estimate separate cross-sectional models for midline and endline. As shown in Table 11.3.3, we find that LEAP had no effect on hospitalization at midline, but led to a reduction of 3.3 percentage points at endline. Breaking down this figure by age group and sex, we see that older adults and males drive this effect.[17]

[17] The ATT effects on hospitalization (Appendix A.7), show that LEAP had no effect on hospitalization at endline, except for an 8.5 percentage point reduction for older adults. There are ATT impacts at midline for the full sample of adults, and for younger adults and males.

Table 11.3.3: Adult hospitalization

Dependent Variable	Endline Impact	Midline Impact	Midline Treatment Mean	Midline Control Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)	(4)	(5)	(6)
All adults						
Hospitalized in last 12 months	-0.033** (-2.30)	-0.023 (-1.53)	0.045	0.063	0.068	0.100
N	3,158	3,077	1,354	1,723	1,407	1,751
Adults 18 – 54 years						
Hospitalized in last 12 months	-0.008 (-0.57)	-0.009 (-0.92)	0.020	0.033	0.048	0.053
N	1,970	1,892	772	1,120	850	1,120
Adults 55+ years						
Hospitalized in last 12 months	-0.066** (-2.03)	-0.037 (-1.22)	0.075	0.105	0.098	0.166
N	1,188	1,185	582	603	557	631
Female adults						
Hospitalized in last 12 months	-0.031 (-1.60)	-0.004 (-0.29)	0.053	0.056	0.082	0.112
N	1,925	1,890	847	1,043	873	1,052
Male adults						
Hospitalized in last 12 months	-0.039** (-2.22)	-0.068** (-2.55)	0.031	0.077	0.045	0.078
N	1,233	1,187	507	680	534	699

Notes: Estimations use cross-sectional modelling at midline and endline among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

The final table of this section shows that the programme reduced out-of-pocket adult health expenditures at endline (Table 11.3.4). Members of LEAP households spent on average GH¢ 7 less on health than their non-LEAP counterparts. This could be an effect of the NHIS, which is supposed to decrease out-of-pocket expenditures on health. This impact is particularly observed among young adults (18 – 54 years) and females.[18]

Table 11.3.4: Expenditures in health

Dependent Variable	Endline Impact	Midline Impact	Impact Diff (EL-ML)	Baseline Treated Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)
All adults						
Health expenditures in last 4 weeks (deflated)	-7.081** (-2.20)	-4.187 (-0.98)	-2.894 (0.56)	5.883	11.714	19.789
N	9,055	9,055		1,239	1,407	1,751

[18] The ATT effect in the full sample is comparable, with a reduction in health expenditures of 5.7 cedi due to LEAP (Appendix A.7). In terms of the ATT analysis, it also holds that this effect is driven by the younger age group and females.

Table 11.3.4: Expenditures in health (continued)

Dependent Variable	Endline Impact (1)	Midline Impact (2)	Impact Diff (EL-ML) (3)=(1)-(2)	Baseline Treated Mean (4)	Endline Treated Mean (5)	Endline Control Mean (6)
Adults 18 – 54 years						
Health expenditures in last 4 weeks (deflated)	-6.139**	-0.434	-5.705**	4.763	6.431	12.457
	(-2.09)	(-0.18)	(2.20)			
N	5,530	5,530		662	850	1,120
Adults 55+ years						
Health expenditures in last 4 weeks (deflated)	-10.062	-5.906	-4.156	7.063	19.468	30.113
	(-1.64)	(-0.75)	(0.42)			
N	3,525	3,525		577	557	631
Female adults						
Health expenditures in last 4 weeks (deflated)	-9.302***	1.095	-10.397**	5.905	11.957	22.040
	(-2.63)	(0.24)	(2.46)			
N	5,573	5,573		764	873	1,052
Male adults						
Health expenditures in last 4 weeks (deflated)	-8.800	-15.594	6.794	5.846	11.311	15.457
	(-1.50)	(-1.38)	(0.48)			
N	3,482	3,482		475	534	699

