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Evaluation of the Kenya Hunger Safety Net Programme Phase 2

Quantitative Household Impact Evaluation Technical Report

Fred Merttens, Michele Binci, Alastair Haynes, Hanna Laufer and Molly Scott

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This assessment is being carried out by Oxford Policy Management. The project manager is Fred Merttens. The remaining team members are: Roger Pearson, Caroline Riungu, Alex Hurrell, Clare O'Brien, Vandi Hill, Professor J. Edward Taylor, Dr Michele Binci, Dr Patrick Nolen, Marta Marzi, Molly Scott, Hanna Laufer, Alastair Haynes, Ramla Attah, Sope Otulana, Chris Hearle, Dr Emma Jones, Shweta Bahri, Claire Simon, Dr Rachel Sabates-Wheeler, Dr Sebastian Silva-Leander, Judith Sandford, Hendrik Lourens Van Nieuwenhuyzen and Laura Giles. For further information contact **fred.merttens@opml.co.uk**.

The contact point for the client is Liz Drake **L-Drake@dfid.gov.uk**. The client reference numbers for the project are: Call down reference number: PO 6711; Framework reference number: PO 5859.

Oxford Policy Management Limited	Level 3, Clarendon House 52 Cornmarket Street Oxford, OX1 3HJ	+44 (0) 1865 207 300 Fax +44 (0) 1865 207 301 Email admin@opml.co.uk
Registered in England: 3122495	United Kingdom	Website www.opml.co.uk

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Executive Summary

Introduction

HSNP Phase 2

The HSNP is an unconditional cash transfer (CT) programme that targets people living in extreme poverty in the four northernmost counties of Kenya: Marsabit, Mandera, Turkana and Wajir. These are part of a region of the country known as the arid and semi-arid lands, which have experienced severe or extreme droughts over many years. As a result of these droughts, food insecurity is high and the principal livelihood activity, livestock production, has been negatively affected. Local prices are also volatile, which can exacerbate the problems faced by households. When rains do come, floods can damage infrastructure and temporarily cut off areas. Furthermore, lack of adequate rangelands for livestock grazing can also trigger conflict between communities.

The HSNP provides households with regular CTs in the expectation that they will reduce extreme hunger and vulnerability by smoothing their consumption and avoiding negative coping strategies, such as the sale of productive assets. The first phase of the HSNP ran from 2009 to 2013. The HSNP is now in its second phase, which runs from July 2013 to March 2018.

HSNP Phase 2 aims to provide the poorest 100,000 households ('routine' beneficiaries) with regular cash payments, and to reach up to an additional 180,000 households ('emergency' beneficiaries) with periodic emergency payments to help mitigate the effects of shocks (383,235 households have been registered so far). The regular transfer is currently worth 2,700 Kenya shillings (KES) per month (approximately £22/$27) and is made directly into the routine beneficiaries' bank accounts every two months. Emergency beneficiaries receive a single month's transfer (i.e. KES 2,700) if their area is deemed to be in severe or extreme drought in any given month. To date, some of the nominal emergency beneficiaries have received one or more emergency payments, while others have received no payments.

HSNP Phase 2 IE

An independent IE of HSNP Phase 2 has been commissioned to provide evidence on programme impact. The evaluation uses a mix of quantitative and qualitative methods to provide an assessment of the programme's impact on the local economy, as well as beneficiary[1] households.

This report presents the results of the quantitative household-level IE component of the evaluation, focussing on a set of indicators around consumption, asset retention and financial inclusion. The report explains the methodology used to quantitatively estimate impact at the household level and provides an overview of the key results emerging from this quantitative analysis of impact.

A forthcoming IE summary assessment report will bring together the evidence from this report along with that produced by the qualitative research and Local Economy-Wide Impact Evaluation (LEWIE), in order to draw overall conclusions about the impacts of HSNP Phase 2 and answer the full set of evaluation questions addressed by the IE component.

This report is focused on answering the main quantitative household IE question, namely, 'What are the overall effects of the CTs on the nominal and actual HSNP beneficiaries on household indicators, including consumption, poverty, asset retention/accumulation, nutrition (dietary diversity) and financial inclusion (saving, borrowing and credit)?

Methodology

The goal of the quantitative household IE is to understand the change in key outcome variables that can be attributed to the HSNP Phase 2 transfers. To uncover this causal effect of interest it is not sufficient to simply compare outcomes between households that are eligible for transfers from the HSNP with those that are not, since the HSNP CTs are explicitly targeted at the most vulnerable households in the four programme counties. This means that there are likely to be systematic differences between beneficiary and non-beneficiary households, beyond their exposure to the CTs, which would render a simple comparison of outcomes biased. This is because the HSNP transfers are targeted toward the most vulnerable, and so we would expect beneficiary households to have attained different outcomes to non-beneficiary households even if they had never received the HSNP transfers.

The possibilities for identifying a suitable comparison group are complicated by a number of features of the way HSNP Phase 2 assigned households to the programme as well as the operating context:

- because the programme started operating some

[1] A note on the use of the word 'beneficiary'. We recognise that it is a potentially problematic word, as it assumes benefit, and also carries normative connotations which place the person receiving in a position of relative weakness to the benefactor. However, we use 'beneficiary' throughout this report because it is consistent with the language the programme uses to describe recipients of the HSNP.

years before the evaluation started, there was no opportunity to carry out baseline data collection;

- the potential to identify a 'pure' comparison group (consisting of households that have never been targeted by either the HSNP or any other CT programme during the intervention period) is limited a) because HSNP Phase 2 incorporates a facility to scale up and make 'emergency' payments to a large number of households in the event of drought shock; and b) because a number of other CT programmes are also operating in HSNP counties;

- non-beneficiary households may also have been affected by spill-over effects resulting from the presence of HSNP CTs within communities.

To address these constraints, our evaluation methodology consists of four integrated stages: (i) descriptive analysis; (ii) regression analysis; (iii) regression discontinuity (RD) analysis; and (iv) propensity score matching (PSM) analysis. The descriptive and regression analyses are used primarily to understand what households in the sample are like and what characteristics they have, while the impact estimation is based on the integration of the RD and PSM approaches.

RD

The targeting mechanism for HSNP is well suited to the use of an RD methodology to assess impact, because one of the main mechanisms that the programme uses to assign households as beneficiaries is a Proxy Means Test (PMT). The RD approach works by comparing households that are within a close neighbourhood of the eligibility cut-off score: the treatment group are those households with PMT scores just below the eligibility threshold and the control group are those households with PMT scores just above the eligibility threshold. The reasoning behind this approach is that households just either side of this eligibility cut-off should have been very similar before the HSNP started in all respects, apart from their exposure to the transfers. Therefore, comparing their outcomes should isolate the impact of the programme.

However, the application of an RD methodology is complicated by the fact that assignment to the HSNP is not determined through the PMT scores alone. The programme targeting mechanism also incorporates a community-based wealth ranking (CBWR) element, which means that there are some households with PMT scores above the PMT-eligibility threshold that are assigned to the HSNP routine beneficiary group, and some households with PMT scores below the threshold that are not assigned to the routine beneficiary group.

Given this 'fuzziness' of treatment assignment around the eligibility cut-off, the RD methodology we use follows a fuzzy RD (FRD) model. FRD is a special application of the RD approach that is used in cases where assignment to an intervention is not perfectly predicted by a continuous eligibility score. Under standard assumptions, FRD is able to successfully uncover an unbiased estimate of the impact of the programme. However, while generally this approach has been found in the literature to be well equipped to mitigate possible selection bias, a core limitation of the FRD approach is the potential that it may lead to imprecise estimates of the true impact of HSNP Phase 2's CTs. This is due to the fact that there is a mixture of households actually receiving routine HSNP transfers, and those not actually receiving any transfers, either side of the eligibility cut-off.

During the evaluation period we also learned that the extent of the fuzziness was more extensive than was first supposed, due to some operational issues in the implementation of the HSNP. The implications of this elevated 'fuzziness' are that, while FRD is shown to successfully deliver unbiased estimates in our model, these estimates may be subject to a degree of *imprecision*.

This limitation in the application of the RD approach is important to note because it transpires that, as discussed in detail in the results section of this report, the RD model finds *no programme impacts for most of the outcome areas tested*. However, evidence from numerous sources indicate that some impacts may be going undetected because of the fuzziness of the RD model. We are thus at risk of being unable to distinguish genuine lack of HSNP Phase 2 impact from the inability of the RD methodology to detect such impact due to the lack of precision around its estimates.

In light of this potential limitation of the RD methodology, we conduct a series of descriptive statistics and regression analyses on different sub-groups within our sample in order to gain an insight into where potential (but undetected impacts) may be occurring. These show that there are often significant differences between households that actually receive the HSNP and those that do not. While these descriptive differences do not have a causal interpretation, they are important as they could be indicative of programme effects that the RD model is not able to uncover.

PSM

Following the descriptive statistics and regression analysis we build on the RD approach by integrating a targeted PSM approach into the analysis in order to function both as a robustness check, and to dig deeper into, the RD results by looking at the distribution of PMT scores among households actually receiving routine

CTs. The integration of the RD approach with the PSM approach is in line with what was envisaged in the inception phase of the HSNP2 evaluation.

PSM works by seeking to construct a comparison group that 'matches' the treatment group as closely as possible in terms of observed variables, and then comparing outcomes between the treatment group and these 'matched' controls. In the case of the HSNP, the PSM treatment group is households actually receiving routine CTs and the control group is households not receiving routine CTs. The intuition is that, conditional on a set of observable variables, the assignment of households to receive HSNP transfers may be considered to be 'as good as random', and therefore a comparison between the two groups will isolate the impact of the programme. In this way, PSM helps us to identify whether there are in fact impacts of HSNP transfers on the households who actually received them that could not be identified by the RD model.

It is important to acknowledge that PSM also has limitations in the HSNP context. While PSM is capable of delivering an unbiased estimate of programme impact, its ability to do so is contingent on the quality of the matching model. The objective in defining a matching model is to identify a set of covariates that, once they are conditioned on, deliver a sample in which there are no systematic differences between the treatment and control groups (known as achieving 'balance'). In this instance, since there was no opportunity to collect baseline data for the evaluation, the set of possible matching variables was limited to those contained within the programme's registration instrument, the Management Information System (MIS), or those from the survey data that were plausibly persistent over time (i.e. static variables), such as age and gender. Nonetheless, our balancing tests provide reassurance that even within these constraints the model was very well balanced along the available observable variables. While not directly testable, this also raises confidence that the model achieved balance in unobserved variables too.

Summary remarks

Bearing these limitations in mind, we believe that the integrated RD and PSM quantitative analysis strategy represents the best possible method of responding to the evaluation Terms of Reference. At the same time, we acknowledge that, while the methodology provides an unbiased estimate of programme impact, the magnitude of these effects may be estimated imprecisely and should be treated with some caution. This is due to the combination of the fuzziness of the RD sample, the potential for programme spill-overs, and the restriction of the estimation to households near the PMT cut-off, rather than those at the bottom of the distribution (for whom impacts may be more pronounced). These limitations mean that, while the impact estimates remain unbiased, if we do not detect programme impact (as is frequently the case using the RD analysis) we cannot conclusively determine whether this is due to a genuine absence of impact or to an inability of the estimation strategy to detect it. Although the PSM helps to partially overcome this issue, it should be stressed that the quantitative findings are best interpreted within an overall synthesis approach, which combines all sources of evidence from across the IE workstream to arrive at a final evaluative judgement. This is the purpose of and reason for the IE summary assessment report, which will bring together all of the evidence from the various quantitative and qualitative IE research activities.

Data

The quantitative household IE relies on two sources of data: a household survey that we conducted, and the HSNP MIS.

Quantitative household survey

The household survey data are the main data used for the impact analysis conducted in this report. The quantitative household survey is a survey of 5,980 people from across the four HSNP counties, covering modules on: basic household information, livestock, assets, land, food and non-food consumption, transfers, food security, subjective poverty, saving and borrowing, jobs, business and livestock trading.

The survey data collection was carried out between 13 February and 29 June 2016, using electronic tablets, in 187 sub-locations across the four counties of Mandera, Marsabit, Turkana, and Wajir.

Sampling for household survey

Our sample frame was defined by sub-locations and households in the HSNP MIS data (see below). The sampling for the quantitative household survey involved a two-stage sampling approach. In the first stage, sub-locations were selected using the probability proportional to size (PPS) method. This method implies selecting larger sub-locations, as defined by the household population, with a higher probability. In the second stage, a fixed number of households were selected within each sub-location. The selection of a fixed number of households in the second stage in theory delivers a sample that is self-weighted (compensating for the oversampling of larger sub-locations in the first PPS stage). In practice, analysis weights are still required.

HSNP MIS data

The MIS data are data from a census of nearly all households in the four HSNP counties (383,235 households)[2]. The census contains the information that was gathered in respect of these households during the registration for the HSNP programme, as well as their assignment to the HSNP CTs, and information about all payments received by all households since the start of Phase 2. The MIS data were used:

- to define the sample frame for the new household survey;
- as a source of covariates for the impact estimation;
- to conduct initial diagnostic tests to assess the feasibility of the RD approach; and
- to determine the HSNP beneficiary status of households and record payments received under the programme (for use in conducting disaggregation analysis).

Sample groups: characteristics and programme coverage

Our sample of households is divided into four groups, as follows:

Group	Description
A	Households within the PMT bandwidth defined for the RD analysis, and below the PMT eligibility cut-off
B	Households within the PMT bandwidth for the RD analysis, and above the PMT eligibility cut-off
C	Households outside the PMT bandwidth for the RD analysis, and below the PMT eligibility cut-off
D	Households outside the PMT bandwidth for the RD analysis, and above the PMT eligibility cut-off

The analysis sample used for the RD and PSM estimation consists of households in Group A and B; that is, those close to the eligibility cut-off.

Table 1 below sets out the characteristics of the sample groups, including the proportion of households within the groups that have received transfers through HSNP Phase 2.

[2] The HSNP acknowledges that, while it is not possible to say for certain whether every single household was captured by the registration exercise – indeed a small number of the population was definitively recognised to be missed and was registered at a later date to the original registration data collection – it is felt that the majority of households then current in the four counties were included in the registration data.

Table 1 Programme coverage (routine and emergency), by group

	Sample groups					
	All households	All nominal routine HSNP beneficiaries	Group A	Group B	Group C	Group D
Group size as % of total sample	100	37	38	38	4	20
% of group that are nominal routine beneficiaries (%)	37	100	71	17	86	4
% of group that are actual routine CT beneficiaries (payroll)	31	84	60	14	67	3
% of group that are actual routine CT beneficiaries (self-reported)	33	81	59	16	70	6
% of group that are actual emergency beneficiaries (payroll)	49	0	23	64	10	78

Table 1 shows that just over one-third of our sampled households (37%) are nominal routine beneficiaries. Moreover, 76% of our sample falls within Group A and Group B, which is the sample used for the RD and PSM analysis. The remaining rows show the proportion of households receiving HSNP transfers, within each of these groups.

A number of observations can be made, based on this table:

- A considerable proportion of nominal routine beneficiaries have not actually received any transfers.
- A considerable proportion of households with PMT scores above the eligibility cut-off have received payments through HSNP.

Altogether, the table shows that the sample is 'fuzzier' around the bandwidth than was anticipated. In the RD treatment group (Group A), there are fewer households than expected that have actually received routine CTs through HSNP Phase 2, and in the RD control group (Group B), there are more households than expected who have received any transfers (both emergency and routine).

Results

Here we describe the main results from the quantitative household IE. In this report, where we speak of a *significant* result, this implies a result that is statistically significant at the 5% level or above. Where we speak of a *weakly significant* result, this means that the finding is only significant at the 10% level.

Consumption and poverty

The results of the quantitative household IE for the consumption and poverty domain are mixed. Descriptively, we find little evidence of differences between households that received HSNP transfers, compared with those that did not. There are, however, some differences between households in Group A and B, suggesting that those with lower PMT scores tend to have lower consumption and food expenditure, and to experience higher poverty, which is in line with expectations.

The RD results do not show an impact of HSNP Phase 2 for any of the key consumption and poverty indicators. However, the estimated coefficients for the PSM model are almost all in the expected direction (that is, showing an improvement among households receiving routine CTs), and are significantly so for a number of indicators, including monthly education expenditure, monthly food expenditure and poverty indicators.

The PSM model shows that households who have received a regular HSNP payment experience an increase in monthly per adult equivalent food expenditure of around KES 66. The PSM model also finds a significant positive impact for education expenditure per child of KES 28.45 (which is supported by the descriptive analysis). In addition, the PSM model finds a small but weakly significant impact on the rate of food poverty. Finally, the PSM model detects significant, but modest, impacts on poverty severity and poverty gap (one percentage point).

Food security

The findings from the PSM model show a significant and positive impact of the HSNP on food insecurity/hunger, as measured by the Household Hunger Scale (HHS). These scores measure the ability of households to access sufficient food, over the previous 30 days. However, there is no corresponding impact found on dietary diversity, as measured by food consumption scores (FCS). One potential explanation for this is that the timing of the survey did not enable impacts on the FCS to be captured. It is plausible that households spend the majority of their transfer in the days immediately following payment. The FCS only measures the diversity of household diets in the seven days preceding the survey, so if this recall period does not coincide with the period in which the HSNP was disbursed, then it is possible that this impact would be missed.

By contrast to the PSM results, the RD results return an unexpectedly negative result in relation to the HHS. However, closer inspection reveals an unusual distribution of these scores around the eligibility threshold, which may explain the inconsistency, as the scores are sensitive to changes in the weights of the RD model.

Descriptively, we find that food insecurity remains prevalent across our sample. This is especially the case in Turkana, which experiences worse food insecurity outcomes than the other counties.

Livestock

Although livestock ownership is generally very common in the HSNP counties (at around 80% of households), within Group B it is significantly higher among households that have received regular CTs, in comparison with those that have not. There is also a significant difference between those households that have received an emergency HSNP payment compared to those that have not, with the latter having higher levels of ownership.

The RD estimates of programme impact for this domain are non-significant but the PSM results show a positive and strongly significant impact of the HSNP on the ownership of livestock, with actual routine beneficiaries being 4.5 percentage points more likely to have owned livestock, and 11.8 percentage points more likely to have purchased livestock in the last 12 months, than households not receiving routine transfers.
We find no impact of the programme on reducing the propensity of households to sell livestock.

Productive assets

While the RD model delivers insignificant estimates of HSNP impact for this indicator group, the PSM model finds a small, but significant, increase in productive asset ownership, with an increase of 1.4 percentage points in the treated households. The small magnitude of this impact is not surprising, given that productive asset ownership is common across the majority of households.

The PSM model also finds an impact of seven percentage points on the purchasing of productive assets. This is not supported by the RD findings; however, the unexpected RD results may again be explained by the behaviour of households just around the cut-off.

There is no evidence that HSNP is reducing the sale of productive assets, although this is already extremely low across the sample.

Financial inclusion

It is relatively uncommon for households to report having any cash savings, and we find no HSNP impact on savings behaviour. The rate of savings differs markedly across counties, however, with the highest proportion of households reporting saving in Mandera and almost no households saving in Wajir.

As measured by the RD model, there is a large and strongly significant impact of the HSNP, of 23.6 percentage points, on the proportion of households purchasing on credit. This is an expected finding that is in line with previous evidence: it reflects the fact that being in receipt of regular HSNP CTs makes households more creditworthy.

We find no impact of the HSNP on the proportion of households with cash savings, or the proportion borrowing money in the past 12 months, though we do see a significant descriptive difference between actual routine HSNP beneficiaries and non-beneficiaries in terms of cash savings.

Conclusion

Overall, the findings of the quantitative household IE study present a mixed picture. The RD model provides robust evidence that there is a strong impact of the HSNP on access to credit, whereby receiving routine CTs enables beneficiary households to appear more creditworthy, giving them the ability to purchase on credit. However, the RD model finds no evidence of a positive impact on any other domain. The RD model also produces some apparently negative findings, although this appears to be due to the nature of the distribution of routine HSNP beneficiaries around the cut-off.

The PSM model, by contrast, finds an impact on some of the outcome areas where the RD does not, or where it produces unexpected findings. It finds an impact of the programme on livestock purchases and ownership, on education expenditure and on food expenditure, as well as a significant reduction in household hunger, as measured by the HHS. However, the impact on poverty is found to be very small (albeit significant), which may be due to the presence of spill-overs in the sample area. There is also no impact on reducing livestock sales, on the diversity of household diets, as measured by the FCS, on saving and borrowing behaviour, or on total consumption expenditure.

It is worth reiterating that, although the methodology provides an unbiased estimate of programme impact, the fuzziness of the RD sample, the potential for programme spill-overs, and the restriction of the estimation to households near the PMT cut-off, rather than those at the bottom of the distribution, mean that the quantitative findings are best interpreted within an overall synthesis approach, which combines all sources of evidence from across the IE workstream to arrive at a final evaluative judgement of this programme.

The findings of the quantitative IE will therefore be further discussed in the forthcoming IE summary assessment report, which will bring together the evidence from this report along with that produced by the qualitative research and LEWIE, in order to draw overall conclusions about the impacts of HSNP Phase 2.

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List of abbreviations

ASP	Arid Lands Support Programme
ATT	Average Treatment Effect on the Treated
CBWR	Community-Based Wealth Rank
CRA	Commission for Revenue Allocation
CT	Cash Transfer
CT-OVC	Cash Transfer for Orphans and Vulnerable Children Programme
CT-PWSD	Cash Transfer Programme for People with Severe Disability
DFID	UK Department for International Development
FCS	Food Consumption Scores
FRD	Fuzzy Regression Discontinuity
GoK	Government of Kenya
HHS	Household Hunger Scale
HSNP	Hunger Safety Net Programme
IE	Impact Evaluation
KES	Kenyan Shillings
LATE	Local Average Treatment Effect
LEWIE	Local Economy-Wide Impact Evaluation
MDP	Ministry of Devolution and Planning
MIS	Management Information System
MLEAA	Ministry of Labour, and East African Affairs
NDMA	National Drought Management Authority
NN	Nearest neighbour
NSNP	National Safety Net Programme
OPCT	Older Person Cash Transfer Programme
OPM	Oxford Policy Management
P4R	Programme for Results
PILU	Programme Implementation and Learning Unit
PMT	Proxy Means Test
PPS	Probability Proportional to Size
PSM	Propensity Score Matching
QA	Quality Assurance
RD	Regression Discontinuity
RGA	Research Guide Africa

1 Introduction

This section provides an introduction to the HSNP and the context in which it is implemented. At the end of this section we give an overview of the objectives and structure of this report.

Background to the HSNP

Context in northern Kenya

The HSNP is an unconditional CT programme that targets people living in extreme poverty in the four northernmost counties of Kenya: Marsabit, Mandera, Turkana and Wajir. These are part of a region of the country known as the arid and semi-arid lands. This region, and in particular northern Kenya, has faced recurrent severe or extreme droughts over many years, including during the last two decades. Protracted drought emergencies have occurred in 1999, 2000, 2004, 2005/06, 2007–2009, 2011 and 2014.

The context of severe and extreme drought, whether protracted or intermittent, has significant impacts on the lives of the population living in the arid and semi-arid lands. For instance, in January 2014 the Government of Kenya declared an impending drought with an estimated 1.6 million people affected. After a poor performance of the long rains between March and May 2014, the drought situation effected both pastoral and agriculture livelihood zones, including the HSNP counties. As a result of these droughts, food insecurity is high and the principal livelihood activity of livestock production is often negatively affected. Local prices are also made volatile, which can further exacerbate the problems households face. When rains do come, floods can damage infrastructure and temporarily cut off areas. A lack of adequate rangelands for livestock grazing can also trigger conflict between communities.

The HSNP was conceived in the aftermath of one of these protracted drought emergencies and it is to this context to which it is addressed. The idea is that the receipt of routine CTs will reduce extreme hunger among poor and vulnerable households, and enable beneficiaries to mitigate the negative effects of drought by smoothing their consumption and avoiding negative coping strategies such as sale of productive assets. The HSNP is one of four CT programmes operating in Kenya, under the National Safety Net Programme (NSNP). Box 1 gives further information.

There are also many other programmes operating in northern Kenya, but coverage is patchy and irregular. These include: the Arid Lands Support Programme (ASP), programmes implemented by the World Food Programme, World Vision aid, and assistance from the government. Many of these programmes provide food, but some provide seeds, equipment/tools etc. or other forms of livelihood support such as training and micro-credit. Like the HSNP, many of these programmes are also designed to respond to emergency situations.

Box 1

The NSNP

There are four main CT programmes in Kenya, which are implemented by two ministries: the Ministry of Labour and East African Affairs[3] (MLEAA; formerly the Ministry of Labour, Social Security and Services) and the Ministry of Devolution and Planning (MDP). The three programmes housed in the MLEAA are: the Cash Transfer for Orphans and Vulnerable Children Programme (CT-OVC); the Older Person Cash Transfer Programme (OPCT); and the Cash Transfer Programme for People with Severe Disability (CT-PWSD). These programmes are all managed by the Social Assistance Unit. The HSNP sits in the NDMA within the MDP.

The three MLEAA CTs currently operate in 47 counties across Kenya, including the four HSNP counties. Within these four counties, prior to 2015 there was not much overlap between the HSNP and the three MLEAA programmes, but since the MLEAA CTs expansion plans began to be implemented in 2015/16 and 2016/17 that situation has changed.