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for midline and endline. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

11.4 Summary

This chapter presented the impacts of LEAP on adults' NHIS enrolment, morbidity, use of health services and health expenditures. We hypothesised that LEAP would increase NHIS enrolment, reduce morbidity, and increase use of health services and health expenditures. We found important increases in NHIS enrolment in the LEAP group, which still fell far short of universal coverage, particularly in terms of having a valid NHIS card for the current year. LEAP had positive and significant effects on household-level participation in NHIS by midline, as well as on individual enrolment in NHIS and having a valid NHIS for the current year, with the effects mainly concentrated in younger adults (18-54 years), female-headed households, larger and poorer households. The main reason cited for never enrolling in NHIS or for not renewing the NHIS card for the current year was inability to pay the premium, which may indicate poor communication about LEAP benefits, as NHIS is supposed to be free of charge for all LEAP household members. On the positive side, comparison to GLSS data indicates that LEAP adults have more NHIS coverage than the general rural poor population.

However, the higher insurance coverage did not translate into lower incidence of illness or an increase in use of health services, with the exception of a positive effect in use of curative care seeking for older (55+) adults. LEAP, however, reduced hospitalizations, particularly for older adults and males. We also estimated that LEAP decreased health expenditures, especially among younger adults and women.

Results suggest that a significant expansion in NHIS coverage could be achieved through regular reminders to LEAP beneficiaries that NHIS is available free of cost as a part of LEAP beneficiary entitlements. These reminders could be cheaply implemented by communicating with beneficiaries during payments.

12. Impacts on child health

This chapter looks into the impacts of LEAP on child health outcomes. We start by assessing whether LEAP was able to increase NHIS enrolment among children. Then we proceed to LEAP's impact on morbidity and on seeking health services. Finally, we conclude with an analysis of the impact on individual health expenditures for children.

12.1 Impact on NHIS enrolment for children

As in the household-level analysis of NHIS enrolment, we use two indicators: ever enrolled in NHIS and having valid NHIS coverage for the current year. Again, we would anticipate that due to the link between LEAP and free NHIS enrolment, we would find a strong increase in NHIS enrolment and presence of valid NHIS cards. This increase is reflected in our impact estimates, presented in Table 12.1.1. For the full sample of children 0 –17 years old, we find a 17 pp endline increase in ever being enrolled in NHIS and more than a 13 pp increase in having a valid NHIS card. At endline, more than 80 per cent of children in LEAP households were ever enrolled in NHIS, compared to just over 50 per cent at baseline. The share of LEAP children having a valid NHIS card more than doubled, from 23 per cent at baseline to nearly 60 per cent at endline.

In addition to conducting analysis on the full sample, we disaggregate these impacts by age group (0 – 5 and 6 – 17) and sex. The impacts on ever being enrolled in NHIS are particularly strong among younger children, with an increase in enrolment of nearly 40 pp. This means that the impacts among older children are somewhat smaller; however, except for no significant changes to older children having a valid NHIS card at endline, the results remain significant and large. There are no differential impacts between boys and girls, except for having a valid card at endline, for which the impact is lower for girls compared to boys and is no longer statistically significant. Note, however, that the overall means for girls are higher than for boys.

CHILD HEALTH TAKE-AWAYS

- NHIS enrolment increased significantly among children 0-17 years old in LEAP households during the evaluation period. The percentage of children with a valid NHIS card more than doubled, from 23 per cent in 2010 to 57 per cent in 2016.
- The percentage of children in LEAP households reporting being sick and ill in the previous 4 weeks increased from 10.3 per cent at midline to 16.4 per cent at endline. However, health care seeking behaviour improved significantly: when sick or ill, 75 per cent of children sought care in 2016, compared to only 60 per cent in 2012.
- Despite the important expansion in NHIS coverage among LEAP households, expenditures on children's health increased from GH¢ 2.0 to GH¢ 3.5. Health expenditures are lower than they are for comparable children in the GLSS, except for older children, who have slightly higher expenditures on health.

We also break results down by type of household (Appendix A.8). Positive impacts on ever being enrolled in NHIS in female-headed households predominantly occur at midline, and are not significant at endline; in contrast, for children in male-headed households the effects remain significant at endline, particularly for having valid NHIS insurance. Impacts on ever NHIS enrolment are significantly negative for small households, but strongly positive and significant for large households. It appears that large households are more likely to enrol in NHIS through LEAP, perhaps because more of the members can

apply at the same time, making it more worthwhile. Further, the effects are highly significant among children in the poorest households, but are only significant for younger children in less poor households.[19]

In addition, comparison to similar indicators in the GLSS shows that children in LEAP households have ever been insured at higher rates and are also more likely to have a valid NHIS card for the current year compared to the general population (Table 12.1.2), confirming our confidence that LEAP has been able to improve health insurance coverage among its beneficiaries.

Table 12.1.1: Impact of LEAP on children's NHIS enrolment, by age and sex

Dependent Variable	Endline Impact (1)	Midline Impact (2)	Impact Diff (EL-ML) (3)=(1)-(2)	Baseline Treated Mean (4)	Endline Treated Mean (5)	Endline Control Mean (6)
Children 0 – 17 years *(N=7,133)*						
Ever enrolled in NHIS	0.173**	0.203***	-0.030	0.514	0.816	0.699
	(2.35)	(3.80)	(0.57)			
Valid NHIS insurance for current year	0.134**	0.185***	-0.051	0.234	0.572	0.509
	(1.99)	(2.89)	(0.77)			
Children 0 – 5 years (*N=1,791)*						
Ever enrolled in NHIS	0.399***	0.363***	0.036	0.503	0.729	0.638
	(4.56)	(4.23)	(0.44)			
Valid NHIS insurance for current year	0.381***	0.352***	0.029	0.251	0.604	0.487
	(4.80)	(4.16)	(0.30)			
Children 6 – 17 years (*N=5,342)*						
Ever enrolled in NHIS	0.156**	0.179***	-0.023	0.518	0.841	0.722
	(2.03)	(3.37)	(0.41)			
Valid NHIS insurance for current year	0.087	0.156**	-0.068	0.228	0.563	0.517
	(1.21)	(2.23)	(1.03)			
Boys 0 – 17 years (*N=3,714)*						
Ever enrolled in NHIS	0.181**	0.214***	-0.032	0.528	0.795	0.679
	(2.00)	(3.18)	(0.53)			
Valid NHIS insurance for current year	0.188**	0.212***	-0.024	0.235	0.537	0.469
	(2.45)	(2.84)	(0.38)			
Girls 0 – 17 years (*N=3,419)*						
Ever enrolled in NHIS	0.173**	0.203***	-0.030	0.500	0.836	0.721
	(2.14)	(3.61)	(0.49)			
Valid NHIS insurance for current year	0.096	0.188***	-0.092	0.232	0.607	0.556
	(1.24)	(2.85)	(1.14)			

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

[19] The ATT effects (presented in Appendix A.8) show that positive impacts are concentrated at midline, especially when it comes to having a valid NHIS card. The comparison group has caught up with the treatment group in terms of having valid NHIS insurance, as shown by the significant negative impact difference between midline and endline. Disaggregating the ATT results by household type, these catch-up effects are found primarily among female-headed households. There is also a negative impact of LEAP on children in small households, but strongly positive impacts among younger children 0 – 5 years large households. Finally, we find stronger positive impacts in poorer households compared to the less poor ones.