Following the Kenya National Social Protection Strategy (2011), the government established the NSNP. The aim is to create a framework around which the four main CT programmes (CT-OVC, OPCT, CT-PWSD and HSNP) will be increasingly coordinated and harmonised.

The NSNP has three objectives that aim to improve the efficiency and effectiveness of safety net support to poor and vulnerable populations in Kenya:

1. create robust and transparent systems for targeting, registration, payments, case management and monitoring, and strengthen the overall governance of the programmes;
2. harmonise the four CT programmes to improve the coherence of the sector; and
3. expand the coverage of the four programmes in a coordinated manner to progressively realise the right to safety net support.

The NSNP is thus the first step in a long-term reform agenda that aims to establish a national safety net system as part of an integrated approach to delivering social protection services nationally. The Social Protection Secretariat, a body created by the National Social Protection Policy, provides sector-wide oversight and coordination.

The NSNP is supported by the World Bank's Programme for Results (P4R). Some of the indicators that trigger payments to the Government of Kenya (GoK) under the P4R rely on data from the HSNP programme and its evaluation.

[3] The Ministry of East African Community, Labour and Social Protection was formed as a result of re-organisation of Government in May 2013. The Ministry combined the former Ministry of Labour and part of the former Ministry of Gender, Children and Social Development

1.1.2 The HSNP CT

The first phase of the HSNP ran from 2009 to 2013 and provided around 69,000 households (approximately 496,800 people) with regular electronic CTs every two months. The HSNP is now in its second phase, which began in July 2013 and is currently contracted to run until March 2018. It is funded by DFID to the value of £85.6 million, and the GoK is also expected to contribute funding as part of the NSNP (see Box 1). It is envisaged that by 2017, 49% of total programme costs and 54% of the HSNP caseload will be met by the GoK.

HSNP Phase 2 aims to provide the poorest 100,000 households with regular cash payments, and reach up to an additional 180,000 households with periodic emergency payments to help mitigate the effects of shocks such as drought. These beneficiary households are selected from the 383,235 households across the four counties that have so far been registered into the HSNP MIS, which is close to the entire population.[4] The registration exercise took place between December 2012 and June 2013 and was intended to be a census of the population of the four counties.[5] It was planned that all households be registered for bank accounts, with the HSNP providing regular CTs to 100,000 of these. Households assigned to receive these regular payments are referred to in this report as **'routine beneficiaries**'. The rest of the households in the MIS are referred to as 'emergency beneficiaries', because they may be eligible to receive HSNP emergency payments in time of drought. In this report, we further distinguish between those households that have actually ever received an HSNP payment as '**actual (routine/emergency) beneficiaries**', as opposed to those that are '**nominal (routine/emergency) beneficiaries**' but who have never actually received a payment (see section 2.2.2 below for further detail on these distinctions).

Table 2 HSNP beneficiary groups

	Routine beneficiaries	Emergency beneficiaries
Types of payment	Regular payments are paid into eligible beneficiaries' bank accounts every two months, to the value of KES 2,700 per month. Households need to have a valid national ID number and a bank account in order to receive a payment.	Payments of KES 2,700 (a single month's transfer) are scaled up to identified 'emergency' beneficiaries in the event of a weather shock.
Target population	Households are targeted to receive regular payments on the basis of a PMT score and a CBWR exercise. The target population is the poorest 25%, according to this definition of vulnerability.	Transfers are scaled up to an additional 25% of the population if drought reaches severe levels in any given location, and to 75% if drought reaches critical levels. Drought is assessed based on satellite technology that monitors the condition of vegetation.
Coverage	The HSNP aims to reach 100,000 households with regular transfers. So far, 89,350 households have been reached.[6]	So far, 209,940 households have been reached with at least one emergency payment (that is, 55% of the households registered in the MIS).[7]

[4] This is the number of households registered in the programme's MIS data as of September 2016

[5] It is known that some settlements were missed from the registration, but not precisely how many households or individuals were missed. There is a plan to register all the missed communities in the next registration exercise, which is currently set to begin in July 2016.

[6] Based on September 2016 HSNP MIS data.

7 Based on September 2016 HSNP MIS data.

At the time of writing, some 316,177 households had been registered with active accounts, of which 90,480 were routine beneficiary households.[8] An ongoing effort is in place to finalise account registration and activation for the remaining households. Once this is achieved, the nominal routine households that have not yet actually received any payments will be paid their full entitlement from the HSNP, dating back to July 2013.

Currently the transfer is worth KES 2,700 per month (approximately £22/$27).[9] The transfer is made directly into the routine beneficiaries' bank accounts every two months.[10] Emergency beneficiaries receive a single month's transfer (i.e. currently KES 2,700) if their area is deemed to be in severe or extreme drought in any given month. Some of nominal emergency beneficiaries have thus received one or more emergency payments, while others have received no payments.

The HSNP is implemented under the NDMA, which reports to the MDP. An internationally procured Programme Implementation and Learning Unit (PILU) sits within the NDMA. The PILU manages and monitors the delivery of the HSNP and provides oversight of a rights and grievances mechanism for the programme. The PILU reports to the NDMA and HSNP Steering Committee. The HSNP is delivered in partnership with implementing partners HelpAge International, which manages the programme rights component, and Financial Sector Deepening Trust, which manages the payments services provider (Equity Bank).

1.1.3 Targeting of households to receive HSNP Phase 2

For Phase 2 of the HSNP, targeting was conducted using a combination of a PMT[11] and CBWR.[12] Using a slightly modified version of the Commission for Revenue Allocation (CRA) formula[13], the NDMA allocated routine beneficiary county quotas. Of the 100,000 quota of routine beneficiary households, Turkana was allocated 39.9%, Mandera 22.2%, Wajir 19.2% and Marsabit 18.7%. A county-specific PMT threshold was derived by taking the PMT score of the nth household in each county, for instance in Turkana this was the PMT score of the 39,918th household.

Within counties, allocations were established for each sub-location by counting the numbers of households within those that fell below the county-specific PMT eligibility threshold. Then, in order to identify the specific households within each sub-location that would benefit from the programme, PMT scores and CBWR scores were combined for each household to produce a single score, which is then used to select the households.

The 2016 assessment of the HSNP programme targeting of routine and emergency beneficiary households found that the extent and uniformity of poverty in areas targeted by HSNP2 made it very difficult for the programme to accurately identify the poorest households using a combination of PMT and Community-Based Targeting mechanisms (Sliver-Leander and Merttens, 2016). Exclusion and inclusion errors in Phase 2 are very high – roughly similar to what would have been achieved if a random targeting rule were used – and targeted beneficiaries are not considerably worse off than non-beneficiaries in terms of monetary poverty. The implications of this targeting performance are discussed at various points throughout this report.

The HSNP transfer is targeted to households rather than individuals, with each household selecting one individual with a national ID to open the bank account and collect the transfer on each payment day. Just under 62% of households have selected a female recipient, and slightly over half of these women are named as the head of their household.

8 Based on September 2016 HSNP MIS data.

9 The original value of the HSNP transfer was KES 2,150 every two months. This was paid to each beneficiary household (or individual in the case of the Social Pension component). The value was calculated as 75% of the value of the World Food Programme food aid ration in 2006, when the value of the transfer was first set. Over time, the value of the transfer has increased: initially from KES 2,150 to KES 3,000 with effect from payment cycle 16 (Sep/Oct 2011), then to KES 3,500 with effect from cycle 19 (Mar/Apr 2012). A one-off doubling of the transfer occurred in Jul/Aug 2011 to support households coping with drought. At the end of the Phase 1 evaluation period it stood at KES 3,500. At the start of Phase 2 the value was KES 4,900.

10 There are some cases where recipients are yet to receive payments due to issues with IDs and so the programme is not always provided to those eligible.

11 A PMT is a statistical method by which household consumption is estimated in terms of known predictors of wealth and poverty such as ownership of assets, demographic characteristics and location of residence.

12 The CBWR is comprised of four wealth groups, 1 being the poorest and 4 being the wealthiest. These wealth groups are not split evenly within each sub-location, but may be distributed so that, for example, 40% of households are in Group 1 (very poor), 34% in Group 2 (poor), 18% in Group 3 (middle) and 8% in Group 4 (better off).

13 The CRA is a parliamentary-approved formula for allocating funds from central government to the counties on the following bases: 45% population, 25% equal share, 20% poverty, 8% land area and 2% fiscal responsibility. The CRA formula was modified for the purposes of allocating the HSNP by removing land area and fiscal responsibility and increasing the weight of the poverty count to 30%, resulting in the following weighting: 25% equal share, 30% poverty and 45% population.

1.2 The IE framework

An independent evaluation of the HSNP Phase 2 has been commissioned, of which this report is a part. This section describes the objectives and approach of the overall evaluation, as well as the quantitative household IE component that this report relates to.

1.2.1 HSNP evaluation objectives

The objective of the overall evaluation is to provide evidence on programme performance and impact for use by all programme stakeholders, including the PILU, NDMA, DFID, NSNP and GoK, plus other national and international stakeholders. The evaluation will inform future decision-making and accountability for funding, as well as the wider community interested in CTs, both nationally and internationally.

Oxford Policy Management (OPM) also conducted the evaluation of HSNP Phase 1, which provided robust evidence that the HSNP works effectively as a safety net, particularly for the poorest beneficiaries. The Phase 1 evaluation found that the HSNP directly supported families to become more food secure, hold onto their assets during shocks, and spend more on health. The evaluation of the HSNP Phase 1 was very rigorous, but it was also resource-intensive and placed large demands on the implementation of the programme in order to facilitate the community-randomised, staggered roll-out that underpinned the quantitative evaluation design.

Such an approach was appropriate for Phase 1, where the priority was establishing the impact of a highly innovative programme operating in an extremely complex environment. After several years of implementation, however, the policy and programme context have changed considerably, and so has the evidence needed to further inform the HSNP design and operation. Since there is already 'proof of concept', Phase 2 of the evaluation is tailored to respond to these needs rather than repeat the exercise of Phase 1.

The evaluation of HSNP Phase 1 clearly demonstrated the impact of the CTs at the beneficiary level with the use of a robust experimental design. However, the methodology did not allow for a comprehensive analysis of the broader effects of the programme on the local economy. As HSNP scales up under Phase 2, it may generate a wide spectrum of effects at different levels and for different groups, including both beneficiary and non-beneficiary households. Our evaluation approach for HSNP Phase 2 thus places a stronger emphasis on this question, though a mixed-method IE that aims to disentangle the variety of effects and understand through which channels and with what observable results the HSNP is changing the lives of people in northern Kenya. The related approaches that make up this IE are summarised in section 1.2.2 below.

This evaluation will still provide an assessment of the programme impact on key household-level indicators such as consumption, asset retention and financial inclusion. But beyond this, it will also seek to understand the impact the programme on the local economy – that is, on local income, prices and livelihood activities, to understand whether there are spill-over effects from the transfers that are also affecting non-beneficiary households.

As described in more detail in the evaluation inception report,[14] the overall (Phase 2) evaluation consists of a number of related components, including:

- a robust mixed-methods IE;
- an operational evaluation including continuous independent programme monitoring; and
- policy analysis.

The evaluation also includes a communications and learning workstream to disseminate the outputs from the various activities carried out under each component.

1.2.2 IE approach

Within the IE component of the evaluation, of which this report is a part, we use a range of analytical methods within an overarching mixed-methods approach. The qualitative research relies on multiple rounds of data collection, while a single round of quantitative data collection based on a household and business survey underpins both the LEWIE and the quantitative household IE. There is no scope for a 'before' and 'after' comparison (i.e. pre- vs. post-treatment) since the current phase of HSNP began in July 2013, well before the start of this evaluation.

[14] OPM (2015) Hunger Safety Net Programme Evaluation of HSNP Phase 2 Inception Report.

A summary of the different approaches that constitute the overall mixed-methods approach for the IE is as follows:

- The wider effects of the HSNP CTs on the local economy are assessed through a **LEWIE**. The LEWIE model is an innovative approach to understanding the local supply-side response to the injection of CTs into local markets. On the one hand, the CTs could result in positive economic spill-overs in the surrounding economy, giving rise to a local income multiplier and amplifying the HSNP's overall impact. On the other hand, if the local supply is not responsive to the anticipated increases in demand, the programme's benefits could be undermined by higher prices. **The LEWIE analysis aims to shed light on the potential multiplier effects of the HSNP, by simulating HSNP** impacts on the entire local economy and on groups of households and production activities.

- The effects of the CTs at the beneficiary level are assessed using a quantitative IE approach based on a RD design and a PSM model. The data used for this analysis come from a large multi-purpose household survey conducted in the HSNP counties (the same data also underpin the LEWIE analysis). As well as generating evidence on the overall impact of the CTs on various key outcome indicators, this part of the analysis also seeks to assess whether there are any differences between different population subgroups in the response to the transfers.

- Multiple rounds of qualitative research deploying participatory methods complement the quantitative approach by: providing an understanding of the context within which the programme is operating, and how this affects and is affected by the CT; capturing experiences and processes that produce outcomes of interest; enabling an assessment of impacts that are difficult to cover quantitatively (such as social cohesion and inter- and intra-household relations); and providing complementary data on some of the topics covered by the quantitative survey to triangulate, validate and provide depth to the quantitative findings.

- **A special study on the ASP** looks at the interaction between the HSNP and a package of complementary activities to support livelihoods, as well as providing an insight into the contribution the ASP makes to county planning and budgeting processes.

These analytical methods have been designed to complement one another, to deliver as full an understanding as possible of what impacts the HSNP2 programme has had and why.

For further information regarding the approaches conducted under the other components of this evaluation, please refer to the HSNP Phase 2 inception report and associated evaluation reports.

1.2.3 IE questions

The original evaluation Terms of Reference put forward a series of key evaluation questions. These related to key elements and assumptions in the programme theory of change, covering both impact (through quantitative and qualitative methods) and operational performance.

The evaluation questions were reviewed and refined

during the inception phase, explicitly mapping them to the OECD-DAC evaluation criteria and allocating them against the proposed evaluation components described above.

Table 3 below sets out the specific evaluation questions that are addressed by the IE, and maps this against the various components of the IE (quantitative RD and PSM approach, qualitative research studies and LEWIE study). Please see the evaluation inception report for a full exposition of all the evaluation questions addressed by the overall HSNP Phase 2 evaluation.

Table 3 Evaluation questions addressed by the IE

Evaluation question	Evaluation approach that addresses the question		
	Quantitative	Qualitative	LEWIE
What are the overall effects of the CTs in terms of consumption, poverty, asset retention/ accumulation, nutrition (dietary diversity), financial inclusion (saving, borrowing and credit), subjective wellbeing, social networks, and conflict/social tension?	✓	✓	
For which subgroups are effects most pronounced (taking account of poverty status, household size, family composition, geographic location, livelihood base, gender and disability)?	✓	✓	
How do CTs impact on women's control of cash within their (often polygamous) households and their wider empowerment?		✓	
How do the effects of predictable transfers compare with those of short-term transfers triggered in response to acute shocks?		✓	
How do the larger one-off transfers some households will receive due to the later-than-anticipated start of the programme impact on those households?	✓		
Does the combination of CTs and wider livelihoods activities open up new livelihoods opportunities/income-generating activities for poor households? How?		✓	✓
What kinds of multiplier effects are found in local economies?			✓
Is there evidence of the programme having an impact on community relations – both within and between communities?		✓	
Do the new payment platform and expansion of financial services provide benefits for beneficiaries and non-beneficiaries?		✓	
Do the reliable CTs build people's resilience to climate variability?		✓	

1.3 Scope of this report

This report covers the quantitative household IE conducted under the evaluation for HSNP Phase 2. The primary purpose of this report is to serve as a technical companion to the forthcoming IE summary assessment report. The evaluation questions above will be addressed in the summary assessment report, which will bring together all sources of evidence within the IE and provide our evaluative judgement on the HSNP and interpretation of results. In this current report, we provide detailed technical information to explain the RD and PSM methodology and sampling approach, as well as outlining the main results. The report is primarily intended for a technical audience who would like to understand the methodological approach behind the quantitative household IE.

The remainder of the current report is structured as follows:

Section 2
discusses the methodology for the household IE and quantitative estimation methods used.

Section 3
describes the data used for the quantitative household analysis, including the sampling strategy and details of fieldwork activities.

Section 4
presents the main results from the impact estimation.

Section 5
outlines our conclusions.

Annex A
contains further supporting technical information about the PSM methodology.

Annex B
contains further supporting technical information about the RD methodology.

Annex C
contains some additional descriptive results.

Annex D
contains the household survey instrument.

2. Quantitative IE methodology

2.1 Overview of the analysis approach

Our quantitative analysis approach consists of four integrated stages: **descriptive analysis**, **regression analysis**, **RD analysis** and **PSM analysis.**

The descriptive analysis is the first step in our analysis approach. This consists of producing a set of summary statistics for all indicators relevant to the evaluation, disaggregated by certain dimensions of interest. The purpose of the descriptive analysis is to help build an initial understanding of what the households in our data are like and what characteristics they have.

Building on the descriptive analysis, we then conduct a **regression analysis** to further explore the relationship between key outcome variables and a range of household characteristics. Taken together, the descriptive analysis and regression analysis form a basis for helping to contextualise and interpret the findings of the evaluation.

An additional purpose of both the descriptive and regression analyses is to test the performance of the RD model and the validity of the assumptions that underpin it. The descriptive analysis plays an important role in informing decisions around the integrated quantitative analysis approach. We conduct an extensive inquiry into the internal validity represented by the RD model, the extent of 'fuzziness' in the sample and how this may affect the results. This is described in section 2.2.2 below. Similarly, descriptive analysis is also an essential part of testing the robustness and internal validity of the PSM model, to better understand whether the matching model achieves 'balance' between the two groups being compared (described in Annex A).

In line with the analysis plan set out in our inception report, and further informed by the descriptive and regression analyses, we chose to complement an RD analysis with a PSM analysis to understand the causal impact of the HSNP routine payments on key outcomes. The RD model is the main analysis approach, with the PSM serving as a robustness check on the results. Taken together, the insights emerging from the RD and PSM techniques form the core of our impact analysis of outcomes at the household level. This combined approach, which was envisaged in the inception phase, has been designed to best respond to the particular nature of the intervention's assignment mechanism as well as actual implementation and roll-out, and was deemed to be the best approach to deliver a robust assessment of the impact of the HSNP Phase 2 transfers given this context. The considerations that informed this choice are outlined in the next section.

2.2 Determining the optimum quantitative household IE methodology

2.21 Design considerations

The goal of the quantitative household IE is to understand the change in key outcome variables that can be attributed to the HSNP Phase 2 transfers. To uncover this causal effect of interest, it is not sufficient to simply compare outcomes between households eligible for transfers through the HSNP with those who were not, since the HSNP CTs were explicitly targeted at the most vulnerable households in Turkana, Marsabit, Mandera and Wajir.

This means that there are likely to be systematic differences between beneficiary and non-beneficiary households, beyond their exposure to the CTs, that render the simple comparison in outcomes biased. In other words, because the HSNP transfers are targeted toward the most vulnerable, we would expect beneficiary households to have attained different outcomes to non-beneficiary households even if they had not ever received the HSNP transfers. This is the classic source of selection bias that quantitative IE techniques are designed to overcome.

For the evaluation of HSNP Phase 2, the possibilities for identifying a suitable comparison group are further complicated by a number of features of the programme's assignment mechanism and how it is delivered. HSNP is being implemented in a highly complex environment, and this has implications for the optimal design of the quantitative approach to its evaluation. Among the considerations that are relevant to this choice are:

There is no opportunity to carry out baseline data collection. HSNP Phase 2 began in 2013, well before the start of this evaluation, and the presence of transfers under HSNP Phase 1 since 2009 would in any case have confounded any possible 'baseline' for the HSNP2.

The potential to identify a 'pure' comparison group (consisting of households never targeted by either the HSNP or any other CT programme during the intervention period) is limited. The HSNP Phase 2 has been designed to scale up 'emergency' payments to a large number of households in the event of localised adverse shocks such as drought or the El Niño event. In addition, a number of other CT programmes are also operating in HSNP counties, including the three major national GoK CTs – CT-OVC, PWSD-CT and OPCT – as well as cash-for-work programmes. There are also a multitude of other aid and development programmes being implemented in various locations throughout the area.

Non-beneficiary households may also have been affected by spill-over effects resulting from the presence of HSNP CTs within communities. These 'indirect' effects accruing to non-beneficiary households may also compromise the ability to attribute an impact of HSNP at the household level[15].

The allocation of the HSNP Phase 2 transfers using a targeting mechanism that is based on an eligibility cut-off PMT score lends itself to evaluation using an RD approach. RD estimation exploits the use of a PMT cut-off score to assign the programme, under the intuition that households just either side of this eligibility cut-off should be very similar apart from in their exposure to the transfers. This means that within a small neighbourhood of the PMT cut-off, assignment to the HSNP transfers may be considered 'as if' random. A series of validity tests were conducted to validate this assumption in terms of observable characteristics, and it was found to perform well (meaning that the internal validity of the RD model is strong). Under the RD model, the treatment and control groups are defined by a household's PMT score in relation to the cut-off: the treatment group is households with PMT scores below the cut-off and the control group is households with PMT scores above. Details of this approach and the assumptions that underpin it are described in further detail in section 2.3 below.

PSM is an alternative evaluation approach to RD, which seeks to 'construct' a suitable comparison group for the intervention households by identifying non-beneficiary households that resemble beneficiary households as closely as possible in all respects other than their exposure to the CTs. In this setting, we applied PSM as a complement and robustness check to the RD, by targeting a specific subgroup in our sample that had actually received routine HSNP payments, according to programme operational data. The nature of this targeted PSM is described below, and allows us to further investigate the impact of the HSNP when actual recipients are the focus of the analysis.

The PSM and RD approaches are both well-established quasi-experimental IE methodologies that, depending on their assumptions being met, can be used to identify intervention impact in cases where full randomisation is unfeasible, undesirable or unethical. In the current context, each of these approaches has certain strengths and weaknesses. It is for this reason that the integrated approach of employing both methods was developed.

[15] The results of the LEWIE analysis suggest that significant spill-overs do indeed accrue to non-recipient households in the HSNP counties. See Taylor, J.E., Thome, K. and Filipski, M. (2016) H*unger Safety Net Programme Evaluation of HSNP Phase 2 Local Economy-Wide Impact Evaluation Report*.

2.2.2 The fuzzy RD (FRD) model

The application of an RD methodology in this setting is complicated by the fact that assignment to the HSNP is not determined through the PMT scores alone. As described in section 1.1.3, targeting of households into the routine beneficiary group is based on a combination of a PMT score (with eligibility thresholds set at the county level) and a CBWR. The implication of including this element of community-based targeting into the overall mechanism is that there are some households with PMT scores above the PMT eligibility threshold who are assigned to the HSNP routine beneficiary group, and some households with PMT scores below the threshold who do not get assigned to the routine beneficiary group. This 'fuzziness' of household assignment to the HSNP routine beneficiary group around the cut-off is illustrated in Figure 1 below. This figure, and the ones that follow, depicts the PMT scores of households in the sample of the quantitative IE household survey, with each dot representing one household.

The figure illustrates that households are more likely to be in the routine HSNP beneficiary group if they have PMT scores below the cut-off. The presence of this (statistically significant) 'discontinuity in the probability of treatment' at the cut-off score is among the key assumptions underpinning RD, and was formally tested and verified using a series of internal validity tests. Nonetheless, it is important to note that there is still some overlap between the two groups around the cut-off (that is, the cut-off score does not perfectly separate the two groups).

Figure 1 HSNP quantitative impact example sample by nominal beneficiary status

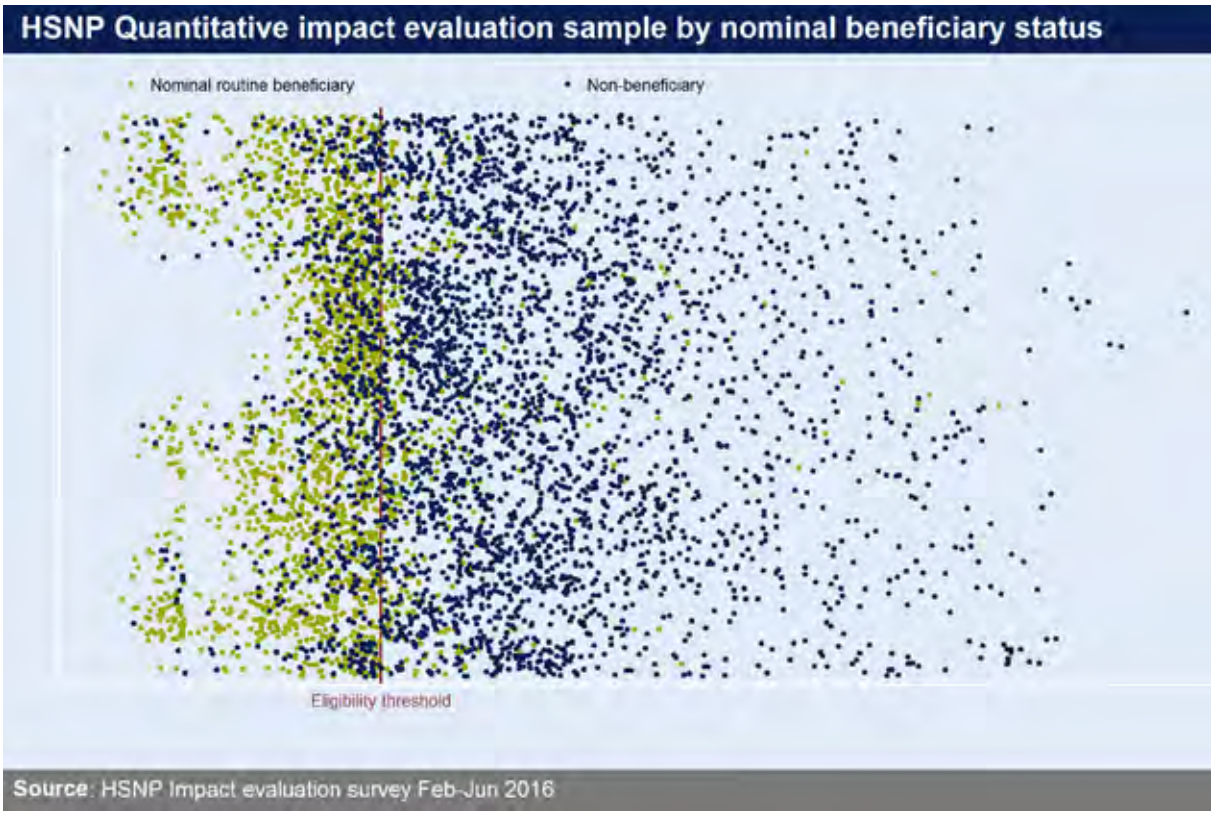
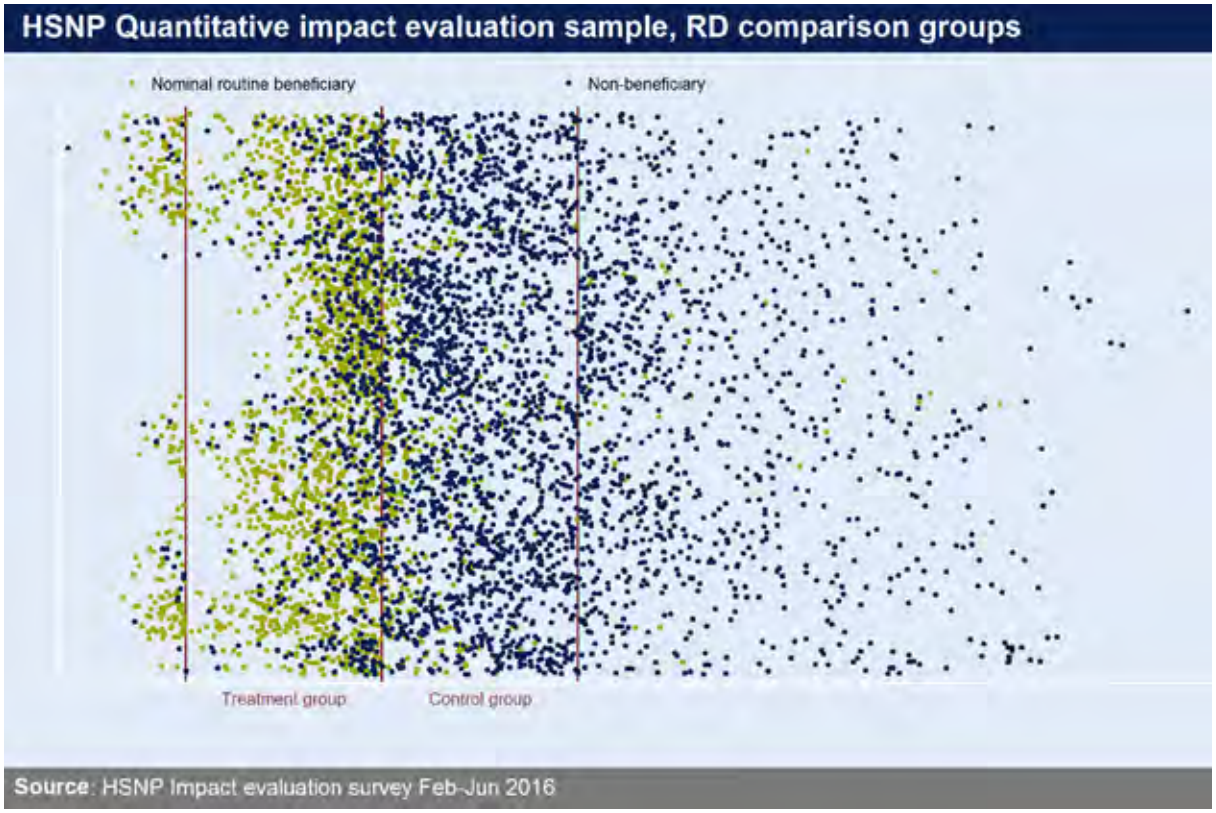


Figure 2 further illustrates the prevalence of this 'fuzziness' of the sample within the narrow range of the eligibility cut-off that the RD approach makes use of. This figure is also intended to make clear that the treatment group for the purposes of the FRD estimation is defined by the PMT score, not assignment or (nominal) receipt of routine HSNP CTs. The treatment group is households with PMT scores below the eligibility threshold, while the control group is households with PMT scores above. In line with standard practice for implementing the RD approach, both the treatment and control groups are defined within a narrow bandwidth of the eligibility cut-off.

Figure 2 HSNP quantitative IE sample RD comparison groups



FRD is a special application of the RD approach for cases where assignment to an intervention is not perfectly predicted by a continuous eligibility score.[16] It is a recognised approach for dealing with these situations and is well documented in the economics literature.[17] This approach involves using the eligibility cut-off for the intervention within an instrumental variables framework. That is, rather than directly comparing households just above and below the PMT cut-off as in a classic application of RD, in a FRD setting the cut-off score is used as an instrument for assignment to the routine beneficiary group. This is described in further detail in section 2.3 below.

Under standard assumptions (outlined below), FRD successfully uncovers an unbiased estimate of the impact of the programme. We performed a number of internal validity tests to assess the validity of these assumptions (presented in Annex B, section B.1), and were satisfied that the approach delivers unbiased results in this setting.[18]

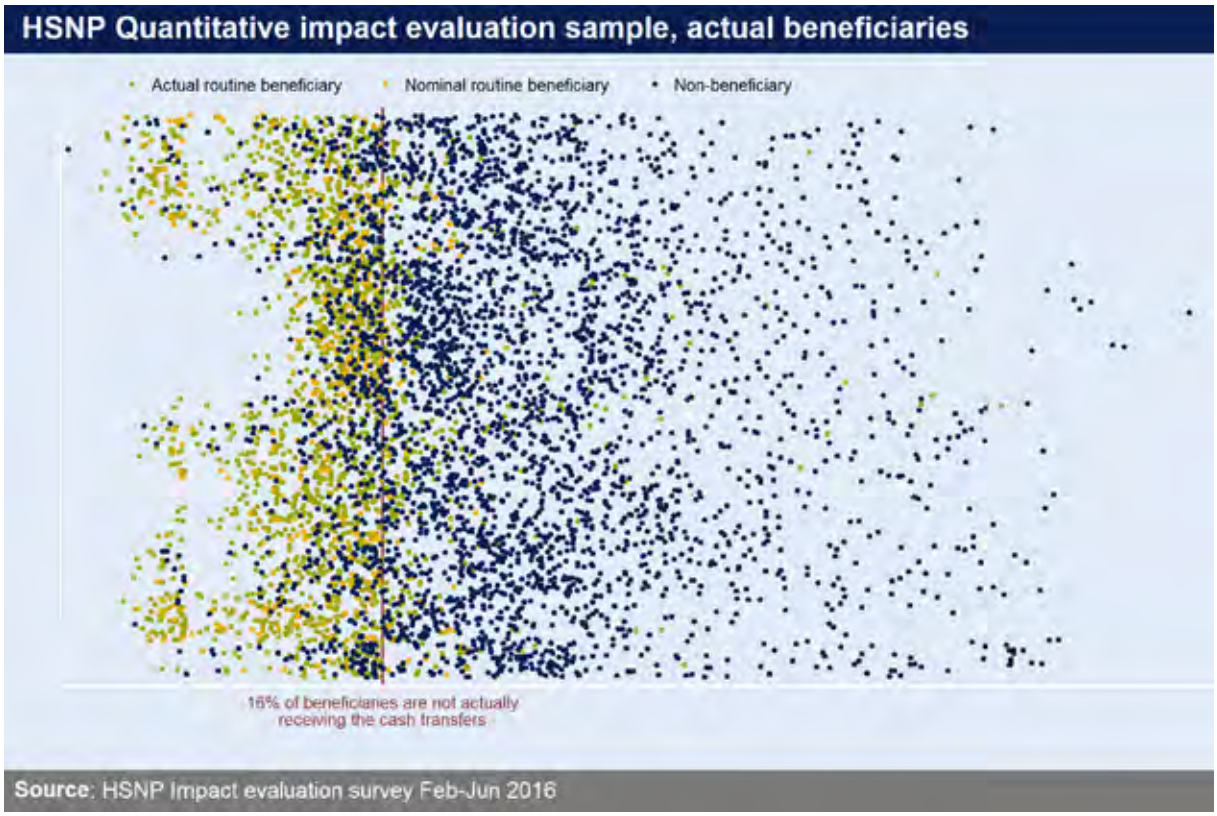
However, while the approach was found to be well equipped to mitigate possible selection bias, a core limitation of the FRD approach is the potential that it may lead to imprecise estimates of the true impact of HSNP CTs. The main reason why this might be so is that impact is assessed by drawing a comparison between households with PMT scores above the cut-off with households with PMT scores below the cut-off. However, as described, there is a **mixture of beneficiary and non-beneficiary households either side of the cut-off**.

[16] The potential need to employ an FRD approach was anticipated and planned during the inception stage of the evaluation.

[17] See the following for a review of the FRD approach, and examples of FRD studies: Lee, David S., and Thomas Lemieux (2010) 'Regression discontinuity designs in economics'. Journal of Economic Literature 48.2: 281–355.

During the evaluation period we also learned that, due to some operational issues in the implementation of the HSNP, the extent of the fuzziness was more extensive than originally anticipated. **This is because not all households nominally assigned to the routine beneficiary group actually received their entitlement of transfers**, due to issues with registering all households with a bank account. This further degree of fuzziness thus has the potential to further weaken average measured outcomes in the treatment group, because fewer of the households in that group are actually receiving HSNP CTs. The prevalence of non-receipt of routine transfers to assigned households is illustrated in Figure 3 below, where the orange dots represent nominal routine HSNP beneficiary households that are not actually receiving the CTs they are entitled to.

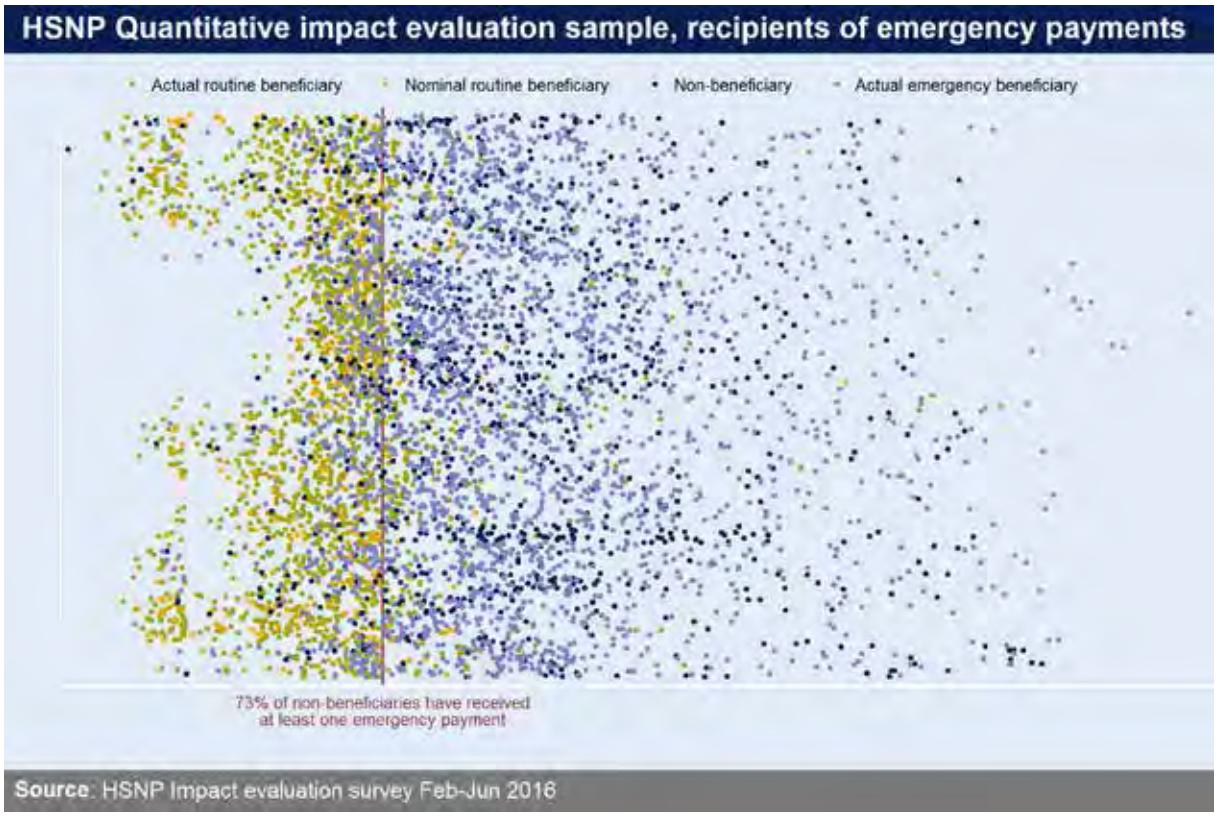
Figure 3 HSNP quantitative IE sample, actual beneficiaries



[18] The evaluation team consulted Dr Patrick Nolen, University of Essex, throughout the process of designing the FRD model and performing internal validity tests to assess its performance. Dr Nolen confirmed that the FRD model was internally valid and its estimates can therefore be considered as unbiased.

Furthermore, **some non-beneficiary households have also received at least one emergency payment through the HSNP during the evaluation period**. Although emergency payments are only disbursed to a subset of households, and at less frequent intervals than the routine CTs, their presence still has the potential to confound average outcomes in the comparison group. The extent of emergency payments across the sample is high, as illustrated in Figure 4 below.

Figure 4 HSNP quantitative IE sample, recipients of emergency payments



The implications of this elevated 'fuzziness' are that, while the FRD is shown to successfully deliver unbiased estimates (on the basis of internal validity tests), these estimates may be estimated with a large degree of *imprecision*. Since the RD treatment and control groups, although comparable and sufficiently distinct in statistical terms, are confounded by erratic and competing CT patterns, the estimates from the first stage are anticipated to be noisy. This results in large standard errors and confidence intervals for the resulting RD estimates, even though they are not systematically biased.

Wide confidence intervals mean that the statistical significance of the measure of impact obtained may be underestimated.[19] In one sense, this is less of a concern if the results do reveal significant impacts on key outcome variables. The argument runs that if a significant impact is found in this setting, we can at least be sure that the programme did indeed have an impact even if the exact significance of the impact may not be known precisely. More challenging is the situation in which significant impacts are not observed as a result of this methodology being applied. If this is the case then it is not possible to conclude whether the intervention truly did not have an impact, or whether it did in fact have an impact that could not be detected using this methodology.

[19] Impact estimation in a FRD setting is performed on the basis of a two-stage least squares approach. The first stage predicts the probability of observations (households in our case) to receive the treatment. The predicted value emerging from the first stage is then used in the second stage to estimate the treatment effect. Standard errors (which are a measure of the precision of the point estimates) in the second-stage regression are then adjusted to account for the degree of uncertainty in the first stage. Hence, a higher-than-expected degree of uncertainty in the first stage, which was due to the compounded fuzziness of our RD model, will have affected the precision of the impact estimates.

2.2.3 Further investigating the fuzziness of the sample

The results from the RD model did not reveal programme impacts for the majority of outcome areas tested, thus placing our analysis at risk of being unable to distinguish genuine lack of impact from a failure of the methodology to detect such impacts.

The extent of the 'fuzziness' in the RD sample, compounded by the HSNP implementation dynamics described above, prompted us to further our descriptive investigation of the differences in outcomes between households actually receiving routine HSNP CTs and those who are not. We also incorporate this comparison within a regression framework, which allows us to isolate the effect of individual factors while controlling for other observable characteristics that are relevant in the analysis of factors influencing outcomes of interest. We estimated regression models on the 'above cut-off' and 'below cut-off' samples separately, and include dummy variables for whether the household had received a regular HSNP payment (or also received an emergency payment).

The findings of both these descriptive and regression analyses do reveal some statistically significant differences in outcomes between the actual routine beneficiary and non-beneficiary households. Such comparisons do not have a causal interpretation (due to the differences in underlying characteristics between recipient and non-recipient households), although strong differences between these two groups may be indicative of a potential impact of actually receiving routine HSNP payments that could not be identified using the RD approach.

In order to better understand how the extensive fuzziness might be affecting the RD model we also looked at the distribution of PMT scores among households actually receiving routine CTs. We sought to compare the households not receiving any routine CTs within the RD treatment group with the households that are receiving CTs, but appear in the RD control group. We found that within the RD treatment group (the 'below the cut-off' sample), the households that do not receive routine payments are distributed just to the left of the cut-off. In the control group (the 'above the cut-off' sample), the households that are actually receiving routine payments are distributed just to the right of the cut-off. If these households significantly differ, this may have an impact on the RD results. This may be especially the case when triangular kernel weights are used, since this weighting scheme involves placing more weight on households that are closer to the cut-off score. Triangular kernel weights are considered to be optimal for estimating local linear regressions at the boundary of the cut-off.

The fact that descriptive differences between actual HSNP routine beneficiaries and non-beneficiaries were typically larger than the results produced by the RD model, and more likely to exhibit the expected direction, could be due to the fact that the actual HSNP beneficiaries in the control group are performing much better than the rest of the RD control group (the 'above the cut-off' sample) due to them receiving regular HSNP payments. We believe that this intuitive interpretation is further supported by the fact that RD models that use triangular weights produce larger coefficients in an unexpected direction. Generally, for outcome indicators that produced surprising RD results, we found large descriptive differences between actual HSNP routine beneficiaries and non-beneficiaries, and the RD coefficient is exaggerated by the use of triangular weights.

2.2.4 Integration of PSM as a robustness check on the RD results

Our analysis plan had anticipated these potential challenges arising from the RD approach, and we thus aimed to use PSM as a robustness check in the event that these issues were realised. In view of the degree of fuzziness observed, we followed this plan and developed an impact estimation approach that integrates the PSM technique and results together with the RD.

Under certain assumptions (outlined in section 2.4), PSM also delivers an unbiased estimate of programme impact. Yet due to differences in how the treatment group is defined, the PSM does not suffer from the same issue as the RD in terms of potential underestimation of the significance of treatment effects.

The ability of the PSM model to overcome selection bias is contingent on the quality of the matching model. The objective in defining a matching model is to identify a set of covariates that, once they are conditioned on, deliver a sample in which there are no systematic differences between the treatment and control groups (known as achieving 'balance') across a selection of observable characteristics. This implies the assumption that all relevant differences between treatment and control groups in the absence of matching can be fully captured by conditioning on the set of matching covariates selected, as well as that there are no remaining unobserved differences. In developing this model, it is necessary for the possible matching covariates to be entirely unaffected by the intervention, or the matching model will be endogenous. Therefore, without access to baseline data, the set of possible suitable matching covariates is limited to those that are plausibly persistent over time (so-called static variables), such as age and gender.

While the lack of baseline data does place some limitations on the matching model, the presence of some

information in the programme registration data (the MIS) which the programme used to construct PMT scores, did allow us to construct a matching model. Our balancing tests (shown in Annex A, section A.2) then provide reassurance that, even with these constraints, the model was very well balanced along the available observable variables. While not itself directly testable, this also raises confidence that the model achieves balance in unobserved variables too (a key assumption underlying the use of PSM).

A second limitation with PSM is that it suffers from somewhat limited external validity (that is, generalisability to other contexts). This is a result of how the treatment group was defined. In contrast to the treatment group for the RD approach, which is defined according to households PMT scores in relation to the eligibility cut-off (regardless of whether or not the household actually received a payment or not), the PSM treatment group consists of households that are actually receiving routine HSNP payments. We chose to implement PSM in this targeted way due to the finding that there appeared to be significant differences between actual HSNP routine beneficiaries and non-beneficiaries. Building the PSM in this way means that the model can help to uncover whether or not the HSNP transfers had real effects on recipient households that could not be detected by the RD. However, it means that the results are less useful for understanding the likely impact of the transfers if implemented elsewhere, since they do not take into account how failure of the transfers to reach the entire eligible population might affect overall effectiveness. We also note here that external validity issues of a different nature do also apply to the RD estimation, since this model defines a Local Average Treatment Effect (LATE) that is only defined for the set of households residing within the narrow bandwidth of the eligibility cut-off (and which therefore cannot be generalised to the most vulnerable households, which may be of particular interest). [20]

We apply PSM estimation to a subset of the impact indicator that are considered most important for this analysis, and where the RD results were inconclusive. Further information about how the RD and PSM models were applied, and the relative strengths and limitations of each, is provided in Table 4 below.

Overall, we believe that the integrated quantitative analysis strategy represents the best approach to respond to the particular needs of this evaluation. At the same time, we acknowledge that while the methodology provides an unbiased estimate of the programme impact, the precision and magnitude of these effects is less well estimated and should be treated with caution. This is due to a combination of the fuzziness of the RD sample, the potential for programme spill-overs, and the restriction of the estimation to households near the PMT cut-off rather than those at the bottom of the distribution. The quantitative findings are therefore best interpreted within an overall synthesis approach, which combines all sources of evidence from across the IE workstream to arrive at a final evaluative judgement of this programme.

The complete findings from the PSM and RD models are presented in section 4. In general, we found that where the RD produces some unexpected results but generally points toward a lack of impact, the PSM tends to produce coefficients more in line with what was anticipated (in terms of significance and direction of impact). At the same time, for some of the impact indicators on which the RD found minimal impact, the PSM model also reports very small coefficients. This is unsurprising, since we would have expected the RD model to uncover a significant impact for very large and significant effect sizes, even within the context of extensive fuzziness.

[20] The RD model defines a LATE. This measures the difference in mean average outcomes between households with PMT scores below the eligibility cut-off and those above, but only for those within the defined bandwidth of the cut-off score. In this sense, the treatment effect is only 'local', as it does not apply to households across the full spectrum of PMT scores. By contrast, the PSM model defines an Average Treatment Effect on the Treated (ATT). This is the difference in mean average outcomes between households that actually received routine HSNP transfers, compared with those that did not.

Table 4 Summary of RD and PSM approaches for the quantitative IE methodology

	RD	PSM
Basis for making causal inference	Compares households within a close neighbourhood of the eligibility cut-off score used to assign the HSNP. Intuition is that households that are 'just' eligible to receive the HSNP transfers should be very similar to households that are 'just' ineligible. Therefore, comparing their outcomes should isolate the impact of the programme.	Defines a comparison group that is as similar as possible to the treatment group, based on a set of observable characteristics. Intuition is that, conditional on a set of observable variables, the assignment of households to receive HSNP transfers may be considered 'as good as' random, and therefore a comparison between them will isolate the impact of the programme.
Rationale for using the approach	The assignment mechanism of the HSNP is suited to an RD approach since it is based on a continuous assignment score. A series of internal validity tests confirmed the ability of the RD methodology to deliver unbiased results in this setting. This means that, within the defined bandwidth of the cut-off score, households were found to be similar in terms of their observed characteristics.	The extent of 'fuzziness' around the PMT cut-off was found to be more significant than first anticipated, leading to concerns that the RD methodology, while remaining unbiased, may be unable to detect statistically significant programme impacts. In this situation a targeted PSM can help assess the impact of the HSNP on households that actually received the transfers that might be undetected by the RD methodology.
Key limitations	Risk that the treatment effect is estimated imprecisely (with large standard errors), due to the extent of fuzziness in the sample. This makes it difficult to distinguish between 'true' lack of impact, and an impact that the methodology could not detect with statistical significance. The results define a LATE, and only relate to households with similar characteristics to those within the bandwidth of the cut-off. This means that the findings cannot be used to understand the likely effects of HSNP CTs on the most vulnerable.	Lack of baseline data restricts the choice of matching covariates. A key PSM assumption is unconfoundedness, which states that PSM estimates are unbiased given the selection on observables. As the latter are a limited range of static variables, this represents a limitation. Limited external validity, since the treatment effect is defined only in respect of households actually receiving transfers, which may be systematically different on average to households that do not receive transfers. The PSM model also only estimates programme impacts for households around the cut-off, since it is defined over the same sample as the RD. Therefore, the results are not generalisable to those who may be the most vulnerable.

	RD	PSM
Definition of the treatment and control groups	Treatment group: households with PMT scores below the eligibility threshold. Control group: households with PMT scores above the eligibility threshold.	Treatment group: households actually receiving routine CTs. Control group: households not receiving routine CTs.
Sample used for analysis	Households within a narrow bandwidth of the PMT eligibility threshold.	Actual HSNP beneficiary households in the quantitative household survey sample, matched to non-beneficiary households.
Treatment effect being estimated	Local Average Treatment Effect (LATE)	Average Treatment effect on the Treated (ATT).
Key identifying assumptions	Within a narrow bandwidth of the cut-off, treatment assignment may be considered randomly assigned. There is a discontinuity in the probability of receiving the intervention at the cut-off.	All systematic differences between treatment and control groups are successfully controlled for through the choice of observed matching covariates (that is, conditional on observable characteristics, treatment assignment is as good as random).