Table 12.1.2: Comparison of NHIS enrolment among LEAP children to GLSS

	2006	2010	2012	2013	2016
Children 0 - 17 years					
GLSS					
Enrolment in NHIS	0.070			0.618	
Valid NHIS card	n/a			0.460	
	[687]			[1,967]	
LEAP					
Enrolment in NHIS		0.514	0.729		0.816
Valid NHIS card		0.234	0.488		0.572
		[1,114]	[985]		[1,011]
Children 0 - 5 years					
GLSS					
Enrolment in NHIS	0.057			0.644	
Valid NHIS card	n/a			0.498	
	[227]			[687]	
LEAP					
Enrolment in NHIS		0.503	0.702		0.729
Valid NHIS card		0.251	0.532		0.604
		[280]	[224]		[219]
Children 6 - 17 years					
GLSS					
Enrolment in NHIS	0.077			0.604	
Valid NHIS card	n/a			0.440	
	[460]			[1,280]	
LEAP					
Enrolment in NHIS		0.518	0.737		0.841
Valid NHIS card		0.228	0.475		0.563
		[834]	[761]		[792]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of children in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets. n/a= not available.

12.2 Impacts on morbidity and use of health services

Similarly to adults, LEAP has significantly increased health insurance coverage among beneficiary children. As such, we may expect to see improvements in health status or use of health services. The impact estimates on morbidity, seeking care when ill, and seeking preventive care services are presented in Table 12.2.1. Similar to chapter 11 on adult health, we use cross-sectional models for these indicators due to a different recall period in the treatment and comparison group at baseline. The total rate of morbidity among LEAP children increased from 10 per cent to 16 per cent between midline and endline. The comparison group showed a similar increase and, therefore, we find no effect of LEAP on child morbidity. However, among those who were ill, we find a significant positive impact of 15.7 percentage points on curative care seeking at endline. While at midline about 63 per cent of the LEAP sample sought care when ill, this has increased to over 75 per cent at endline. The rate of preventive care seeking is very low among children (around one per cent), and LEAP has not affected this behaviour.

Among younger children, there is a significant increase at midline on the incidence of illness (16.6 percentage points). This effect has diminished and is no longer significant at endline. Curative care seeking again exhibits a positive impact at endline. In the older children, we find a significant reduction of 3.4 percentage points in illness at midline. This effect, however, is no longer significant at endline.

There is also a positive effect on curative care for this age group. Looking at the impacts by sex, there are no impacts for boys, but we find an increase in illness of 8.8 percentage points among girls. Additionally, there is a positive effect on curative care seeking for girls.

When results are broken down by household type (Appendix A.8), we find that there is an increase in illness incidence among children in male-headed households. We additionally observe some weakly negative impacts on preventive care seeking among children in the poorest households at midline, and among children in the less poor households at endline, but the size of the effect is low.[20]

The GLSS survey collected morbidity information for two weeks (as opposed to four weeks) before the survey, so our estimates are not exactly comparable. Compared to our GLSS subsample (Table 12.2.2), LEAP children are sick more often (although this may be due to the shorter recall period for GLSS), but are also more likely to seek care when ill. This is consistent with our impact estimates. Rates of preventive care seeking are similarly low among the GLSS sample and are therefore not reported in the table.

Table 12.2.1: Impact of LEAP on child morbidity and use of health services, by age and sex

Dependent Variable	Endline Impact	Midline Impact	Midline Treatment Mean	Midline Control Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)	(4)	(5)	(6)
Children 0 – 17 years						
Sick/injured last 4 weeks	0.030	0.006	0.104	0.119	0.164	0.171
	(0.94)	(0.38)				
N	2,249	2,274	985	1,289	1,011	1,238
Sought curative care if sick/injured	0.157**	0.033	0.626	0.540	0.754	0.680
	(2.46)	(0.34)				
N	345	240	102	138	162	183
Sought preventive health services	0.001	-0.005	0.010	0.015	0.005	0.003
	(0.22)	(-0.72)				
N	2,249	2,274	985	1,289	1,011	1,238
Children 0 – 5 years						
Sick/injured last 4 weeks	0.078	0.166***	0.213	0.143	0.235	0.238
	(1.54)	(3.77)				
N	549	544	224	320	219	330
Sought curative care if sick/injured	0.280**	-0.071	0.746	0.349	0.755	0.651
	(2.43)	(-0.73)				
N	133	93	47	46	52	81
Sought preventive health services	-0.004	-0.023	0.028	0.039	0.000	0.007
	(-1.28)	(-0.87)				
N	549	544	224	320	219	330