In the following section we explain how the RD and PSM approaches were implemented in greater detail.

2.3 RD approach

2.3.1 Model specification

RD identifies the casual impact of having received payments through the HSNP by comparing outcomes between treatment and control households within a small neighbourhood of the PMT eligibility threshold. To implement this approach, the bandwidth chosen was a distance of 400 above and below the eligibility cut-off.[21] This choice was the result of a series of diagnostic tests [22] to select a range that was narrow enough such that the characteristics of households lying on either side of the cut-off were found to be statistically similar, but wide enough such that there would be sufficient households in the sample to power our analysis.

We use a non-parametric approach to estimate the impact of the HSNP on its beneficiaries. This involves estimating the difference in intercepts (i.e. the discontinuity) of two local polynomial estimators, one from each side of the eligibility threshold . Formally, for a positive bandwidth *h,* the RD estimator is the coefficient that satisfies the following expression, where y_i denotes the outcome for household i and PMT_i denotes the PMT score.

$$\min_{\beta} \sum_{i=1}^{n} \left(y_i - \sum_{j=0}^{p} \beta_j (PMT_i - c_0)^j \right)^2 K\left(\frac{PMT_i - c_0}{h}\right)$$

The key features of the approach include the implementation of a local linear regression in some bandwidth *h* around the eligibility threshold. A kernel weighting approach is also used, as determined by the kernel function K(.).

In specifying weights, there are two options: triangular kernel weights or uniform kernel weights. Triangular kernel weights give greater weight to data points closer to the cut-off than those further away, with weights reducing linearly with distance from the cut-off. Uniform kernel weights give a uniform weight to each data point regardless of its distance from the cut-off. The estimation of impact is sensitive to the choice of kernel function and the use of covariates, so we present the results across a range of RD models. The full results are presented in Annex B. The models differ in whether they control for clustering, if they include additional covariates (the FRD already exploits discontinuities in the probability of treatment conditional on a covariate), and how they weight observations around the cut-off. The four models presented are as follows:

- Controlling for clustering, including covariates from the MIS and using triangular kernel weights;
- Controlling for clustering, including covariates from the MIS and using uniform kernel weights;
- Controlling for clustering, no covariates and using triangular kernel weights; and
- Controlling for clustering, no covariates and using uniform kernel weights.

The main model that we present results for in the main body of the text is the model that includes covariates and uses triangular kernel weights. Covariates are defined from the HSNP MIS data (that is, the programme's registration data). The use of covariates is not necessary for treatment effect identification but rather helps to improve precision. This is particularly relevant in the context of our FRD model, for which the precision of the estimates is a concern.

The implementation of the FRD is formally implemented using **two-stage least squares**. The first stage implies estimating the treatment assignment that is predicted by PMT scores, and then this predicted value is used in place of actual treatment status in the second stage regression on outcomes of interest.

[21] PMT scores themselves have an inter-quartile range of 682.1036, based on the programme's MIS data.
[22] Technical notes produced on the choice of optimal bandwidth can be shared on request.

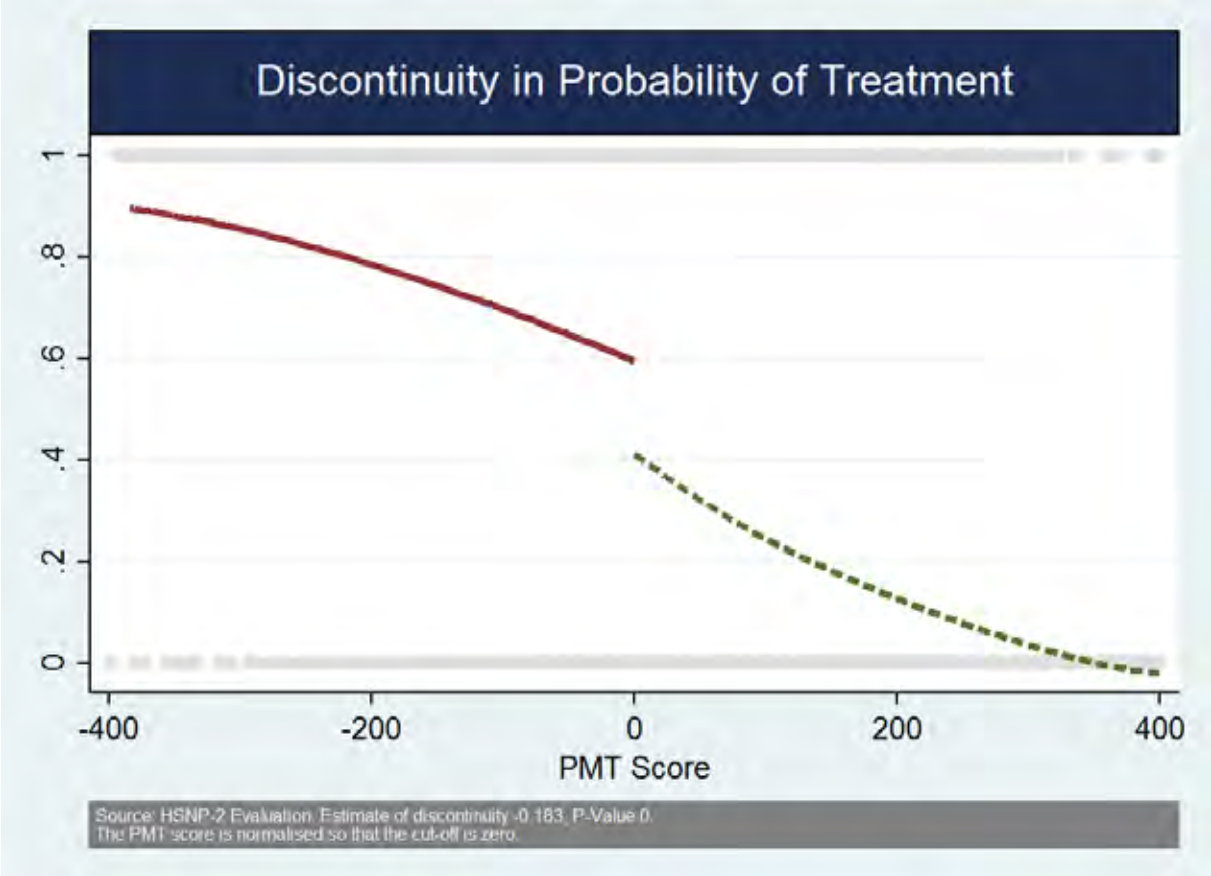
2.3.2 Assumptions behind RD

The ability of the RD model to deliver robust causal estimates of the impact of HSNP rests on the following assumptions:

Assumption 1: *The assignment variable has a monotonic effect on the probability of being treated for everyone.* This means that PMT scores have predictive power for assignment to receive the HSNP, with the probability of being assigned to the HSNP decreasing as PMT scores increase.

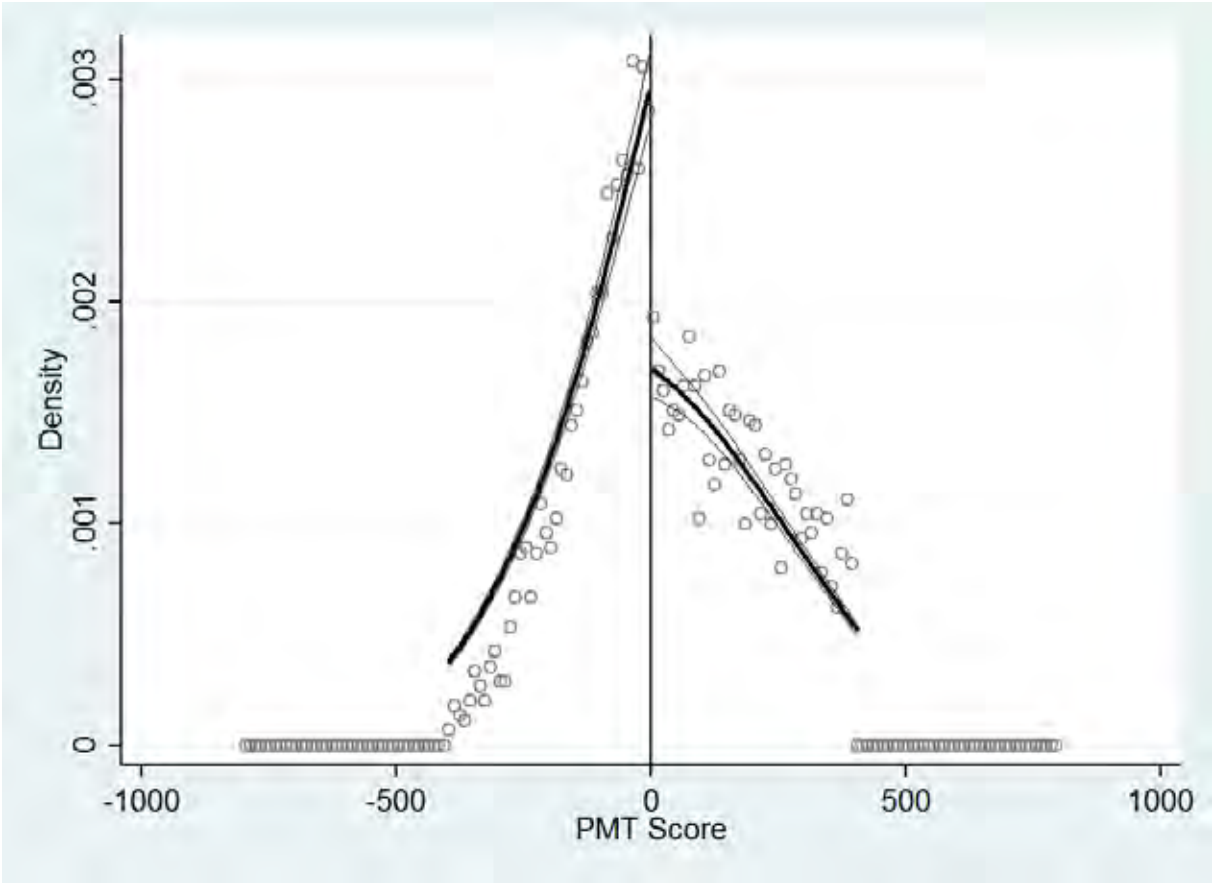
Figure 5 below plots the probability of being assigned to receive the HSNP transfers against PMT scores within our chosen bandwidth (where the PMT scores have been normalised such that the eligibility cut-off is 0). This figure shows that households with higher PMT scores have a lower probability of being targeted to receive the HSNP. This raises confidence that the monotonicity assumption is verified, although it cannot be directly tested from a statistical point of view.

Figure 5 Discontinuity in probability of treatment



Assumption 2: *It must not be possible for households to manipulate their score on the assignment variable in order to benefit from the intervention.* Selection bias is reintroduced if households are able to alter their PMT scores in order to benefit from the HSNP, since this violates the requirement that households within a narrow range of the cut-off score may be considered comparable. In particular, the ability of households to affect their score would mean that those who opted to do so may have different underlying or unobserved characteristics to those who do not, invalidating the comparison between them.

Figure 6 DC density test for PMT scores across the RD sample



This can be formally tested, and Figure 6 presents the results of a discontinuity in the PMT score at the eligibility threshold following McCrary (2008), who tests whether the marginal density of the PMT score is continuous across the eligibility threshold.[23] The density of the distribution of the PMT around the cut-off gives us an idea of whether households manipulated the threshold. A considerable spike in the density around the cut-off would entail that there had been some form of manipulation. Although the density does increase, as Figure 6 shows, this does not represent a substantial and sudden jump. At the same time, the fact that the PMT cut-off at country level was not the sole assignment mechanism implies that a manipulation of the PMT would not have been directly associated with receiving the transfer. For these reasons we believe that a manipulation of the PMT score is not a concern in our estimation of impact with the FRD.

[23] McCrary, J. (2008) Manipulation of the running variable in the regression discontinuity design: A density test. Journal of econometrics, 142(2), pp.698-714.

Assumption 3: *There must be a discontinuity in the probability of being treated by the HSNP around the eligibility threshold.* This assumption may be interpreted as requiring that there should be a 'jump' in the probability of treatment at the eligibility threshold. This discontinuity in the probability of being assigned to the HSNP around the eligibility cut-off is illustrated in Figure 5. As explained in section 2.2.2 above, since the PMT cut-off does not perfectly predict which households were assigned to receive the HSNP, our RD model is implemented as a FRD.

Assumption 4: *Both observable and unobservable characteristics must be a continuous function of the assignment score at the eligibility threshold.* In practice, this assumption requires that at baseline there are no systematic differences in either observable or unobservable characteristics between households on either side of the eligibility threshold. If this assumption is violated, we could not be sure whether any final differences in outcomes can be attributed to the HSNP or are pre-existing differences between the two groups.

To test this assumption, we use MIS data to compare characteristics between households above and below the eligibility cut-off. The results are presented in Annex B, section B.1, and are supportive of this assumption being met. It is not possible to test whether there are any differences in unobserved characteristics; however, the observed similarity in terms of observables at least raises confidence that the parallel assumption for unobserved characteristics is also met.

The tests for discontinuities across the cut-off score also serve as guidance for the choice of covariates that are included in the RD model. Covariates where we do observe significant differences between the two treatment groups are included in the RD model.[24] to control for residual heterogeneity between the treatment and control groups.

2.4 PSM approach

Given the potential for the RD model to imprecisely estimate true programme impact (as set out in section 2.2.3), we implemented a PSM model as a robustness check. PSM works by constructing a counterfactual group that resembles the treatment group as closely as possible in the absence of the HSNP transfers, such that a comparison between them will isolate the impact of the transfers.

As described in section 2.2.4, the application of PSM in this setting is 'targeted' in the sense that we define the treatment group to be households that actually receive regular transfers from the HSNP, and construct the control group from households that do not receive such payments. This is an alternative approach to one based on eligibility for the transfers (or based around the cut-off as in the case of RD). We chose to specify the model in this way due to finding out that there are a number of eligible households that have not in fact received HSNP transfers. This disjunction between eligibility status and actual recipient status may serve to dilute the impact arising from a comparison of eligible versus ineligible households alone.

The objective of PSM is to deliver treatment and control groups that resemble the groups that might have been selected had the intervention been assigned at random (meaning that there are no systematic differences between them aside from exposure to the HSNP). This is done by constructing a 'propensity score' for every household that represents the likelihood of receiving routine transfers from the HSNP. Impact analysis is then performed by comparing the final outcomes of households in the treatment group with households in the control group that have similar propensity scores. When matching is performed one-to-one, this equates to comparing two households that had similar *a priori* likelihoods of receiving HSNP transfers based on their characteristics, but where only one of them actually did so. We performed a range of diagnostic tests to confirm that the two groups were well 'balanced' after matching in terms of their observable characteristics. The results of these tests are presented in Annex A, section A.2.

To construct our propensity scores we selected matching covariates based on their predictive power for exposure to the HSNP transfers and final outcomes of interest. The intuition behind this is that variables associated with both treatment assignment and final outcomes are those that are the classic source of selection bias, which the PSM approach is designed to mitigate by including them as covariates. This approach implies that a separate matching model needs to be specified for each results domain of interest. The choice of variables for the propensity score model is based on a combination of theory- and data-driven approaches. On the theoretical side, we selected variables for the model that were known to be associated with the chances of being assigned to the HSNP. Additional variables were then added into the model on the basis of a 'data-driven' algorithmic approach, in which all variables in the

[24] The covariates included are: whether a mosquito net is owned, whether a TV is owned, whether a fishing net is owned, the number of children under five, the number of over 60s, household size and the number of female household members.

data were tested for their suitability according to their predictive power for the outcome and treatment status. Propensity scores were built using the MIS data, since baseline data are not available for this evaluation, and the integrity of the model relies on the ability to select variables that could themselves have been influenced by the HSNP.

2.4.1 Key assumptions: Common support and conditional independence

There are two key assumptions that need to hold for PSM to be a valid approach to estimating treatment effects: the common support assumption and the conditional independence assumption.

The common support assumption states that the estimated or predicted probabilities for all individuals of belonging to the treatment or control group must lie between zero and one, i.e. individuals in both groups must have a positive non-zero probability of belonging to either the treatment or control group and the distribution of those probabilities across the two groups must be such that comparable individuals across the groups can be found.

The conditional independence assumption posits that, once observable characteristics have been accounted for, the outcome measure is not related to the treatment status anymore, other than via the effect of the programme. In essence, this assumption states that, once we control for observable characteristics appropriately, treatment status can be treated as if it was assigned randomly. If treatment assignment is non-random, the concern is that control and treatment groups are not comparable. For example, it could be that individuals with a certain characteristic that also affects the outcome measure are more likely to select into treatment. Differences in the outcome measure between treatment and control groups would then not only be due to the treatment effect but also to the systematic difference in this characteristic. As described above, PSM deals with this problem by comparing outcome measures across treatment and control groups only for individuals that are similar, i.e. by controlling for the important characteristics that are related to both treatment status and the outcome measure. The conditional independence assumption simply states that all important characteristics have been taken care of. This means that any bias that arises due to participation in the programme has been dealt with. Note that this includes biases that arise due to unobservable factors – PSM cannot control for these and the assumption is that once observable characteristics have been dealt with no unobservable bias remains.

The validity of any PSM approach crucially depends on how well the approach reduces any imbalance between treatment and control groups. Under conditional independence – i.e. independence of the treatment assignment from outcome measures when controlling for covariates – the propensity score is a valid balancing score. Conditioning on this score appropriately means that bias will be removed between control and treatment groups. Hence, treatment and control groups will be balanced, i.e. they will have similar covariate distributions. Resultantly, this means that, across a variety of different characteristics, the treatment and control groups will be similar to each other.

However, if after conditioning on the propensity score the treatment groups remain unbalanced, then, again assuming that conditional independence holds, the estimation of the propensity score might not have been specified correctly. Similarly, if after matching the imbalance between samples persists, then the way in which we conditioned on the propensity score might not have been appropriate. **This means that a crucial component of any PSM approach is to assess how balanced the treatment and control groups are along key covariate dimensions, after matching**.

3. Data

3.1 Data sources for the quantitative IE

The quantitative household IE relies on two sources of data: the HSNP MIS and a household survey that we conducted.

The purpose of collecting new data for this evaluation is to gather richer information than was already available through the MIS data, such as on key outcome areas like poverty and consumption, and to enable an estimate of the local economy effects of the HSNP.

The household survey consists of three instruments:
- Household questionnaire;
- Business questionnaire; and
- Livestock trader questionnaire.

The household survey instrument which forms the basis for the household quantitative IE is shown in Annex D. The business questionnaire and livestock trader questionnaire are used for the LEWIE analysis (not discussed in this report).

Table 5 Data sources used for the quantitative IE

Data source	Description of the data	Use for analysis
HSNP MIS data	The MIS data is a census of all1 households in the four HSNP counties. It contains the information that was gathered in respect of these households during the registration for the HSNP programme, as well as their assignment to the HSNP CTs, and information about all payments received by all households since the start of Phase 2. It contains 383,235 households.[25]	To define the sample frame for the new household survey. As a source of covariates for the impact estimation. To conduct initial diagnostic tests to assess the feasibility of the RD approach. To determine the HSNP beneficiary status of households and record payments received under the programme (for use in conducting disaggregation analysis).
Quantitative household survey	A survey of 5,980 from across the four HSNP counties, covering modules on basic household information, livestock, assets, land, food and non-food consumption, transfers, food security, subjective poverty, saving and borrowing, job, business and livestock trading.	The household survey data is the main data source used for the impact analysis conducted in this report. The business and livestock questionnaires are standalone modules that provide additional data for the LEWIE model.[26]

Note: While the registration exercise was intended to comprise a census of every single household in the four HSNP counties, it is acknowledged that some households were likely missed, implying that it is not in fact a complete record of the whole population.[27]

3.2 Fieldwork

Data collection for the quantitative household survey started simultaneously across the four counties of Mandera, Marsabit, Turkana and Wajir and was carried out between 13 February and 29 June 2016. The fieldwork was conducted in 187 sub-locations across the four counties: 44 in Mandera, 46 in Wajir, 48 in Marsabit, and 49 in Turkana.

3.2.1 Fieldwork protocols

Fieldwork was undertaken by four field teams composed of between five and seven people each, including the team leader. The size of each field team was determined by the number of interviews to be conducted in each county and the language requirements. Four county team leaders from our survey partner Research Guide Africa's (RGA) headquarters were responsible for supervising ongoing fieldwork, while a fieldwork manager was in charge of managing the overall activities.

A key challenge facing fieldwork teams for this survey was in the identification of sampled households. Due to the fact that initial registration data used to draw the sample had been first collected in 2012, together with the pastoral nature of many of the households and communities in our sample, it was relatively common to find that households had relocated since the MIS data were collected. Our fieldwork teams sought to track households that had relocated to within reasonable limits, and if the household had moved away permanently or was not known in the community then the team would replace them with a random replacement from lists provided. The team used tracking forms with information about each household in the sample (drawn from the MIS data) to help them identify the households, and worked with local guides, elders and the chief in each community to help locate them. Data collection was done using electronic tablets.

3.2.2 Fieldwork ethical standards

We sought to maintain the highest possible ethical standards throughout this evaluation. Regarding the implementation of the household survey, the principles that we followed included the following:

- **Seeking the informed consent of all participants in data collection**. In practice, this entailed providing potential survey respondents with information about the content of the study and how their information would be used, as well as seeking to make them feel comfortable and empowered to refuse to participate or not answer any questions if they did not want to. •
- **The importance of seeking informed consent was emphasised during enumerator training**.
- **Preserving the anonymity of research participants.** This means ensuring that participants would not have their personal information shared, or be at risk of being individually identified as a result of their participation in the survey. During fieldwork we made every effort to ensure that interviews were always conducted in a quiet and private location. During data analysis and the writing up of results, we ensured that households' identifying information was not shared with anyone beyond the small analysis team, and that no individuals could be identified in any reports written using the data collected from this survey.
- **Ensuring the safety of research participants and respecting cultural sensitivities throughout our interactions with participants**.
- **Protecting the safety of the local researchers who conducted data collection**. The measures that we took to protect local researchers during this assignment included maintaining close communication between all teams and OPM during the data collection, to allow any emerging concerns to be communicated, adhering to strict security protocols, and ensuring that the teams obtained all relevant permissions and authorisations to conduct data collection in each location. Sub-locations with known security issues were removed from our sample frame so that no data collection would be conducted there, and we reserved the option not to visit any other sub-location should security issues arise during the data-collection period.

3.2.3 Quality assurance (QA)

We established a rigorous QA process for the HSNP survey, to provide ongoing support to field teams during their assignment and protect the quality of the data.

The first element of the QA approach was careful training and piloting of the survey before implementation. This was essential to ensure that the questionnaires were well designed, and that fieldwork teams were thoroughly prepared to undertake the assignment. Training was conducted between 25 January and 6 February 2016, and a pilot was conducted before the main fieldwork from 9 to 12 February. We had also conducted a pre-test of all survey instruments and the tracking protocol between 19 and 26 October 2015.

The second crucial element of the QA approach was to develop a fieldwork model that emphasised

[25] September 2016 batch of the HSNP MIS.

[26] The associated sampling approaches for this data collection are discussed in the LEWIE report. See Taylor, J.E., Thome, K. and Filipski, M. (2016) Hunger Safety Net Programme Evaluation of HSNP Phase 2 Local Economy-Wide Impact Evaluation Report.

[27] See Fitzgibbon, C. (2014) HSNP Phase II Registration and Targeting Lessons Learned and Recommendations

close and regular communication between fieldwork teams, and between RGA field staff and OPM. OPM also accompanied RGA fieldwork staff for the initial roll-out of the survey, to support resolution of early challenges faced in implementation of the survey. This communication allowed teams to raise any issues they were facing and seek support early.

In terms of the integrity of the data itself, there were two safeguards in place. The first was a series of basic consistency and range checks that were built into the survey instrument. These checks meant that interviewers would immediately be notified (during the interview) if data that they had entered fell outside an acceptable range or were inconsistent with a previous answer. Second, OPM and RGA teams were able to monitor data on an ongoing basis throughout the fieldwork to identify and respond quickly to any issues as they arose. The ability to closely track quantitative data quality during its collection is an opportunity provided by electronic data collection that is not generally possible with paper-based surveys, where there is a lag in receiving data due to the need to enter them first. We set up a systematic set of cleaning checks that each batch of new data was subject to, to check for consistency errors and high rates of anomalous responses. We then fed back immediately to teams if any concerns became apparent.

3.3 Sampling for the quantitative household survey

The following section describes the sampling for the quantitative household survey.

We conducted a two-stage sampling approach, for which the sample frame was defined by sub-locations and households in the HSNP MIS data. In the first stage, sub-locations were selected using the PPS method. This method implies selecting larger sub-locations, as defined by the household population, with a higher probability. A number of additional sub-locations were sampled with certainty for the LEWIE analysis, given the need to capture trading hubs and major urban areas. The LEWIE-specific sampling is illustrated in more detail in the LEWIE report. In the second stage, a fixed number of households were selected within each sub-location. The selection of a fixed number of households in the second stage in theory delivers a sample that is self-weighted (compensating for the oversampling of larger sub-locations in the first PPS stage). In practice, analysis weights are still required also to account for non-response, as outlined further below.

3.3.1 Sub-location-level sampling

Our power calculations, illustrated in the inception report, recommended the selection of around 200 sub-locations from across the four HSNP counties[28]. Before doing so, we dropped sub-locations from the sample frame of sub-locations in the HSNP MIS that did not have sufficient households in them to make up our sample. We also sampled with certainty 6 sub-locations per county (that is, 24 in total), which were county capitals and main trading gateways, as these commercial hubs were important to include in the sample for the LEWIE analysis[29].

For the remaining sub-locations in our sample frame, we implemented the PPS process. This starts by first generating a list of all sub-locations in the sample frame. In our case this list was sorted into groups for each of the four counties, which amounts to implicit stratification by county. We then calculate a sampling step based on the cumulative sum of population sizes and the number of sub-locations to be drawn. The sampling step is used to select sub-locations from the list, beginning from a random start.

Due to variation in the population sizes of some sub-locations, the PPS procedure in this instance leads to some sub-locations being selected more than once (which can happen if the population size of a particular sub-location is greater than the sampling step). There are a number of possible options for dealing with this situation. One is to prevent multiple selection of sub-locations by removing sub-locations with large population sizes from the sampling frame, as they are sampled 'with certainty', and then re-calculating a new sampling step for the remainder of the sub-locations. This procedure can be repeated until there are no longer any sub-locations sampled 'with certainty' to be removed from the sampling frame, at which point PPS can be applied as normal. This approach ensures that 200 sub-locations are selected, but involves redistributing the selection probabilities for sub-locations, which has implications for the application of weights and sampling errors.

The approach that we chose was to use a straightforward application of PPS in a single stage, and if a sub-location was selected more than once then the number of households selected from that sub-location would be increased (doubled, if the sub-location was picked twice, and tripled if selected three times). In our final sample, 11 sub-locations were selected twice while one sub-location was selected three times, leading to a total of 187 sub-locations selected for our sample (including the 24 that were sampled 'with certainty').

[28] OPM (2015) Hunger Safety Net Programme Evaluation of HSNP Phase 2 Inception Report

[29] We dropped a total of 45 sub-locations from the sample frame that had fewer than 14 households with PMT scores above or below the eligibility cut-off. After also removing from the sample frame 24 sub-locations which were sampled 'with certainty', this led to a sample frame size of 433 sub-locations from which to select the remainder of the sub-location sample.

3.3.2 Household-level sampling and sample groups

After selecting sub-locations in the first stage, we then select a fixed number of households from each sub-location in the second stage.

In this analysis, we refer to different groups and sub-groups of households according to their HSNP beneficiary status. These groups are described in Table 6. For the purposes of sampling for the household survey, we also distinguish between different groups of households according to our analysis requirements. In particular, a different sub-sample of our data is used for the household IE analysis (RD and PSM) and the LEWIE analysis. These analysis groups are described in Table 7.

Table 6 Definitions of sample groups for analysis

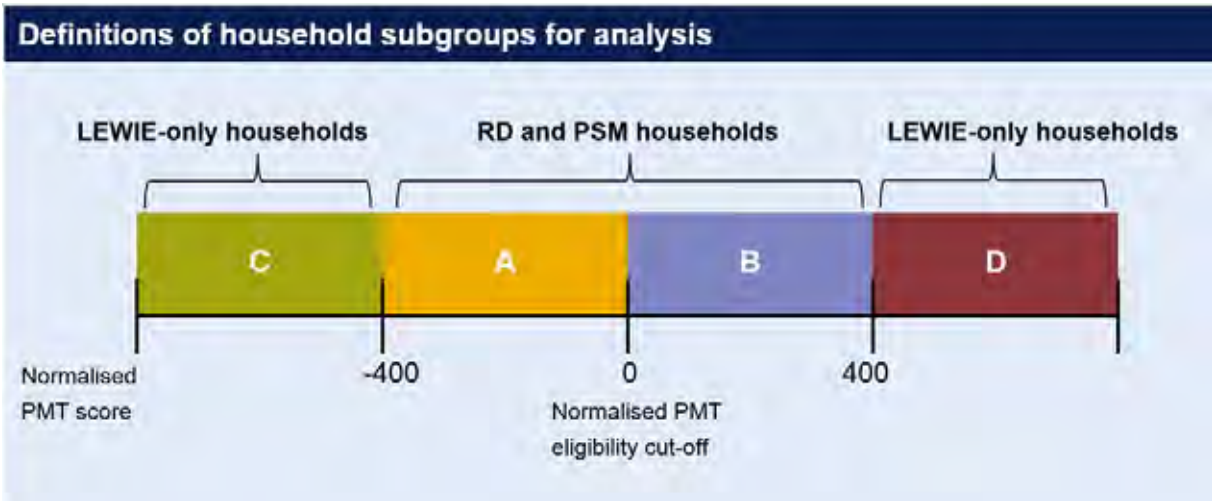
Groups	Description	Analysis type
A	Defines households within the PMT bandwidth for the RD analysis, and below the PMT eligibility cut-off. These households are used in both the RD/PSM and LEWIE analyses.	RD and PSM, and LEWIE
B	Defines households within the PMT bandwidth for the RD analysis, and above the PMT eligibility cut-off. These households are used in both the RD/PSM and LEWIE analyses.	RD and PSM, and LEWIE
C	Defines households outside the PMT bandwidth for the RD analysis, and below the PMT eligibility cut-off. These households are used in the LEWIE analysis only.	LEWIE only
D	Defines households outside the PMT bandwidth for the RD analysis, and above the PMT eligibility cut-off. These households are used in the LEWIE analysis only.	LEWIE only

Table 7 Definitions of sample sub-groups of households by beneficiary status

Sample sub-groups	Description
Nominal routine beneficiaries	These are all households that are assigned to receive regular HSNP payments, regardless of whether they have ever actually received any payments or not. This group may also be referred to as 'nominal' beneficiaries.
Actual routine beneficiaries	As previously stated in section 2.2.2, not all HSNP beneficiaries have actually received regular payments for different reasons. The 'actual' routine beneficiaries are households that have received at least one regular HSNP payment up to February 2016, according to the HSNP payroll data.
Nominal emergency beneficiaries	This group defines all households that are not assigned to receive routine payments. Some of these households have received emergency payments through the HSNP, and some have not.
Actual emergency beneficiaries	These are the observations who have actually received an emergency HSNP payment.[30]

[30] See section 1.1.2 for more detail about the emergency payment.

Figure 7 Definitions of household subgroups for analysis



In each sub-location we sampled 32 households, as follows:

- 12 households below the cut-off but within the bandwidth (Group A);
- 12 households above the cut-off but within the bandwidth (Group B);
- Four households below the bandwidth (Group C);[31] and
- Four households above the bandwidth (Group D).

A total of 64 households were sampled in the 11 sub-locations that were sampled twice in the first stage, and 96 households in the sub-location that was sampled three times.

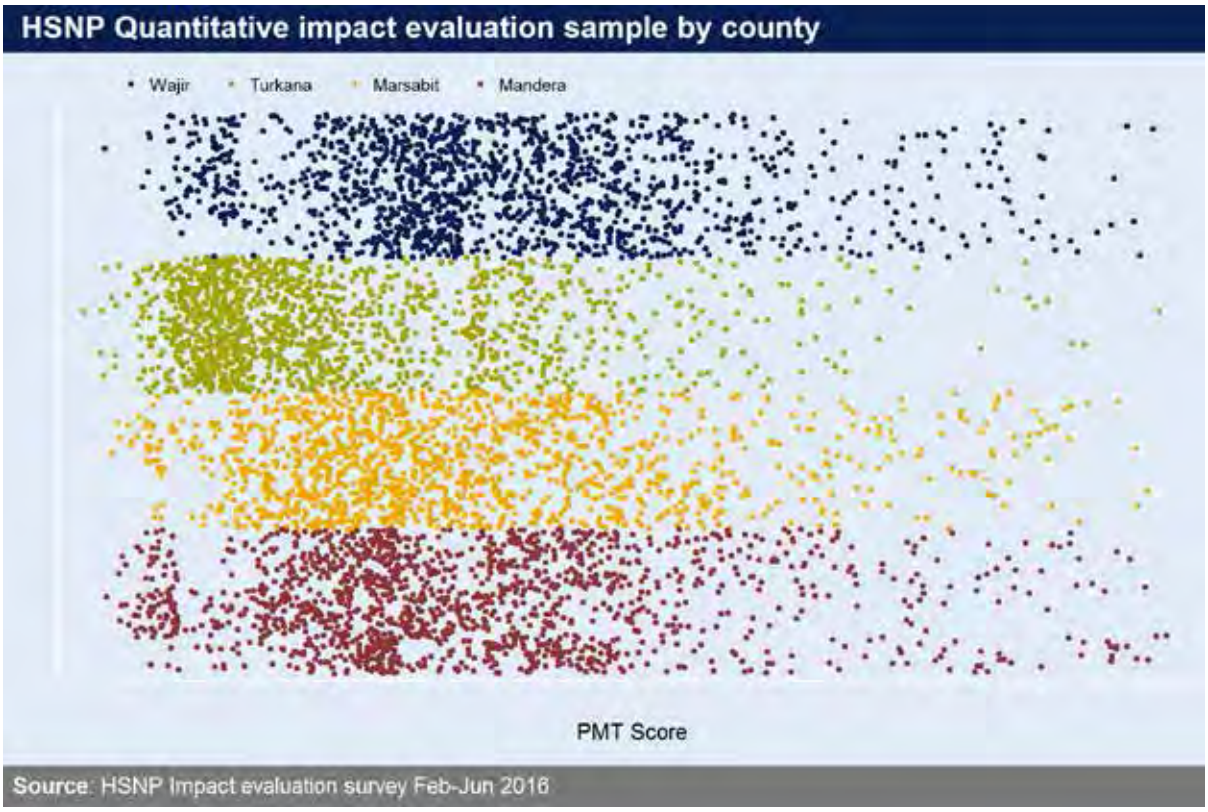
In a few sub-locations there were insufficient households to select the desired LEWIE sample, resulting in fewer than 32 households sampled. Overall, we sampled 6,384 households, and of these 5,980 were successfully interviewed. The overall loss of sample is 6.8% (404 households not interviewed). This is below the 10% level that we estimated as a critical cut-off for an acceptable loss. Moreover, the RD sample size, which was determined based on power calculation and is most relevant, is mostly preserved with the loss for the specific RD sample of just 6%. Table 8 Sample sizes for the household surveyTable 8 below shows the sample sizes for this survey, and Figure 8 illustrates the distribution of the sample by county and PMT scores.

Table 8 Sample sizes for the household survey

Group	Description	Intended sample size	Achieved sample size
A	Households within the PMT bandwidth defined for the RD analysis, and below the PMT eligibility cut-off	2384	2263
B	Households within the PMT bandwidth for the RD analysis, and above the PMT eligibility cut-off	2400	2248
C	Households outside the PMT bandwidth for the RD analysis, and below the PMT eligibility cut-off	278	249
D	Households outside the PMT bandwidth for the RD analysis, and above the PMT eligibility cut-off	1322	1220
Total		6384	5980

[31] In some instances there were insufficient observations below the bandwidth to make up the intended sample. When this occurred, the shortage was made up by the LEWIE above the bandwidth observations. For instance, if there were only two observations below the bandwidth in a sub-location, we would sample six from above the bandwidth. In this way we always aimed to sample eight LEWIE observations.

Figure 8 HSNP quantitative IE sample, by county



3.3.3 Analysis weights

Analysis weights are constructed to ensure that the analysis accounts for any household non-response rate at the sub-location level. They are calculated separately for the RD and LEWIE sub-samples.[32]

The total number of households sampled across treatment and control groups in each sub-location is 24 for the quant IE sample, if no replacements were needed in the sub-location. If some replacement households were selected (due to being unable to identify all initially-sampled households), the number of sampled households in that sub-location increased to a maximum of 48. The number of households approached is the number of households that were found in the process of trying to reach the 24 households originally sampled in each sub-location (including any who did not consent to interview). If replacements were needed in a sub-location, the number of households approached is the number that were found in the process of trying to reach the originally sampled households as well as the added replacements. The final number of households in our sample corresponds to the sum of the total number of households successfully interviewed in each sub-location forming part of our sample.

Weights are calculated by multiplying the ratio of households originally sampled, or households originally sampled plus any additionally sampled replacements, over the total number of households in the sub-location, multiplied by the ratio of the number of households that were successfully interviewed, over the total number of households approached, in the sub-location. This sample-weighted response rate is then inverted to create the response weights. This procedure provides us with a household non-response rate at the sub-location level whilst also adjusting for the replacement protocol adopted as part of our sampling strategy.

Note that we also normalise these weights so that their sum is equal to the number of households in our sample, which is done for the purposes of statistical inference. Therefore, the primary sampling unit is the sampled sub-locations, while the stratum is the county.

[32] We also calculated specialist weights for the poverty analysis.

4. Results

This section of the report presents the results of the quantitative analysis of the household survey data.

We first describe the coverage of the programme, and then present the descriptive and impact results for the following key outcome areas in turn:

- Consumption and poverty;
- Food security;
- Productive asset ownership, purchase and sale;
- Financial inclusion; and
- Land.

In section 4.2 we also describe how to read the tables in this report.

4.1 Programme coverage

Before outlining the results of the analysis, we first present some basic information about programme coverage across the sample.

Table 9 below describes the characteristics of our sample, in terms of the groups defined above and the proportion of households within those groups that have actually received transfers through the HSNP.

Table 9 Programme coverage (routine and emergency), by group and sub-group

	Sample group					
	All house-holds	All nominal routine HSNP beneficiaries	Group A	Group B	Group C	Group D
Group size as % of total sample	100	37	38	38	4	20
% group that are nominal routine beneficiaries (%)	37	100	71	17	86	4
% group that are actual routine CT beneficiaries (payroll)	31	84	60	14	67	3
% group that are actual routine CT beneficiaries (self-reported)	33	81	59	16`	70	6
% group that are actual emergency beneficiaries (payroll)	49	0	23	64	10	78

The first row of the table shows the percentage of the total household sample divided into different groups. This shows that just over one-third of the households (37%) in our sample are nominal routine beneficiaries. Also, 76% of our sample falls within Group A and Group B, which is the sample used for the RD and PSM analysis.

The remaining rows show the proportion of households receiving HSNP transfers within each of these groups. There are a number of observations to make from this table:

The proportion of routine beneficiaries (both nominal and actual) is higher in sample groups with lower PMT scores.
This is in line with expectations, given the use of the PMT scores to assign households into the routine beneficiary group. We find Group C, which contains households with the lowest PMT scores, has the highest proportion of households actually receiving routine CTs (67%). Similarly, Group D, which contains households with the highest PMT scores, has the lowest proportion of households actually receiving routine CTs (3%).

A considerable proportion of nominal routine beneficiaries have not actually received any transfers
Only 84% of nominal routine beneficiaries in our sample have actually received a payment.[33]
The treatment group for the RD design is all households in Group A (that is, those with PMT scores below the cut-off and within the defined bandwidth). Among these households, only 60% of households are found to have actually received a routine HSNP CT, according to the programme's payroll data.

A considerable proportion of households with PMT scores above the eligibility cut-off have received payments through the HSNP.
The table shows that fully 64% of the RD control group (Group B) have received at least one emergency payment, while 14% are in receipt of routine HSNP CTs.

Altogether, the table underlines how the sample is 'fuzzier' around the bandwidth than was first supposed. We find that there are fewer households in the RD treatment group (Group A) who have actually received routine CTs through the HSNP than there are nominal routine beneficiaries, and a significant proportion of households in the control group that are receiving transfers (both emergency and routine).

4.2 How quantitative results are presented in this report

In this subsection we describe how to read the results in this report. For each results area, we present both descriptive statistics and the impact estimates arising from the RD and PSM analysis.

Table 10 below is an example of how the descriptive results are presented. Each row relates to an outcome indicator, and the columns show the means for a set of groups and sub-groups. The groups and sub-groups that are compared in the table, moving from left to right, are:

1. **Group A and Group B:** As above, these are households with PMT scores below the cut-off (Group A) and households with PMT scores above the cut-off (Group B).

2. **Actual routine beneficiaries and households not actually receiving routine HSNP CTs:** Compared separately within Group A and Group B

3. **Actual emergency beneficiaries and households that have never received an emergency payment:**[34] Compared within Group B only

For each of these pairs, we show whether there is a statistically significant difference between their mean outcomes using asterisks in the right-hand column of each group. Significance levels are given as:

* = p-value < 0.1 (significant at the 10% level),
** = p-value < 0.05 (significant at the 5% level)
*** = p-value < 0.01 (significant at the 1% level).

In this report, where we speak of a *significant* result, this implies a result that is statistically significant at the 5% level or above. Where we speak of a *weakly significant* result, this means that the finding is only significant at the 10% level.

RESULTS

[33] Up until February 2016, i.e. the start of our fieldwork.
[34] Actual emergency beneficiaries are defined as households that had received at least one emergency payment through the HSNP up to February 2016 (when the quantitative fieldwork started).

Table 10 Dummy descriptive results table

	Overall		Group A		Group B			
	Group A	Group B	No routine HSNP	Actual routine HSNP	No routine HSNP	Actual routine HSNP	No emergency payment	Actual emergency payment
Productive asset ownership	93.1	91.4*	93.4	92.8	90.8	95.0**	92.6	90.7

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

We then present the RD impact estimation from our preferred model and, where applicable, the PSM impact estimation.[35] Once again the asterisks represent statistical significance.[36]

Table 11 Dummy impact estimates table

	RD	PSM
Productive asset ownership	0.7	1.4*

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

4.3 Consumption and poverty

Key findings

Overall, the results for the consumption and poverty domain are mixed.
Descriptively, we find little evidence of differences between households that received HSNP transfers, compared with those who did not. The RD results also do not return an impact for any of the key indicators within this domain. However, the estimated coefficients for the PSM model are almost all in the expected direction (that is, showing an improvement among households receiving routine CTs), and are significantly so for a number of indicators. This includes monthly education expenditure, monthly food expenditure and poverty indicators.
Descriptively, there are some differences between households in Group A and Group B, suggesting that those with lower PMT scores tend to have lower consumption and food expenditure, and to experience higher poverty. This is in line with expectations.

[35] As stated above, our preferred RD model is one that includes covariates from the MIS data and triangular kernel weights. PSM estimation was carried out on a subset of the indicators considered to be most important for this analysis, and where the RD results were inconclusive.
[36] These comparisons are between column 1 and 2, 3 and 4, 5 and 6, and 7 and 8.

Table 12 Descriptive results for consumption and poverty impact indicators

	Overall		Group A		Group B			
	Group A	Group B	No routine HSNP	Actual routine HSNP	No routine HSNP	Actual routine HSNP	No emergency payment	Actual emergency payment
Monthly total expenditure per adult equivalent, adjusted for regional price differences (KES)	2514	2774***	2447	2554	2760	2867	2763	2781
Monthly food expenditure per adult equivalent, adjusted for regional price differences (KES)	1879	2085***	1815	1918*	2077	2137	2092	2081
Per capita month-ly health expenditure (KES)	45	42	48	43	41	48	44	41
Per child monthly education expenditure (KES)	162	148	130	181**	140	203*	138	154
Food share of monthly consumption expenditure	75.4	76	75.4	75.4	76.1	75.2	76.1	75.9
Poverty rate[2]	0.5	0.4***	0.5	0.5	0.4	0.4	0.4	0.4
Food poverty rate[3]	0.53	0.47***	0.6	0.5	0.5	0.4	0.5	0.5
Poverty gap[4]	0.13	0.11***	0.15	.12**	0.1	0.1	0.1	0.1
Poverty severity[5]	0.063	0.052**	0.08	0.06***	0.1	0.0	0.1	0.1

Notes: (1) Significance levels: *=p<0.1, **=p<0.05, ***=p<0.001. (2) The proportion of households whose monthly consumption expenditure per adult equivalent, adjusted for regional price differences, is lower than a poverty line set at KES 2,317.6. (3) The proportion of households whose monthly food expenditure per adult equivalent, adjusted for regional price differences, is lower than a poverty line set at KES 1,779.3. (4) The average distance between households monthly consumption expenditure, adjusted for regional price differences, and poverty line set at KES 2,317.6. (5) The average squared distance between households monthly consumption expenditure, adjusted for regional price differences, and poverty line set at KES 2,317.6.

4.3.1 Descriptive results

Table 12 presents the descriptive results for indicators in the consumption and poverty domain, which assess different dimensions of household poverty. This domain looks at monthly household expenditure across different categories, and poverty severity – as measured by consumption expenditure relative to a defined poverty line, and food poverty.

This table shows that Group B households have significantly higher monthly expenditure (both on food and overall), and significantly lower rates of poverty as measured by comparing household consumption expenditure and food consumption expenditure with a poverty line. Group B households spend an average of KES 2,774 per month, of which KES 2,085 is on food (over two-thirds), while Group A households spend KES 2,514 altogether and KES 1,879 on food per month. The differences between groups A and B are in line with expectations, since households in Group B have higher PMT scores than those in Group A.

The results show few descriptive differences between households, depending on whether they are actually receiving any HSNP transfers. There are no differences in average monthly expenditure between these two groups (apart from one weakly significant difference in average monthly food expenditure for households receiving routine transfers in Group A). However, we do find that households that actually receive HSNP transfers tend to have higher monthly education expenditure than those that do not, as well as a lower poverty severity (although higher poverty gap). Descriptively, we also find that there is lower consumption expenditure and higher estimated poverty in Turkana relative to the other counties (the results from this disaggregation are not presented).

4.3.2 Impact estimates

Turning to the impact estimates, presented in Table 13, we find that the RD results do not show an impact across any of the indicators in this domain. The estimated coefficients for average monthly total expenditure and monthly food expenditure are positive, but insignificant. However, the PSM results show an impact on monthly food expenditure, showing that households that have received a regular HSNP payment experience an increase in monthly per adult equivalent food expenditure of around KES 66. Similarly, households receiving HSNP CTs are shown to spend an average of KES 28.35 more on education-related expenditure per month, according to the PSM results.

The PSM results also return a modest impact on the poverty gap and poverty severity of one percentage point, which although small in magnitude is highly statistically significant.

The fact that the PSM returns positive impacts on food expenditure and poverty, while RD does not, is likely to be due to the lack of precision in the RD results, associated with large standard errors.

Table 13 RD and PSM results for consumption and poverty impact indicators

	RD	PSM
Average monthly total expenditure per adult equivalent adjusted for regional price differences (KES)	364.1	42.4
Monthly food expenditure per adult equivalent adjusted for regional price differences (KES)	148.5	66.5**
Per capita monthly health expenditure	21.5	-1
Per child monthly education expenditure	-23.0	28.5**
Food share of monthly consumption expenditure	-4.8	N/A
Poverty rate[2]	-0.0	-0.01
Food poverty rate[3]	0.0	-0.03*
Poverty gap[4]	-0.0	-0.01**
Poverty severity[5]	-0.0	-0.01***

Notes: (1) Significance levels: *=p<0.1, **=p<0.05, ***=p<0.001. (2) The proportion of households whose monthly consumption expenditure per adult equivalent, adjusted for regional price differences, is lower than a poverty line set at KES 2,317.6. (3) The proportion of households whose monthly food expenditure per adult equivalent, adjusted for regional price differences, is lower than a poverty line set at KES 1,779.3. (4) The average distance between households monthly consumption expenditure, adjusted for regional price differences, and poverty line set at KES 2,317.6. (5) The average squared distance between households monthly consumption expenditure, adjusted for regional price differences, and poverty line set at KES 2,317.6.

4.4 Food security

Key findings

The findings from the PSM model show a significant impact of the HSNP on food security, as measured by the HHS. These scores measure the ability of households to access sufficient food over the past 30 days. There is no corresponding impact found on FCS, which measures dietary diversity in the seven days preceding the survey. One possible explanation for this lack of impact is that there may be a short-term impact of the HSNP on dietary diversity, in the first few days after payments are disbursed, which is not detected if the timing of the survey occurs outside this period.
The RD results return some unexpected findings within this domain. However, closer inspection reveals an unusual distribution of these scores around the eligibility threshold, which can explain the inconsistency. Descriptively, we find that food insecurity remains prevalent across our sample. This is especially the case in Turkana, which experiences worse food insecurity outcomes than the other counties.