[20] The ATT impacts (depicted in Appendix A.8) show that continued receipt of LEAP had no impact on morbidity at endline, but there are positive impacts at midline, driven by younger children (16.8 percentage points increase). Curative care seeking is again positively impacted by LEAP, both in the full sample of children, and among older children (17.1 pp and 15.5 pp respectively). The positive effect on morbidity at midline is present among children in female-headed households, small and large households and the poorest households. Effects at endline are all insignificant. ATT effects on preventive care seeking are again negligible.

Table 12.2.1: Impact of LEAP on child morbidity and use of health services, by age and sex (continued)

Dependent Variable	Endline Impact	Midline Impact	Midline Treatment Mean	Midline Control Mean	Endline Treated Mean	Endline Control Mean
	(1)	(2)	(3)	(4)	(5)	(6)
Children 6 – 17 years						
Sick/injured last 4 weeks	0.024	-0.034*	0.072	0.111	0.144	0.146
	(0.71)	(-1.84)				
N	1,700	1,730	761	969	792	908
Sought curative care if sick/injured	0.121*	-0.128	0.522	0.626	0.754	0.699
	(1.68)	(-1.23)				
N	212	147	55	92	110	102
Sought preventive health services	0.003	-0.001	0.005	0.007	0.006	0.001
	(0.96)	(-0.13)				
N	1,700	1,730	761	969	792	908
Boys 0 – 17 years						
Sick/injured last 4 weeks	-0.023	-0.001	0.099	0.099	0.136	0.201
	(-0.67)	(-0.06)				
N	1,182	1,197	511	686	505	677
Sought curative care if sick/injured	0.146	0.088	0.652	0.602	0.702	0.642
	(1.32)	(0.89)				
N	168	127	50	77	67	101
Sought preventive health services	-0.000	0.001	0.014	0.011	0.004	0.003
	(-0.12)	(0.17)				
N	1,182	1,197	511	686	505	677
Girls 0 – 17 years						
Sick/injured last 4 weeks	0.088**	0.006	0.109	0.137	0.193	0.136
	(2.33)	(0.25)				
N	1,067	1,077	474	603	506	561
Sought curative care if sick/injured	0.197**	0.097	0.601	0.500	0.792	0.747
	(2.12)	(0.85)				
N	177	113	52	61	95	82
Sought preventive health services	0.001	-0.013	0.006	0.019	0.006	0.003
	(0.18)	(-1.33)				
N	1,067	1,077	474	603	506	561

Notes: Estimations use cross-sectional modelling at midline and endline among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance

Table 12.2.2: Comparison of child morbidity and use of health services among LEAP children to GLSS

	2006	2010	2012	2013	2016
Children 0 - 17 years					
GLSS					
Sick/injured last 2 weeks	0.139			0.114	
	[691]			[1,969]	
Sought curative care if sick/injured	0.394			0.604	
	[103]			[213]	
LEAP					
Sick/injured last 4 weeks		0.097	0.104		0.164
		[1,114]	[985]		[1,011]
Sought curative care if sick/injured		0.605	0.626		0.754
		[109]	[102]		[162]

Table 12.2.2: Comparison of child morbidity and use of health services among LEAP children to GLSS (continued)

	2006	2010	2012	2013	2016
Children 0 - 5 years					
GLSS					
Sick/injured last 2 weeks	0.224			0.186	
	[230]			[687]	
Sought curative care if sick/injured	0.479			0.571	
	[55]			[122]	
LEAP					
Sick/injured last 4 weeks		0.137	0.213		0.235
		[280]	[224]		[219]
Sought curative care if sick/injured		0.666	0.746		0.755
		[39]	[47]		[52]
Children 6 - 17 years					
GLSS					
Sick/injured last 2 weeks	0.096			0.077	
	[461]			[1,282]	
Sought curative care if sick/injured	0.294			0.645	
	[48]			[91]	
LEAP					
Sick/injured last 4 weeks		0.083	0.072		0.144
		[834]	[761]		[792]
Sought curative care if sick/injured		0.572	0.522		0.754
		[70]	[55]		[110]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of children in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets.