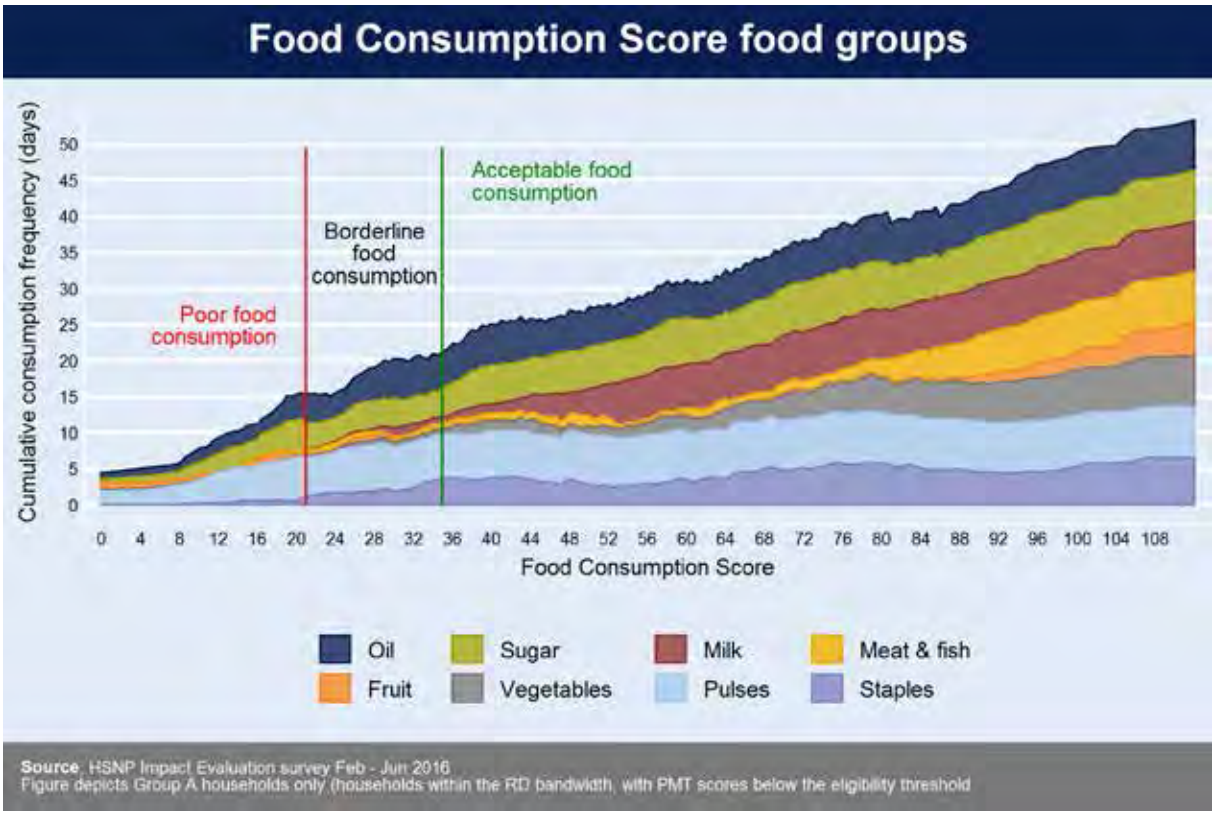
The indicators in this domain measure household food insecurity. The HHS is a measure of food security that assesses the ability of the household to access sufficient food. The score ranges from 0 to 6, and can be used to categorise households into three groups: 'little to no household hunger', 'moderate household hunger', and 'severe household hunger', with lower scores indicating less household hunger. The FCS is a measure of household dietary diversity, which captures the ability of the household to access a diverse range of foods in the seven days before the survey. FCS can be categorised as follows: a score of 21 or less represents poor food consumption, a score between 22 and 35 equates to borderline food consumption, while a score of 36 or more is considered as acceptable food consumption. The final indicator in this domain measures whether households sometimes or often resorted to going entire days without eating during the worst recent period of food shortage experienced.

4.4.1 Descriptive results

Descriptively, the results point to a mixed picture in terms of the prevalence of food insecurity. Average FCS scores are around 57 for households in Group A and B, which falls well within the 'acceptable' range, and average HHS scores are around 1.7, which is on the borderline between being classed as 'little to no household hunger' (a score of up to 1) and 'moderate household hunger (a score of 2). However, the results also show that around one-third of households are found to have experienced food insecurity in the worst recent food shortage period.

Figure 9 illustrates the diversity of food groups eaten by households with different FCS scores, and how the diversity of household diets increases as FCS scores increase. The figure shows that households with low dietary diversity consume mainly staple foods, with other groups such as oil, milk, pulses, vegetables and sugar being introduced to diets as overall diversity increases. Fruit and meat and fish are only consumed by households with the most diverse diets.

Figure 9 Food Consumption Score groups



There are no significant differences between Group A and Group B households across the FCS and HHS indicators, but some differences according to whether an HSNP payment was actually received. Within Group B, we find that those receiving the HSNP routine transfers have a significantly lower HHS, and a significantly lower proportion have experienced food insecurity in the worst recent food shortage period. Households in Group B also have a significantly higher FCS if they have received an emergency payment.

The descriptive findings indicate that households in Turkana are relatively disadvantaged in terms of food insecurity compared to households in other counties. The prevalence of food insecurity across counties as measured by the HHS is depicted in Figure 10 below, showing that Turkana has a much larger proportion of households experiencing moderate hunger and very few experiencing little to no hunger, compared with other counties. The same is true of the FCS, where we again find that average scores are significantly lower in Turkana in comparison to the others. This is shown in Figure 11.

Figure 10 HHS categories by county

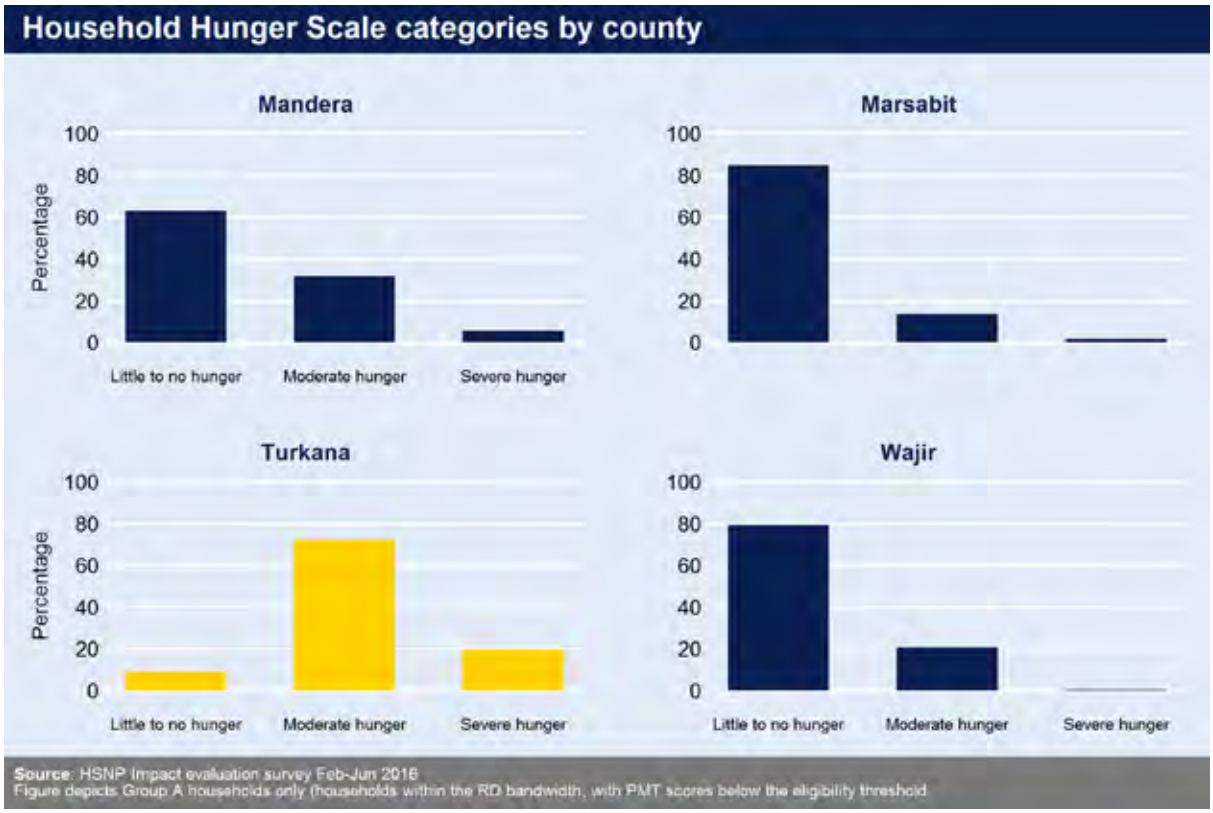
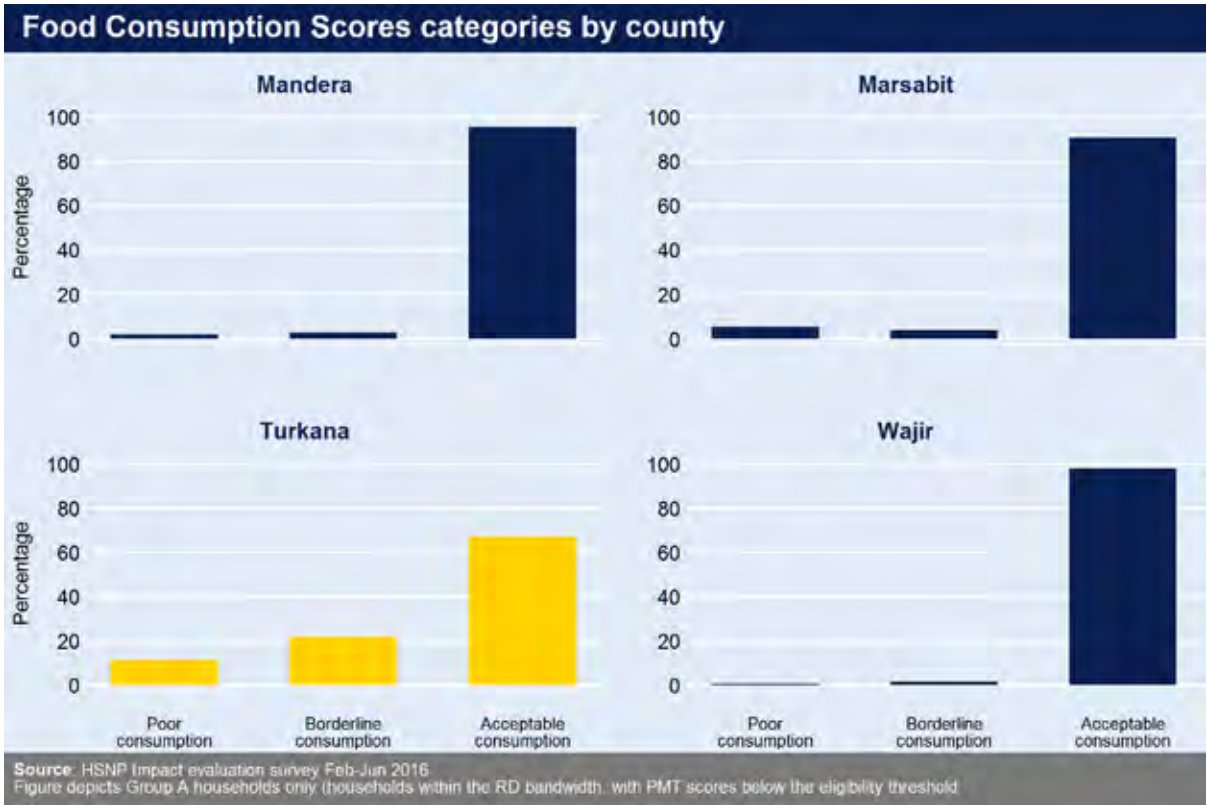


Figure 11 FCS categories by county



RESULTS

4.4.2 Impact estimates

The finding that households actually receiving routine HSNP transfers have a descriptively lower HHS appears to have a causal interpretation, when measured by the PSM model, which shows a significant reduction of 0.16. The RD model, however, returns a positive coefficient of 1.1 (suggesting a worsening of access to food, as measured by the HHS). Exploring this counterintuitive result further, we find that the magnitude of the coefficient decreases when uniform weights are used instead of triangular weights. This implies that this increase may be driven by the significantly lower HHS experienced by households that have received a regular payment in Group B, who are predominately distributed immediately to the right of the cut-off, as can be seen in Figure 35.

The RD model returns an unexpectedly positive and significant impact on the proportion of households found to be food insecure in the worst recent food insecurity period. This unusual result may be explained by examining the distribution of households receiving regular HSNP payments in Figure 34 and Figure 35. We find a significant difference according to whether households are receiving routine HSNP CTs, within Group B. Figure 12 below shows that the observations just to the right of the cut-off are performing significantly better, which is where most of the households that are receiving a regular payment are located. This is also exaggerated by the use of triangular weights in our preferred RD model, which gives these distorting observations near the cut-off greater weight. The magnitude of this impact decreases when uniform weights are used in the RD model, as can be seen in Annex B, section B.2.

Both the RD and the PSM models find an insignificant impact on the FCS.

Figure 12 RD results for whether a household was food insecure in the worst recent food shortage

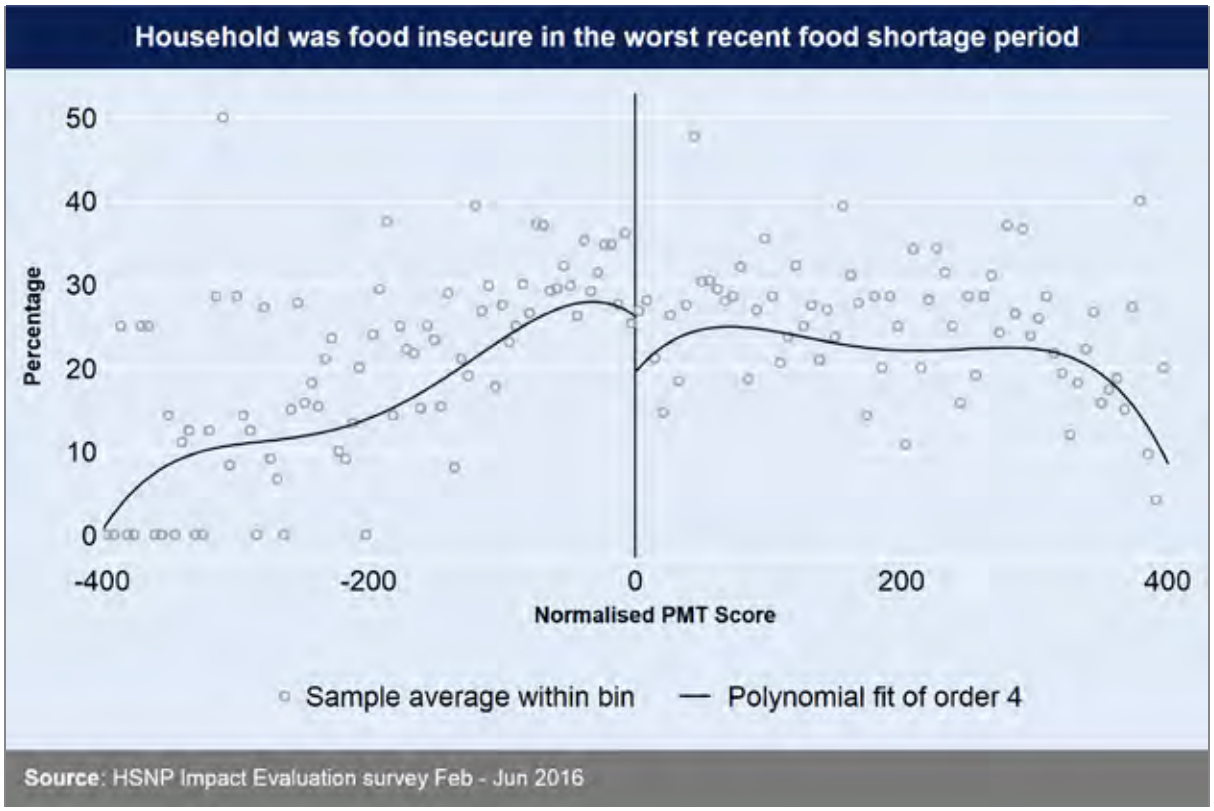


Table 14 Descriptive results for food security impact indicators

	Overall		Group A		Group B			
	Group A	Group B	No routine HSNP	Actual routine HSNP	No routine HSNP	Actual routine HSNP	No emergency payment	Actual emergency payment
Household Hunger Scale	1.7	1.7	1.8	1.7	1.8	1.3***	1.7	1.7
Proportion of households that were food insecure in the worst recent food shortage period[2]	33.4	32.4	36.6	31.4	34.1	21.2***	31.9	32.7
Food Consumption Score	57.9	57.2	56.6	58.6	57	58.6	55.3	58.2***

Notes: (1) Significance levels: *=p<0.1, **=p<0.05, ***=p<0.001. (2) Based on answers to the question '[during the period of worst food shortage], did your household skip entire days without eating?'

Table 15 RD and PSM results for food security impact indicators

	RD	PSM
Household Hunger Scale	1.1**	-0.2***
Proportion of households that were food insecure in the worst recent food shortage period	33.5**	N/A
Food consumption score	-2.2	0.9

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

4.5 Livestock

Key findings

Livestock ownership is very common in the HSNP counties. Around 80% of households report currently owning any livestock, and about half of households report having sold livestock in the previous year.

The RD estimates are non-significant for this domain. The PSM results show a positive and strongly significant impact of the HSNP on the ownership of livestock of around 4.5 percentage points. There is also an impact on the proportion of households reporting having purchased livestock in the past 12 months, of nearly 12 percentage points.

4.5.1 Descriptive results

Around 80% of households report that they currently own some form of livestock, with male-headed households found to have significantly higher rates of livestock ownership than female-headed households.

Around 20% of households report having purchased livestock in the past 12 months, while around 50% report having sold livestock. The higher incidence of livestock sales relative to purchases may be explained by the manner in which households manage their herds, by choosing to sell livestock while maintaining herd sizes primarily through breeding rather than purchase. We also find that there are differences in buying and sales behaviour between the four counties, with Wajir and Mandera experiencing lower levels of purchasing in comparison to Marsabit and Turkana.

There are some descriptive differences by group for livestock ownership, but these do not tell an entirely consistent story and may be spurious. For purchasing of livestock in the past 12 months, the results show considerable and highly significant differences depending on whether households have actually received a routine HSNP transfer, with a much larger proportion of those who received transfers reporting having purchased livestock. Within Group A, we also find a significantly lower proportion of households reporting having sold any livestock if they are actual HSNP routine beneficiaries.

4.5.2 Impact estimates

The impact estimates again present a mixed picture. The RD estimates on these indicators are non-significant, and while coefficients are positive for livestock ownership and sales they are negative for livestock purchasing. The RD impact may be being distorted by the higher levels of livestock ownership among those households that have received a regular payment, who are distributed to the right of the cut-off.

The PSM model, however, shows a positive and strongly significant impact of the HSNP on livestock ownership, of 4.5 percentage points, and an impact on livestock purchasing of nearly 12 percentage points.

Table 16 Descriptive results for livestock impact indicators

	Overall		Group A		Group B			
	Group A	Group B	No routine HSNP	Actual routine HSNP	No routine HSNP	Actual routine HSNP	No emergency payment	Actual emergency payment
Household owned any livestock in the last 12 months	80	78.4	81.4	79.1	77.6	83.5**	82.9	76.0***
Whether the household has purchased or bartered any livestock in the last 12 months	20.6	17.3***	10.8	26.5***	15.3	30.6***	20.3	15.7
Whether the household has sold any livestock in the last 12 months	50.1	47.5	56.6	46.1***	47.5	47.2	50.8	45.7

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

Table 17 RD and PSM results for livestock impact indicators

	RD	PSM
Household owned any livestock in the last 12 months	-13.4	4.5***
Whether the household has purchased or bartered any livestock in the last 12 months	2.5	11.8***
Whether the household has sold any livestock in the last 12 months	-1.5	-1.1

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

4.6 Productive assets

Key findings

Ownership of productive assets is extremely high across the sample.
There is small impact of the HSNP on productive asset ownership, from this high base, observed in the PSM model of 1.4 percentage points. The corresponding RD estimate is positive but not significant. The PSM model also finds an impact of seven percentage points on the purchasing of productive assets. This is not supported by the RD findings, but the unexpected RD results may again be explained by the behaviour of households just around the cut-off.
There is no evidence that the HSNP is reducing the sale of productive assets, although this is already extremely low across the sample.

4.6.1 Descriptive results

The rate of ownership of productive assets is very high across our sample, at over 90%. This is predominately being driven by high rates of ownership of axes and machetes. Around one-third of all households have purchased a productive asset in the past 12 months.

Within the Group B sample, households that actually receive routine HSNP CTs are found to be significantly more likely to own and to have purchased a productive asset than those who do not (although this is only weakly significant in the latter case). There are no significant differences for these indicators in the Group A sample.

The sale of productive assets is found to be extremely limited, with less than 1% of households reporting having done so in the last 12 months. Descriptively we see differences between households in Group B who have received a regular payment in comparison to households that have not. Households that have received a regular payment are less likely to sell productive assets, although the difference is very small.

4.6.2 Impact estimates

The RD finds an insignificant impact on the ownership of productive assets, although the coefficient is positive. However, there is a positive and statistically significant impact observed through the PSM model, of 1.4 percentage points.[37] The small magnitude of this impact is not surprising given that productive asset ownership is already so common across the majority of households.

The RD result for purchasing productive assets is significant, however, in the opposite direction to that expected, with a 24 percentage point decrease in purchasing productive assets among the treatment households. In comparison, the PSM finds a strongly significant increase in the purchasing of productive assets of seven percentage points. The apparent decrease found in the RD could be driven by the fact that the households that have received a regular payment in the 'above the cut-off' sample are performing much better and these households are distributed to the right of the cut-off, artificially driving up the performance of the control group and distorting any impact. We therefore believe that this result is spurious.

Both the RD and PSM results for the selling of productive assets are insignificant.

[37] Significant at the 10% level.

Table 18 Descriptive results for assets impact indicators

	Overall		Group A		Group B			
	Group A	Group B	No routine HSNP	Actual routine HSNP	No routine HSNP	Actual routine HSNP	No emergency payment	Actual emergency payment
% of households owning a productive asset	93.1	91.4*	93.4	92.8	90.8	95.0**	92.6	90.7
% of households purchasing a productive asset	32.4	33.1	30.5	33.6	31.9	41.4*	34.4	32.5
% of households selling productive assets	0.1	0.1	0.2	0.1	0.1	0.0*	0	.1*

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

Table 19 RD and PSM results for assets impact indicators

	RD	PSM
% of households owning a productive asset	0.7	1.4*
% of households purchasing a productive asset	-24.1**	7***
% of households selling productive assets	0.6	-0.2

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

4.7 Financial inclusion

Key findings

It is relatively uncommon for households to report having any cash savings, and there is no impact of the HSNP on savings behaviour. The rate of savings differs markedly across counties, however, with the highest proportion of households reporting saving in Mandera and almost no households saving in Wajir. There is a large and strongly significant impact of the HSNP, of 23.6 percentage points, on the proportion of households purchasing on credit. This is an expected finding that is in line with previous evidence. It reflects the fact that being in receipt of regular CTs makes households more creditworthy. There is no impact of the HSNP on the proportion of households that save or borrow money.

The indicators in this domain assess the proportion of households with any savings, how they save and whether they borrow or use credit. These indicators reflect the financial inclusion of households within the HSNP sample.

4.7.1 Descriptive results

Savings behaviour is not widespread, with only around 13% of households reporting having some cash savings. Descriptively there are no significant differences in savings behaviour between Group A and Group B. We do observe significant differences across the four counties, however, with saving being the highest in Mandera and the lowest in Wajir. In Wajir almost no households report having any savings. There are also significant differences in savings behaviour between households depending on whether they are actually receiving HSNP transfers, with households actually receiving routine transfers being significantly more likely to have any savings. This effect is present in both the Group A and Group B samples, although the difference in the Group A sample is only weakly significant.

Households that save do not tend do so via formal channels, with the majority keeping their savings at home. We find that only 0.7% and 1.2% of households in Group A and Group B respectively save using a formal bank account. There are also negligible rates of saving through the HSNP bank account.

Around 15% of households in Group A and just under 17% in Group B report having borrowed money in the last 12 months. Descriptively there are no significant differences between any of the sub-samples. Much more common is the use of credit to buy. We find that 70% and 72% of households in Group A and Group B respectively report having bought something on credit in the last three months.

4.7.2 Impact estimates

There is no impact of the programme on the number of households reporting some level of savings, or the proportion that save through a formal bank account. There is also no impact on borrowing behaviour in the past 12 months, according to the RD model.

However, the RD model does find a strongly significant impact of the HSNP payment on the use of credit, with a coefficient of 23.6 percentage points. Findings from the ongoing operational monitoring suggest this is due to the fact that traders are more willing to sell things on credit to households that are receiving regular transfers, since they consider them to be more creditworthy.

Table 20 Descriptive results for financial inclusion impact indicators[38]

	Overall		Group A		Group B			
	Group A	Group B	No routine HSNP	Actual routine HSNP	No routine HSNP	Actual routine HSNP	No emergency paywment	Actual emergency payment
Whether the household has any cash savings	12.7	12.6	8.7	15.1***	11.9	16.9*	13.5	12.1
Whether the household saves via a formal bank account	0.7	1.2	0.5	0.8	1.3	0.3**	0.2	1.7***
Whether the household has borrowed money in the last 12 months	15.2	16.8	13.5	16.2	17.2	14	14.9	17.8
Whether the household bought something on credit in the last three months	72.1	69.9	72.4	71.9	70.2	68	66	72.1**

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

Table 21 RD and PSM results for financial inclusion impact indicators[38]

	RD	PSM
Whether the household has any cash savings	7.1	N/A
Whether the household saves via a formal bank account	2.2	N/A
Whether the household has borrowed money in the last 12 months	1.3	N/A
Whether the household bought something on credit in the last three months	23.6***	N/A

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

[38] Saving in the HSNP bank account is dropped from this table due to the very small number of observations reporting doing so.