12.3 Impacts on individual health expenditures

In theory, any effect of LEAP on individual health expenditures would be ambiguous. On the one hand, beneficiaries can spend more on health as they have more disposable income which may cause health expenditures to rise. On the other hand, if LEAP improves household health though better meals or better housing conditions, we could observe a reduction in expenditures on health. However, the unique feature of LEAP is that it is combined with free health insurance through the NHIS, which is supposed to take care of some of the general out-of-pocket health expenditures.[21] So even if LEAP is not able to impact household well-being or morbidity, its impact through the NHIS may lead to a reduction in health spending by reducing out-of-pocket expenditures on consultations and some medicines.

The impacts are presented in Table 12.3.1. The strongest impacts are visible at midline. Expenditures for children's health in LEAP households is almost GH¢ 3 less than their non-LEAP counterparts, which is a large effect given that the baseline mean for the treatment group was only GH¢ 2. This effect was stronger among older children (6 – 17 years old) and among boys. At endline, however, the effect has completely disappeared and LEAP is no longer associated with reductions in out-of-pocket expenditures

[21] According to the NHIS website, 95 per cent of disease conditions and 540 types of medicines are covered by NHIS (http://www.nhis.gov.gh/benefits.aspx). In reality, however, medicines are not always available or have to be bought outside the system and informal out-of-pocket payments are common (Agyepong et al., 2016).

on health. Among female-headed households, the reduced spending at midline remains at endline, and for children 6 – 17 years in these households the reduction persists at endline (Appendix A.8). Except for a significant reduction for boys in both small (GH¢ 17 reduction) and large households (GH¢ 4 reduction), there are few impacts in these subgroups. The reduction at midline is more prominent among children in less poor households than in the poorest households, except for boys, for whom the reduction is significant in both types of households. The only significant endline impact in these subgroups appears for older children in less poor households, in the form of an almost GH¢ 5 reduction in health expenditures.[22]

Table 12.3.1: Impact of LEAP on children's health expenditures (in GH¢), by age and sex

Dependent Variable	Endline Impact (1)	Midline Impact (2)	Impact Diff (EL-ML) (3)=(1)-(2)	Baseline Treated Mean (4)	Endline Treated Mean (5)	Endline Control Mean (6)
Children 0 – 17 years (N=7,133)						
Real monthly health expenditures	0.315	-2.876**	3.191**	2.007	3.512	3.556
	(0.27)	(-2.21)	(2.01)			
Children 0 – 5 years (N=1,791)						
Real monthly health expenditures	0.737	-1.633	2.370	2.454	4.704	4.506
	(0.42)	(-0.65)	(0.81)			
Children 6 – 17 years (N=5,342)						
Real monthly health expenditures	0.026	-3.228**	3.255*	1.858	3.165	3.189
	(0.02)	(-2.42)	(1.94)			
Boys 0 – 17 years (N=3,714)						
Real monthly health expenditures	0.700	-5.374**	6.074**	1.991	3.495	4.433
	(0.40)	(-2.39)	(2.24)			
Girls 0 – 17 years (N=3,419)						
Real monthly health expenditures	-0.072	-1.125	1.053	2.024	3.529	2.524
	(-0.06)	(-1.12)	(0.89)			

Notes: Estimations use difference-in-differences, cluster fixed effects modelling among panel households and coefficients for binary outcomes are estimated based on a linear probability model. All estimations control for gender, age, baseline head of household's characteristics (age in years, sex, indicator of any schooling, widowhood), presence of an exclusive cooking room at baseline, household demographic composition and size at baseline, baseline presence of cluster-level shocks interacted with age of head. All control variables are also interacted with dummies for wave 2 and wave 3. Robust t-statistics were obtained by clustering at the different levels of the sampling design and are shown in parenthesis. * 10% significance ** 5% significance; *** 1% significance.