4.8 Land

Key findings

Land ownership is relatively uncommon in most parts of the HSNP counties, where pastoralism and livestock herding are more predominant forms of livelihood activity than agrarian farming. Overall, we find that around 10% of households report owning any land. Those who do own land generally use it for cultivation of vegetables and grains. There are no significant differences across any of the descriptive sub-samples in this indicator, with agricultural land ownership being around 10% in both Group A and Group B.

There is no impact of the HSNP on ownership of land. It may be that the size of the HSNP transfers is too small to have an impact on the holdings of assets of this size.

Table 22 Descriptive results for land impact indicators

	Overall		Group A		Group B			
	Group A	Group B	No routine HSNP	Actual routine HSNP	No routine HSNP	Actual routine HSNP	No emergency payment	Actual emergency payment
Whether the household currently owns agricultural land	10.5	9.1	9.4	11.2	8.8	11.4	11.3	7.9

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

Table 23 RD and PSM results for land impact indicators

	RD	PSM
Whether the household currently owns agricultural land	1.3	N/A

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

5 Conclusions

This report focuses on the quantitative household-level IE component of the HSNP 2 evaluation. Its objectives are to provide detailed information about the methodology used to assess quantitative impact at the household level and to provide an overview of the key results emerging from this quantitative analysis of impact. The forthcoming summary assessment report will bring this evidence together along with that from the qualitative research and LEWIE components of the IE, to draw overall conclusions about the impacts of HSNP Phase 2

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5.1 Methodology

The quantitative methodology used to assess impact at the household level is designed to best respond to the evidence needs of the HSNP and the complex environment in which it is implemented. Unlike Phase 1 of the programme, the evaluation of Phase 2 has no scope for randomisation or the use of a baseline. To address these constraints, our approach consists of four integrated stages: (i) descriptive analysis; (ii) regression analysis; (iii) RD analysis; and (iv) PSM analysis. The descriptive and regression analyses are used primarily to understand what households in the sample are like and what characteristics they have, while the impact estimation is based on the integration of the RD and PSM approaches.

We performed a series of tests to check whether the assumptions that underpin both the RD and PSM models hold, and to understand how well they perform. While these tests ensure confidence in the ability of both methods to deliver unbiased results, there remain a number of limitations with the analysis methodology that need to be considered when interpreting the quantitative findings. The main limitations relate to the presence of spill-overs, which serve to dilute the impact that can be estimated through a counterfactual design by changing outcomes in the non-beneficiary group, and the complex way transfers are assigned to households.

The targeting mechanism of the programme is based on a combination of a PMT score and a community-based ranking exercise. This means that, while there is an eligibility cut-off associated with assignment to receive routine transfers through the HSNP, this does not perfectly predict which households will receive it. Moreover, the presence of emergency payments means there is a degree of confoundedness within the sample, as those not targeted to receive routine payments may still be in receipt of some support through the HSNP from its emergency payments. We also learned during the evaluation that, due to certain operational issues, not all those households assigned to receive routine CTs actually did so. Finally, and perhaps most importantly, the presence of regular injections of cash within local economies generates multiplier effects (demonstrated through our LEWIE model and presented in a separate report). These multiplier effects confer some changes and benefits on non-beneficiary households, which complicate the ability of the IE to detect impact at the household level by comparing its nominal routine beneficiaries with the group of non-beneficiaries.

We believe that the integrated RD and PSM approach is the methodology best suited to overcoming these challenges. Nonetheless, we acknowledge that the results may be subject to imprecision (due to the extent of 'fuzziness' in the sample) and underestimation due to the spill-overs, the effect of emergency payments received by the control group and the restriction of the estimation to households near the PMT cut-off, rather than those at the bottom of the distribution (for whom impacts may be more pronounced). These limitations mean that, while the impact estimates

remain unbiased, if we do not detect programme impact we cannot conclusively determine whether this is due to a genuine absence of impact or an inability of the estimation strategy based on the RD to detect it. The PSM can partially help to overcome this issue, since we implemented it using a 'targeted' approach that compared actual routine HSNP beneficiaries with matched non-beneficiaries. This means that the results can help uncover whether receiving HSNP transfers had real effects on recipient households that could not be detected by the RD. However, it also means that the PSM results may be less useful for understanding the likely impact of a CT programme if implemented elsewhere, since they do not take into account how failure of the transfers to reach the entire eligible population might affect its overall effectiveness.

5.2 Key results

Overall, the findings present a mixed picture. The RD model provides robust evidence that there is a strong impact of the HSNP on access to credit, whereby receiving routine CTs enables beneficiary households to appear more creditworthy, allowing them recourse to the ability to purchase on credit. The RD model does not find evidence of a positive impact on any other domain. There are some apparently negative findings arising from the RD model, which appear to be due to the nature of the distribution of actual routine HSNP beneficiaries around the cut-off (this is discussed further in sections 2 and 4 above and 0).

The PSM model does find an impact on some of the outcome areas where the RD did not, or where it produced unexpected findings. We find an impact of the programme on livestock purchases and ownership, on education expenditure, health expenditure and a significant reduction in household hunger as measured by the HHS. However, the impact on poverty is found to be small (albeit still significant), which may be due to the presence of spill-overs in the general population. We also find no impact of the programme on reducing livestock sales, on the diversity of household diets as measured by the FCS, on saving and borrowing behaviour, or on total consumption expenditure.

These results will be further discussed, within the context of the other evidence collected for the IE component of the HSNP2 evaluation in the forthcoming summary assessment report.

5.2.1 Consumption

No impact of the HSNP on total monthly expenditure is found in either the RD model or PSM model. Both return a positive coefficient, but this is not significant. The difference between Group A and Group B households is found to be significant when compared descriptively, with households with PMT scores below the cut-off experiencing lower consumption expenditure on average, which is in line with expectations.

Total monthly food consumption is also found to be significantly higher in Group B in comparison with Group A when measured descriptively. There is also a descriptive difference between the households that have received regular HSNP payments in Group A and those that have not, with the former having larger monthly food expenditure, although this is only weakly significant. The PSM model finds a smaller measured coefficient than the RD model but this is significant, showing that households that have received a regular HSNP payment experience an increase in monthly per adult equivalent food expenditure of around KES 66.

There are no descriptive differences across the various samples for monthly *per capita* health expenditure, but both the RD model and the PSM model estimate negative effects, albeit insignificant. The PSM model finds a significant positive impact for education expenditure per child of KES 28.45, which is supported by the descriptive analysis. The RD result for education expenditure is negative and insignificant.

5.2.2 Poverty

Poverty, as measured by total monthly consumption expenditure, is significantly lower in Group B in comparison with Group A. There are, however, no descriptive differences between households that have received regular HSNP payments and those who have not, and both the RD model and the PSM model produce insignificant results. Food poverty follows this pattern, and while Group B records significantly lower food poverty rates in comparison with Group A there are no descriptive differences when further disaggregating the samples. The PSM model, however, finds a small but weakly significant impact on the rate of food poverty. The PSM model further detects significant, but modest, impacts on poverty severity and poverty gap (one percentage point). These variables measure the average distance between households total monthly consumption expenditure, adjusted for regional price differences, and a poverty line set at KES 2317.6.

5.2.3 Food security

The results show a positive impact of the HSNP on household hunger, as measured by the HHS, in the PSM model, but no impact on dietary diversity as measured by FCS.

The RD results return an unexpectedly negative result on the HHS, but these findings must be interpreted with care as they are sensitive to changes in the weights of the RD model.

Descriptively, we find that food insecurity remains

prevalent across our sample. This is especially the case in Turkana, which experiences worse food insecurity outcomes than the other counties.

5.2.4 Livestock

Livestock ownership is very common in the HSNP counties, and significantly higher among households that have received regular CTs in comparison with those that have not among Group B. There is also a significant difference between those households that have received an emergency HSNP payment compared to those that have not, with the latter having higher levels of ownership.

While the RD estimates of programme impact are insignificant, the PSM model finds a strong significant impact, with actual routine beneficiaries being 4.5 percentage points more likely to have owned livestock, and 11.8 percentage points more likely to have purchased livestock in the last 12 months, than households not receiving routine transfers.

No impact of the programme is found on reducing the propensity of households to sell livestock. In addition, we also observe that livestock sales are more common than livestock purchases among the sample (with around 50% of households reporting having purchased livestock in the past 12 months, compared to only 20% reporting having sold livestock). The reason for this may be to do with how households manage their herds, with breeding forming the main method of increasing herd size, thus allowing livestock owners to sell off additional animals when there is need or when the herd size becomes large.

5.2.5 Asset ownership

While the RD model delivers insignificant estimates of HSNP CT impacts for this indicator group, the PSM model finds a significant increase in productive asset ownership, with an increase of 1.4 percentage points in the treated households. The small magnitude of this impact is not surprising given that productive asset ownership is common across the majority of households. The PSM model further finds a strongly significant increase in the purchasing of productive assets of seven percentage points.

5.2.6 Financial inclusion

There is a large and strongly significant impact of the HSNP on the proportion of households purchasing on credit. This is an impact of 23.6 percentage points as measured by the RD model. One possible explanation for this is because access to routine HSNP transfers, which are regular and predictable, improves the perceived creditworthiness of households.

There is no impact of the HSNP found on the proportion of households with cash savings, or the proportion borrowing money in the past 12 months, although we do see a significant descriptive difference between actual routine HSNP beneficiaries and non-beneficiaries in terms of cash savings. It may be that the estimation strategy is not able to detect a significant impact on this domain due to its limitations.

5.2.7 Land

Given the predominance of pastoralism across the HSNP counties, land ownership for agrarian farming is relatively uncommon. We find no significant difference across any of the descriptive sub-samples, with agricultural land ownership being recorded at around 10%. The causal impact, as determined by the RD model, also shows an insignificant impact on the ownership of agricultural land. This might be due to the modest size of HSNP CTs in relation to the cost of acquiring land.

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Annex A PSM methodology, results and balancing tests

This technical annex describes the implementation of the PSM approach in detail and presents our full results. Our approach consists of three stages: first, defining the first-stage estimation of propensity scores; second, using matching algorithms to deliver impact estimates based on the propensity scores estimated in the first stage; and, finally, assessing the balance achieved by the matching model to understand how well it is performing. This annex describes each of these three stages in turn.

A.1 Implementation of the matching model

A.1.1 First-stage model selection

The first stage of implementing PSM analysis is to define a unique propensity score for each household. Formally, the propensity score captures the likelihood of being in the nominal routine beneficiary group, conditional on a set of observable characteristics.

We estimate propensity scores in the first stage following a procedure suggested by Imbens and Rubin (2015, p. 281 ff.).[39] First, treatment assignment (that is, assignment to the nominal routine beneficiary group) is defined as a binary variable that has the values 0 (for control) and 1 (for treatment). Treatment assignment is then regressed on a set of observable characteristics using a logit or probit regression. In the case of a logistic regression specification, the binary response variable is modelled as follows:

$$\Pr(T=1|X_i) = \frac{e^{f(X_i)}}{1+e^{f(X_i)}} \quad (1)$$

where $\Pr(T=1|X_i)$ is the probability of the treatment indicator (T) being equal to one, conditional on the covariates (X_i) for unit i. The function $f(X)$ is normally modelled linearly, i.e. is of the form $f(X) = X\beta$.

The coefficients of this function (β) are estimated using maximum likelihood techniques. The fitted values (i.e. the predicted probabilities) that follow from this procedure, are the propensity scores for each unit of observation (household).

The key question for the first stage is which covariates to include in $f(X)$. To make this selection, it is important to first recall the overall objective of PSM, which is to achieve balance between the treatment and comparison groups. In view of this goal, our approach to model specification is based on the principle that the ideal matching covariates are those that are strongly related to *both* the exposure to treatment assignment and are also determinants of the key outcome variable.

This is because these are the variables that, if omitted from the model, would represent the classic source of selection bias. Variables that are unrelated to treatment, but strongly related to the outcome, are also suitable matching covariates as they increase the precision of estimates without increasing bias. However, variables that are related to treatment assignment only but not related (or only weakly related) to the outcome will tend to reduce the precision of the estimates without reducing bias.

With these considerations in mind, following the procedure described in Imbens and Rubin (2015) for selecting covariates, we implemented a three-step approach to select matching covariates:[40]

[39] Imbens, G.W. and Rubin, D.B. (2015) Causal inference in statistics, social, and biomedical sciences. Cambridge University Press.
[40] Ibid.

1. Select a set of basic covariates based on theoretical grounds:

The starting point for the PSM analysis is to use previous theory and literature to define a set of characteristics that were expected to be determinants of assignment to the HSNP nominal routine beneficiary group and key outcome variables. This requires a theoretically substantiated understanding of the relationships that are being analysed.

2. Increase the set of covariates based on algorithmic approaches:

Alongside the 'theory-driven' approach to covariate selection, we also employ a data-driven approach. This involves using variable selection algorithms to identify variables that vary significantly between the control and treatment groups. There are a variety of methods available to do this, but the approach we use is based on stepwise regression.

There are two stepwise regression approaches that can be employed for this: backward and forward stepwise regression. The underlying idea behind both approaches is to check each covariate, step by step, for significant correlation with the outcome and treatment assignment variable. As explained above, variables that are significantly related to both will tend to bias impact estimates if not included in the propensity score model.

Backward selection starts with a regression on the full set of covariates, and discards the term that is least significantly correlated with the dependent variable. The regression is then repeated on the reduced set of covariates, until all variables that are uncorrelated with the dependent variable have been discarded. Forward selection, instead, starts with an empty set of covariates, i.e. a regression on a constant, and then checks the significance of each covariate as it is included in the regression in turn. It then adds the most significantly correlated variable to the model. This procedure is repeated until all significant covariates are included in the model.

For both backward and forward estimation, a threshold p-value for what is considered to be significant needs to be specified. For backward selection this means identifying the p-value for which, when the least significant variable in the model has a p-value below this threshold, the model is considered to have discarded all variables uncorrelated with the outcome. When this happens then all the variables still included in the model are considered to be significant and the procedure stops. For forward selection, this means setting the level for identifying whether all significant covariates have been included in the model: that is, if the p-value of the most significant variable to be added is equal or above to the threshold, then the significance levels of all variables that have not yet been included in the model are less significant and the procedure stops. Setting this threshold therefore influences the variables that are selected in stepwise regressions.

We implement both backward and forward selection using different thresholds and selected variables based on whether they were selected in all the different specifications or not.

3. Increasing the set of covariates with polynomial and interaction terms using algorithmic selection:

In a third step, we introduce quadratic and interaction terms to the model, using the same method of stepwise regressions to decide which ones to add to the model. The rationale for doing this is the fact that balance might only be achieved if the propensity score is estimated using non-linear transformations of the variables selected initially (Imbens and Rubin, 2015, p. 287).[41] Again, the stepwise regression approach helps to determine which of these non-linear terms are significant predictors of differences across control and treatment groups, and should therefore be controlled for.

The result of this process is the identification of a set of matching covariates to be included in the first-stage estimation of the propensity score. This three-step approach is conducted for every estimation strategy for each outcome variable in turn.

A.1.2 Second-stage algorithm selection

The second stage of PSM is to 'match' the sample, using the predicted propensity scores estimated in the first stage, and then compare the resulting 'matched' treatment and control groups to estimate the impact of the programme.

There are a variety of algorithms available to implement the second stage of PSM. Figure 13 below provides an overview of the different algorithms available. It is beyond the scope of this report to explain in detail the technicalities of each of these approaches.[42] Differences between these approaches can be defined along three main dimensions:

- The maximum allowable 'distance' between propensity scores that may be permitted for matching observations. This relates to the common support

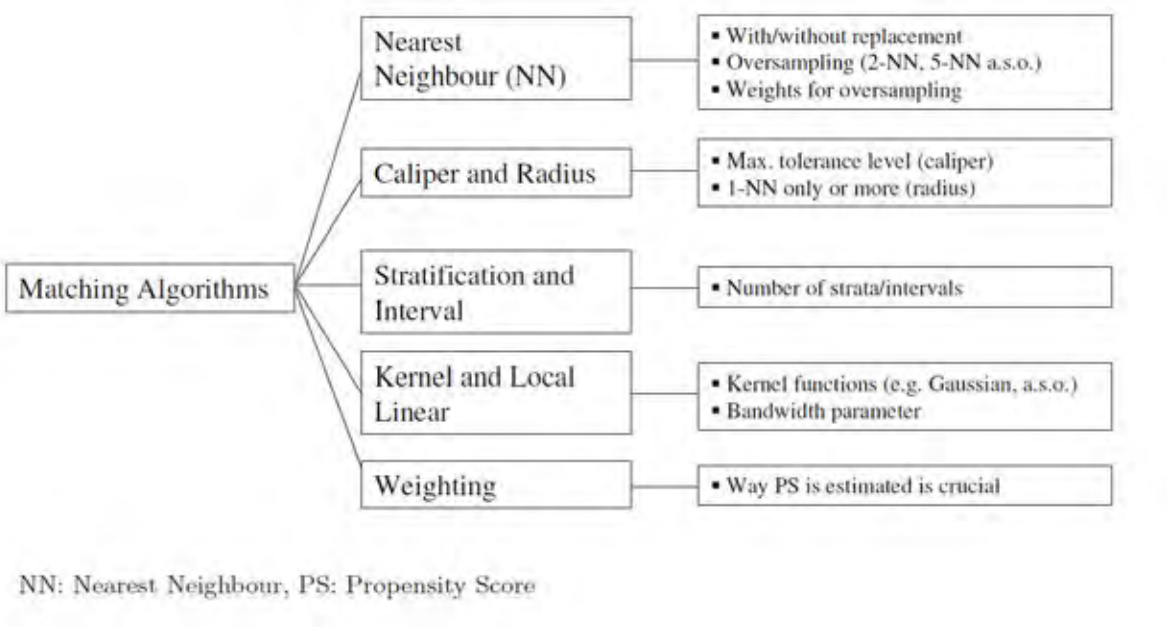
[41] Ibid.

[42] Caliendo, M. and Kopeinig, S. (2008) Some practical guidance for the implementation of propensity score matching. Journal of economic surveys, 22(1), pp.31-72.

condition. The choice of cut-offs or trimming aims to prevent the model from 'matching' observations with very different propensity scores (which may re-introduce bias).

- The accepted range of propensity scores that define control comparators for treatment units.
- The manner in which comparators are compared to the treatment units, to estimate the treatment effects.

Figure 13 Matching algorithms selection



Notes: Figure taken from Caliendo and Kopeinig (2008).

The second dimension relates to how units in the control group with propensity scores that are similar to a treatment group observation are treated. For instance, kernel matching is a non-parametric matching estimator that uses the weighted averages of all individuals in the control groups to create the counterfactual outcome. The weights are determined by the distance between treatment and matched control units, with higher weights given to closer matches (Caliendo and Kopeinig (2008)). [43] Alternatively, nearest neighbour (NN) matching with just one 'neighbour' involves matching one treatment with one control observation that has the closest propensity score. NN matching may also be implemented with more than one neighbour, where a treatment observation is matched to several control units with similar propensity scores. Caliper matching is similar to NN matching but does not include a fixed number of neighbours. Instead, the comparators are selected based on a maximum difference in propensity scores allowed.

Finally, the third dimension refers to how, once comparator units are found, the outcome measures are compared across treatment and control. For example, with NN matching simple averages are calculated over the difference between the treatment units and matched controls. With kernel functions, a form of weighted averages is also used to estimate treatment effects.

Selecting the appropriate matching algorithm for a PSM exercise is not straightforward and requires careful analysis of how well balanced samples are after employing different algorithms, with different sub-specifications. In general, our model selection is based on the fact that discriminating between models poses trade-offs between variance (that is, the precision of the estimates) and bias. For instance, in the extreme case of NN matching with just one neighbour, it could be that the 'nearest neighbour' is actually quite far away in terms of propensity scores. If this happens often, this could introduce bias into the estimation procedure. A solution to this could be to implement matching using several comparators in a matching setting. However, this could

[43] Caliendo, M. and Kopeinig, S. (2008) Some practical guidance for the implementation of propensity score matching. Journal of economic surveys, 22(1), pp.31-72.

decrease the number of available matches, which could increase the variance of the treatment estimate.

Kernel matching with appropriate trimming and enforcement of common support is a good compromise between these different approaches, and is therefore selected as our main matching algorithm. In order to find the optimal estimation model we use different kernel matching algorithms with different bandwidths and trimming levels and compare the results to assess their balancing properties. The manner in which balance is assessed is described in the next section.

A.1.3 Assessing balance

As stated above, the primary goal of PSM is to deliver a sample that is well balanced, meaning that there are very few systematic differences between the treatment and control groups in the matched sample.

We assess the performance of the matching models using a variety of approaches. First, we assess individual covariate balance across samples by looking at the standardised difference in means across treatment and control groups both before and after matching. This standardised difference is the difference in group averages over the square root of the average of the sample variances. If samples are balanced, this difference should be small, and matching should reduce this standardised difference as compared to the unmatched samples.

We then performed t-tests to assess whether differences across treatment and control groups were statistically significant. Under a well-performing matching model, we expect few significant differences between treatment and control groups after matching.
We also look at the variance ratios of covariates of treated over control measures. If there is perfect balance across samples, then covariates should be distributed equally and hence this ratio should be equal to one.

All these measures together give an indication of whether specific covariates are balanced across treatment and control groups. To assess overall variance we also look at two statistics that summarise covariate balance across the sample: Rubin's B and Rubin's R.

Rubin's B reflects the absolute standardised difference of the means of the propensity score in the treated and control groups (unmatched and matched). Rubin's R is the ratio of the treated to control variances of the propensity scores. Rubin (2001) suggests that the value of B should lie below 25 and that R should lie between .5 and 2 for overall balance to be sufficient.[44] Together, Rubin's B and Rubin's R provide a reliable indication of the trade-off between bias and variance across the treatment and control groups, as it changes before and after the matching procedure. However, individual-level balance should always be assessed as the overall balance is only an approximation of goodness of fit.

Finally, we also look at the distribution of propensity scores graphically. Ideally, propensity scores should be distributed equally across treatment and control groups. Very skewed or divergent distributions could be an indication that balance has not been achieved successfully.

Matching procedures were implemented using the psmatch2 package in Stata (14.1) and balancing tests were carried out using the pstest package, which provides the results for all the statistics mentioned above.[45]

A.2 PSM impact estimation results and balance tests

This subsection presents the full set of PSM results and balancing tests.

Figure 14 to Figure 29 present the main impact results and balance tests for each of the key outcome variables tested in turn, under the main model specification. The results from all model specifications implemented under each results area are then displayed in Table 24 at the end of this subsection.

[44] Rubin, D.B. (2001) Using propensity scores to help design observational studies: application to the tobacco litigation. Health Services and Outcomes Research Methodology, 2(3), pp.169-188.
[45] See http://fmwww.bc.edu/repec/bocode/p/pstest.html for details.