Finally, we again match our findings to a similar comparison group from the GLSS surveys. Children in LEAP households spend less than their GLSS counterparts on average, but the rate of increase in spending in LEAP is higher than in GLSS. The difference between GLSS and LEAP is large among younger children. However, for children 6 – 17 years old, we actually observe higher health expenditures for the LEAP group than for children from poor households in the GLSS (GH¢ 3.2 (LEAP 2016) versus GH¢ 2.7 (GLSS 2013)), potentially due to increased care seeking and more income available on a routine basis to spend on health.

22 The ATT impacts are more nuanced (Appendix A.8). We find significant negative effects at midline for the full sample of children (GH¢ 2.4) and for older children 6 – 17 years old (GH¢ 2.6), but only at the 10 per cent significance level. Broken down by household type, these effects appear stronger among female-headed households, small households and richer households. At endline, we observe significant negative impacts among children in female-headed households, between GH¢ 2 – 4, depending on the subgroup. There are also significant decreases in health expenditures for older children in small and in less poor households.

Table 12.3.2: Comparison of individual health expenditures among LEAP children to GLSS (in GH¢)

	2006	2010	2012	2013	2016
Children 0 - 17 years					
GLSS					
Real monthly health expenditures	4.539			4.965	
	[691]			[1,969]	
LEAP					
Real monthly health expenditures		2.007	1.833		3.512
		[1,114]	[985]		[1,011]
Children 0 - 5 years					
GLSS					
Real monthly health expenditures	8.503			9.235	
	[230]			[687]	
LEAP					
Real monthly health expenditures		2.454	4.313		4.704
		[280]	[224]		[219]
Children 6 - 17 years					
GLSS					
Real monthly health expenditures	2.546			2.729	
	[461]			[1,282]	
LEAP					
Real monthly health expenditures		1.858	1.107		3.165
		[834]	[761]		[792]

Notes: GLSS estimates are calculated from GLSS 5 and GLSS 6 datasets. The GLSS comparison sample consists of children in rural households, in the first consumption quintile, in the same regions as the LEAP households (Central, Volta and Brong Ahafo). GLSS estimates are weighted with sampling weights. Number of observations is given in square brackets.

12.4 Summary

This chapter presented the impacts of LEAP on children's NHIS enrolment, morbidity, use of health services and health expenditures. LEAP had a strong and significant positive impact on the enrolment in NHIS and the possession of a valid NHIS card for the current year. However, these increases in health insurance coverage did not translate into improved use of health services or a lower incidence of illness. The only group for whom the incidence of illness decreased were older children (6 – 17 years), and this reduction only took place at midline. LEAP, however, had a positive effect on the use of curative care seeking at endline (both compared to the evaluation comparison group and GLSS), possibly related to the increased NHIS coverage. Finally, while we observed a significant reduction in health expenditures at midline among LEAP recipients, this effect did not persist through the endline. In addition, spending on health was lower among young children, but not among older children, as compared to GLSS figures. As such, LEAP, through its linkage with NHIS, has not been able to fully relieve out-of-pocket health expenditures after six years of operation.

13. Discussion and conclusion

The results in this study demonstrate that LEAP has made **tremendous improvements in the operational aspects of the programme**. The midline evaluation (2012) showed very low levels of transfers and an unpredictable, sporadic payment schedule. An associated qualitative analysis described these two aspects of LEAP as particularly frustrating for beneficiaries. The current evaluation (2016) shows that ***payments are now regular, and the transfer itself is over double the value it was in 2012. However, with continued inflation, there remains an urgent need to monitor the value of the transfer to ensure that it maintains its real value***. Beneficiaries report other issues which the programme could address. For example, the average travel time for picking up transfers has increased significantly despite the roll-out of electronic payments, and more beneficiaries report being asked for money at the pay point.

Another key improvement in programme operations is the linkage with NHIS. We observe large increases in the proportion of adults and children in LEAP households who now have a valid NHIS card and almost all households (96 per cent) report ever having an NHIS card at some point, an admirable achievement in terms of getting ultra-poor households in contact with the formal health care system. However, given the limited health impacts and the fact that NHIS faces its own challenges, it may be helpful to also ***focus on linkages between LEAP and Ghana Health Services' Community-Based Health Planning & Services (CHPS) and not rely solely on NHIS*** provision as the solution to facilitating better access to primary health services.

A simple comparison of outcomes among LEAP households from baseline (2010) to 2016 shows significant improvements in virtually all aspects of the household economy. Particularly large ***improvements are observed in consumption, housing quality, subjective well-being, and productive activity***, as shown in Table 0.1 in the Executive Summary. What is more difficult to establish is the *impact* of LEAP compared to the alternative of what would have happened to these households without the programme. The original comparison group selected to answer this question, drawn from a national survey conducted by ISSER in 2010, appears not to be an accurate counterfactual as it shows growth in consumption that far exceeds what is predicted by GLSS6 or by per capita GDP growth in Ghana. Using this comparison group to estimate impacts very likely severely under-estimates the true impact of LEAP. For example, when using this comparison group we find that the net impact of LEAP on consumption is essentially zero, while using an alternative counterfactual of per capita GDP growth suggests large and positive impacts of LEAP on consumption of over 30 per cent. And these positive impacts are more consistent with other indicators of well-being such as housing quality and a subjective measure, happiness.

Despite the concerns with the comparison group, we still observe some important impacts of the programme. For example, the treatment group growth in the ***value of crop production has outstripped that of the comparison group***, and this appears to be driven by purchases of seeds and agricultural tools. We also find ***positive impacts on certain dimensions of child schooling, such as reduced absenteeism, as well as the strong increase in NHIS coverage*** already mentioned above.

Aside from the comparison group, other features of the context and study design influence the findings and ought to be kept in mind. One is that the LEAP transfer is on the lower end of what would be the minimum amount necessary to see transformative effects across multiple domains. A useful rule of thumb, based on experience from the Transfer Project, is that a target transfer that represents 20 per cent of pre-programme consumption is needed to see truly transformative effects (Davis & Handa, 2015). For LEAP, the mean transfer as a share of pre-programme consumption is 18 per cent, and the median is even

lower at 13 per cent. Maintaining the value of the transfer remains on ongoing concern for the programme, and needs to be closely monitored. A second feature is the relatively small sample size for the evaluation. This occurred because the LEAP evaluation in 2010 was integrated into the wider ISSER national household survey, and there were sample size limits so as not to have the LEAP evaluation jeopardize the overall household survey. This small sample size means that in cases where impacts are spread across a wide range of outcomes (as is often the case with unconditional cash transfers), some impacts will not show up as statistically significant. A second implication is that it becomes difficult to analyse sub-groups as sample sizes quickly become even smaller.

Future evaluations of LEAP can learn some important lessons from this study. First, the ***sample size should be large enough to detect relatively small changes***, given that households are likely to spend the transfer differently, and programme impacts are thus likely to be spread across a wide range of outcomes. Second, the ***selection of a comparison group, essential for any credible impact evaluation, must be done with care***. At the initiation of this study in 2010, the randomization of communities into treatment and control status was deemed to be politically infeasible. Experience from other countries (e.g. Zambia, Kenya, Malawi) indicates that when programme expansion is staggered so that not all communities will be reached immediately, using late entrants as a comparison group is politically viable provided that the rationale and logic is well documented and communicated. Such designs then allow for credible estimates of impact, which in turn can be used to improve the programme and to advocate for its expansion. The relative pros and cons of using late entrants as a comparison group should be carefully considered in any future impact evaluation of LEAP. The costs of this strategy include the cost of early targeting in future programme districts and the potential of raising expectations in these communities. The benefit is that the evaluation would be able to provide scientifically credible impact estimates for use in policy dialogue. The inability to provide credible impact estimates in the current study is a weakness that may limit the potential use of the results in certain types of policy discussion.

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