Figure 14 Total expenditure per adult equivalent: Main PSM model results

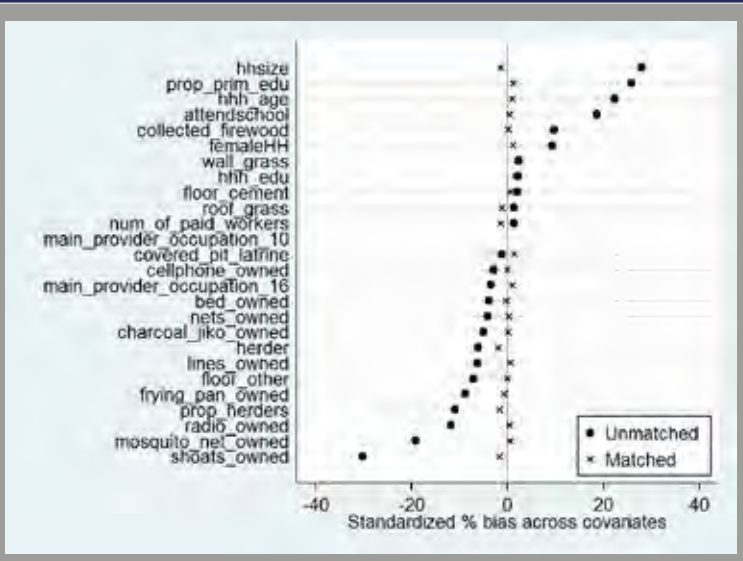
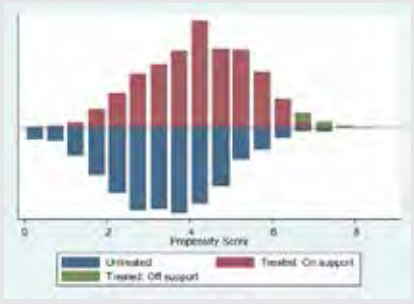
Variables	Balancing		
			
	Bandwith		2
	Trimming		3
	N on common support		4507
	Rubin's B Rubin's R	(before matching)	63.56 0.61
	Rubin's B Rubin's R	(after matching)	5.46 1.08
	ATT		42.37
	BS T Stat		1.049

Figure 15 Food expenditure per adult equivalent: Main PSM model results

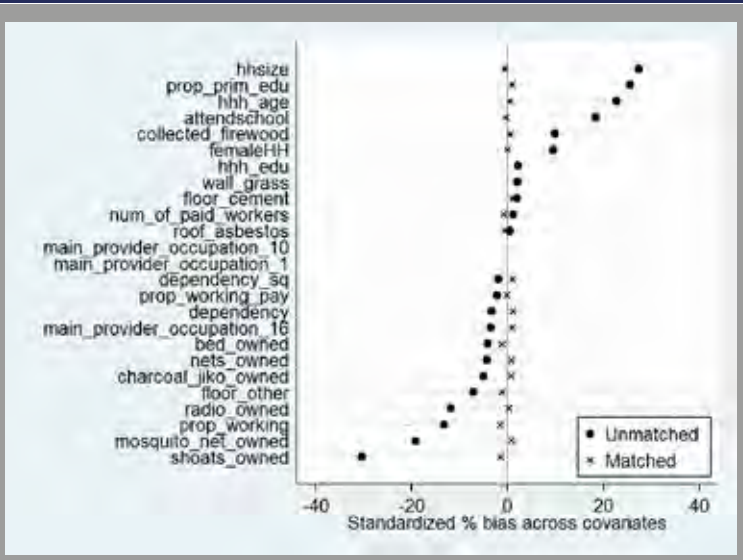
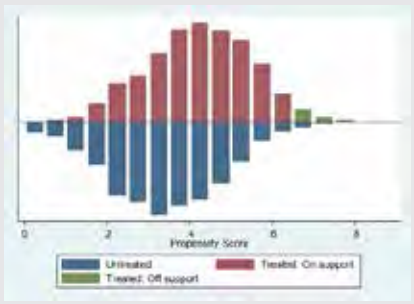
Variables	Balancing		
			
	Bandwith		2
	Trimming		3
	N on common support		4494
	Rubin's B Rubin's R	(before matching)	62.15 0.61
	Rubin's B Rubin's R	(after matching)	5.06 1.08
	ATT		66.48
	BS T Stat		2.051

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Figure 16 Monthly health expenditure per capita: Main PSM model results

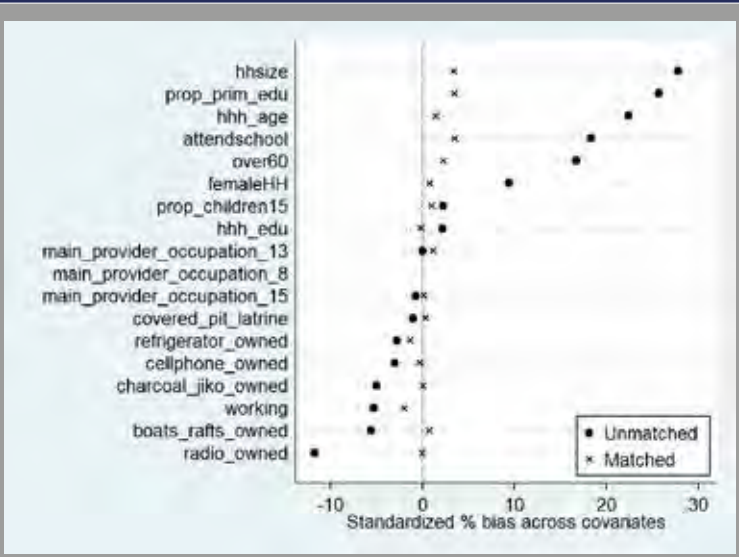
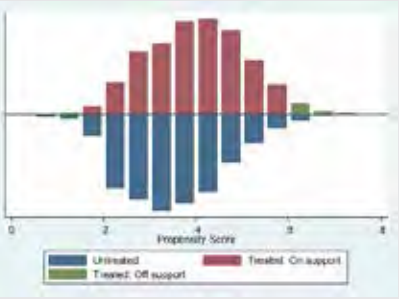
Variables	Balancing		
			
	Bandwith		4
	Trimming		3
	N on common support		4508
	Rubin's B Rubin's R	(before matching)	47.96 0.9
	Rubin's B Rubin's R	(after matching)	6.54 1.03
	ATT		-0.98
	BS T Stat		-0.28

Figure 17 Monthly education expenditure per child: Main PSM model results

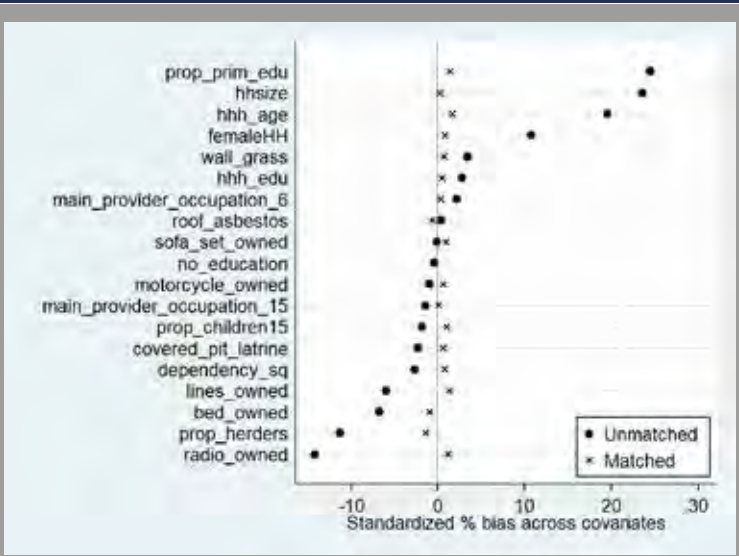
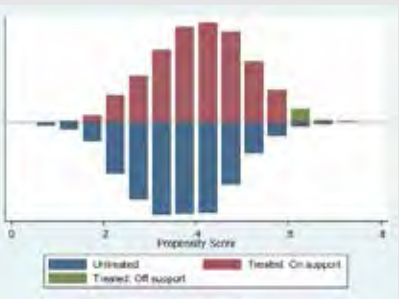
Variables	Balancing		
			
	Bandwith		2
	Trimming		3
	N on common support		4064
	Rubin's B Rubin's R	(before matching)	46.76 084
	Rubin's B Rubin's R	(after matching)	4.24 1.18
	ATT		28.45
	BS T Stat		2.243

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Figure 18 Consumption poverty rate: Main PSM model results

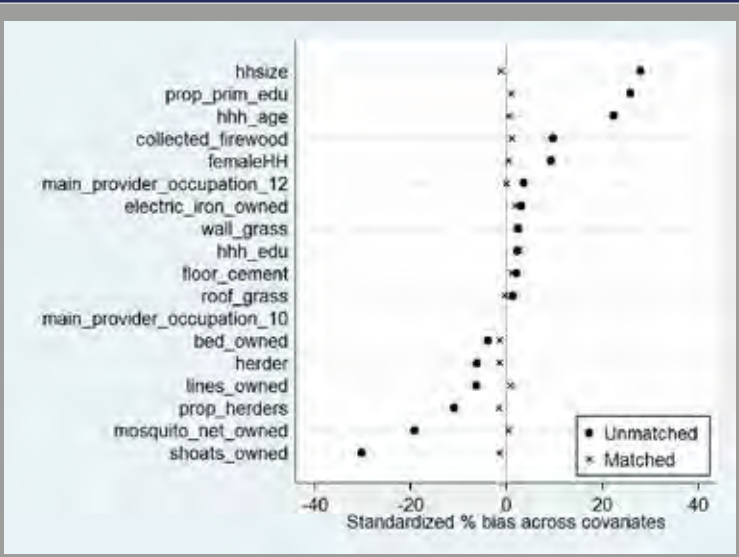
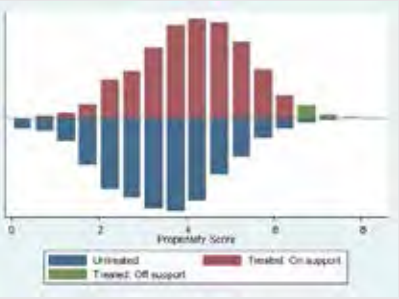
Variables	Balancing		
			
	Bandwith		2
	Trimming		3
	N on common support		4507
	Rubin's B Rubin's R	(before matching)	60.17 0.62
	Rubin's B Rubin's R	(after matching)	5.03 1.23
	ATT		-0.01
	BS T Stat		-0.63

Figure 19 Food poverty rate: Main PSM model results

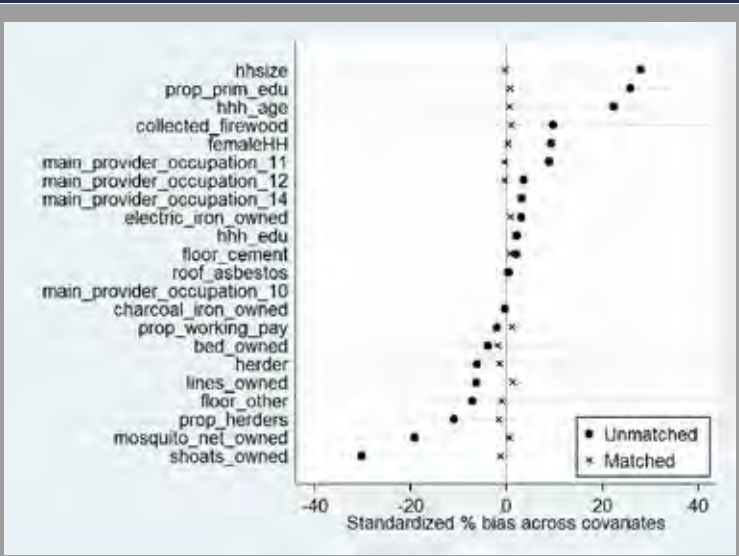
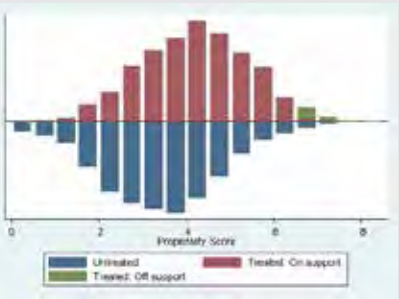
Variables	Balancing		
			
	Bandwith		2
	Trimming		3
	N on common support		4507
	Rubin's B Rubin's R	(before matching)	61.25 0.62
	Rubin's B Rubin's R	(after matching)	4.95 1.07
	ATT		-0.03
	BS T Stat		-1.765

Figure 20 Poverty gap: Main PSM model results

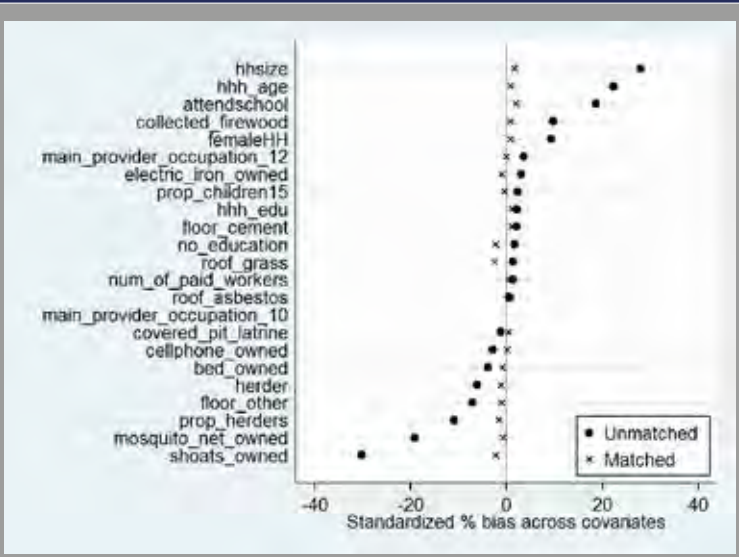
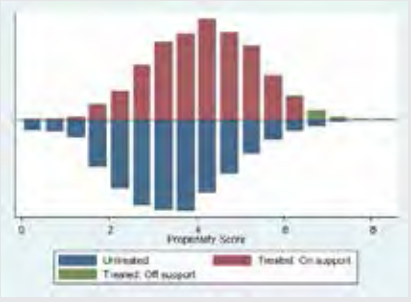
Variables	Balancing		
			
	Bandwith		4
	Trimming		3
	N on common support		4507
	Rubin's B Rubin's R	(before matching)	60 0.59
	Rubin's B Rubin's R	(after matching)	7.12 1.06
	ATT		-0.01
	BS T Stat		-2

Figure 21 Poverty severity: Main PSM model results

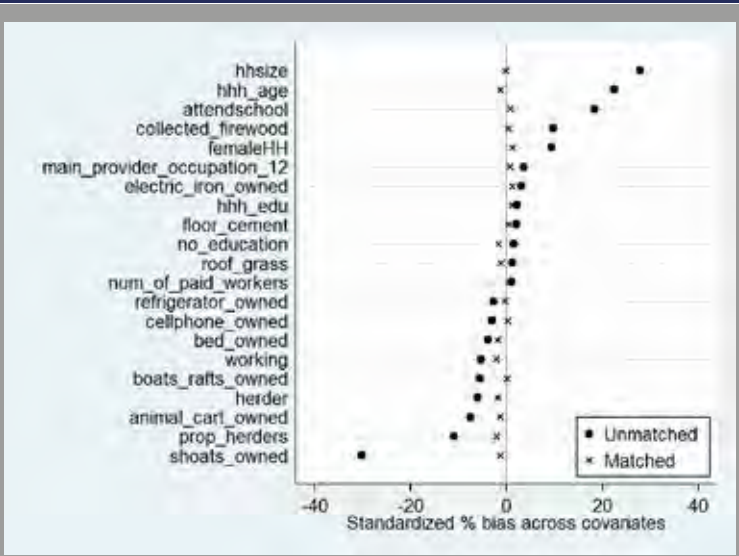
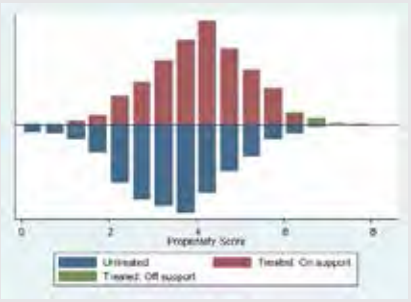
Variables	Balancing		
			
	Bandwith		4
	Trimming		3
	N on common support		4510
	Rubin's B Rubin's R	(before matching)	55.55 0.6
	Rubin's B Rubin's R	(after matching)	4.85 1
	ATT		-0.01
	BS T Stat		-3.33

Figure 22 Productive asset ownership: Main PSM model results

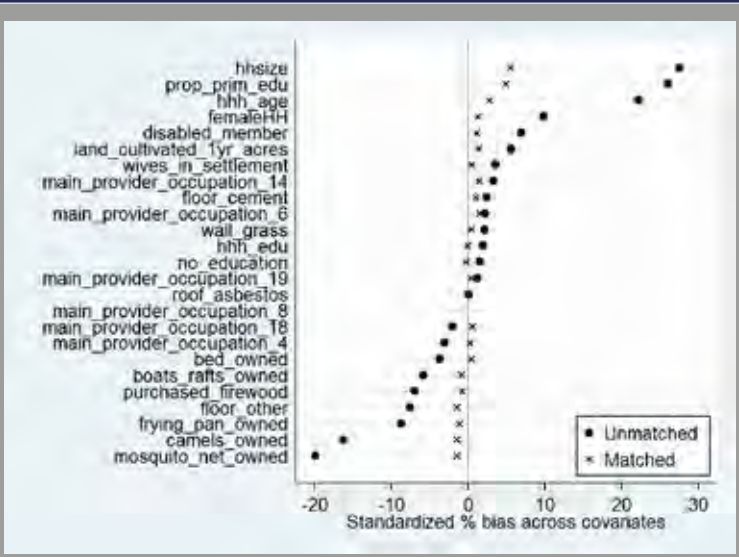
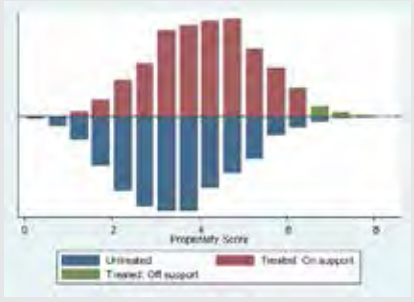
Variables	Balancing		
			
	Bandwith		6
	Trimming		3
	N on common support		4379
	Rubin's B Rubin's R	(before matching)	56.63 0.66
	Rubin's B Rubin's R	(after matching)	10.59 1.07
	ATT		1.4
	BS T Stat		1.802

Figure 23 Productive assets purchased in the past 12 months: Main PSM model results

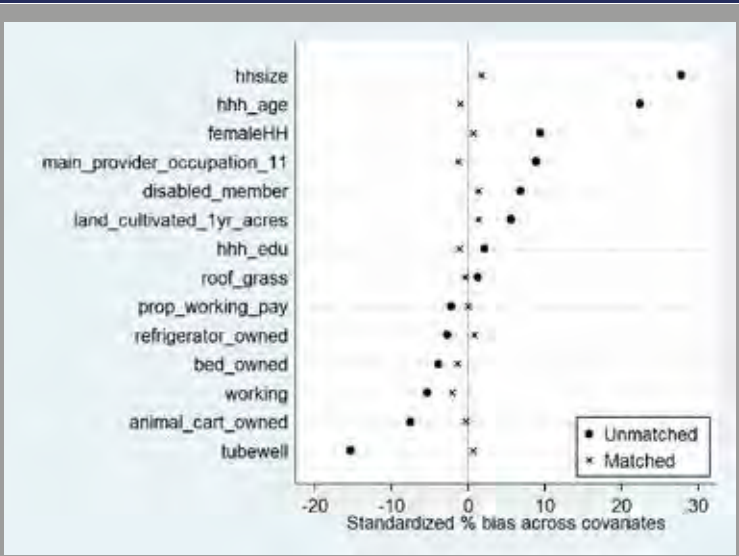
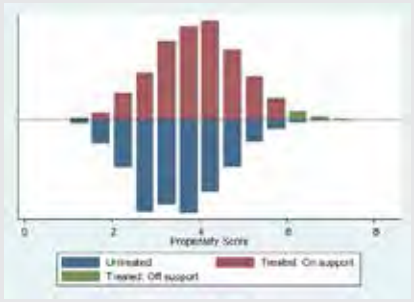
Variables	Balancing		
			
	Bandwith		2
	Trimming		3
	N on common support		4510
	Rubin's B Rubin's R	(before matching)	45 0.92
	Rubin's B Rubin's R	(after matching)	4.89 1.05
	ATT		7
	BS T Stat		4.525

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Figure 24 Productive assets sold in the past 12 months: Main PSM model results

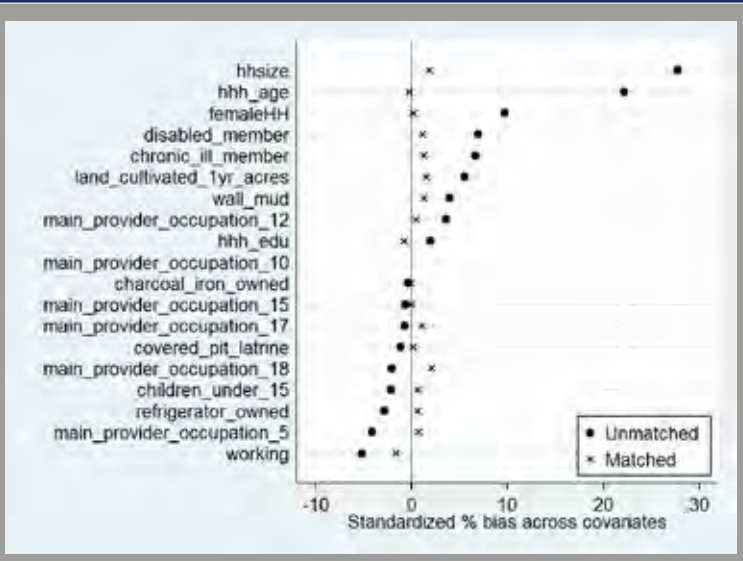
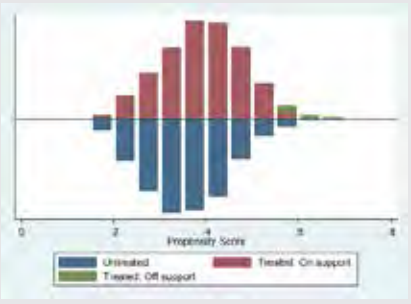
Variables	Balancing		
			
	Bandwith		2
	Trimming		3
	N on common support		4378
	Rubin's B Rubin's R	(before matching)	40.31 0.88
	Rubin's B Rubin's R	(after matching)	4.86 1
	ATT		-0.17
	BS T Stat		-1.10

Figure 25 HHS: Main PSM model results

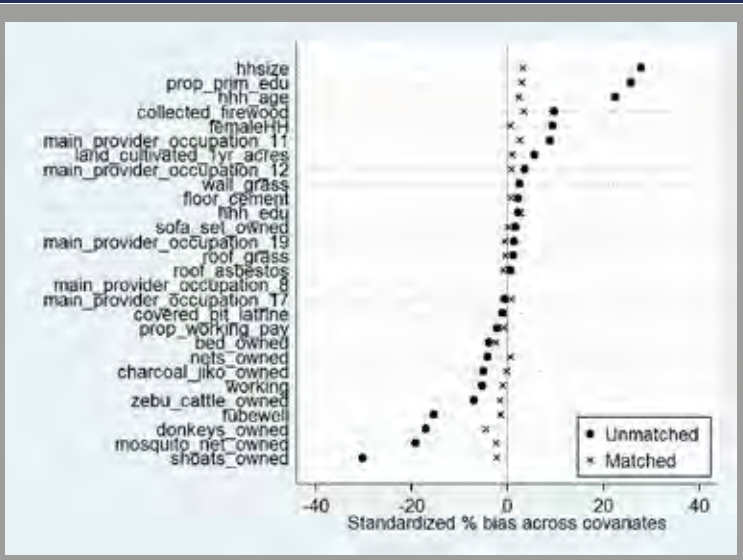
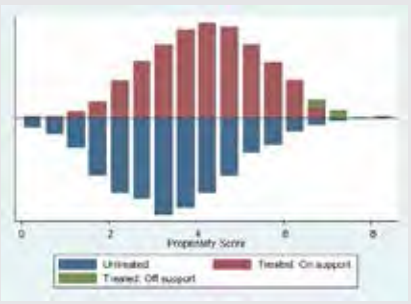
Variables	Balancing		
			
	Bandwith		6
	Trimming		3
	N on common support		4458
	Rubin's B Rubin's R	(before matching)	64.47 0.68
	Rubin's B Rubin's R	(after matching)	11.71 1
	ATT		-0.16
	BS T Stat		-4.215

Figure 26 FCS: Main PSM model results

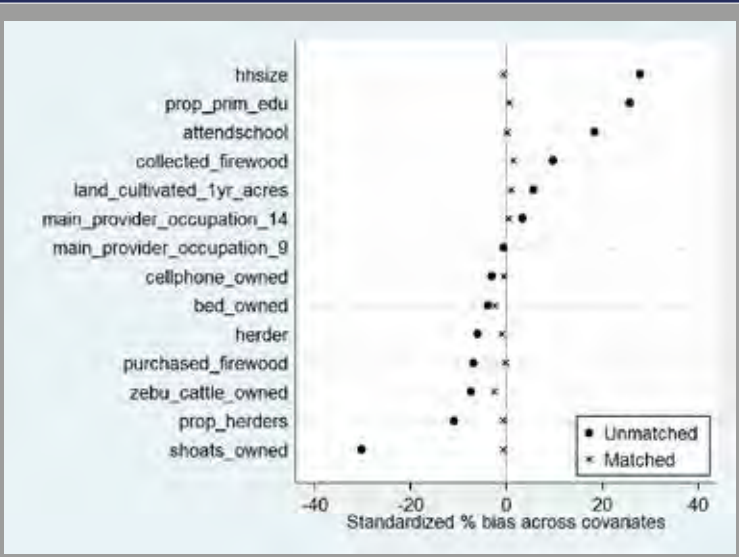
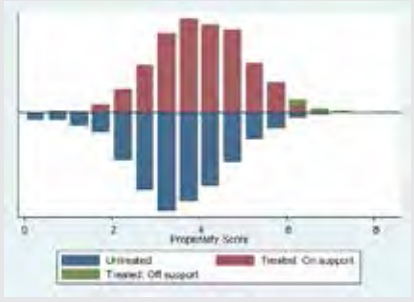
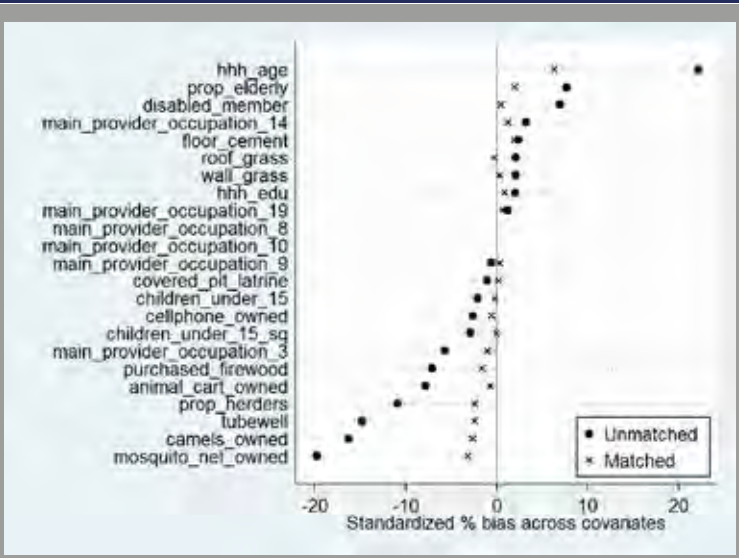
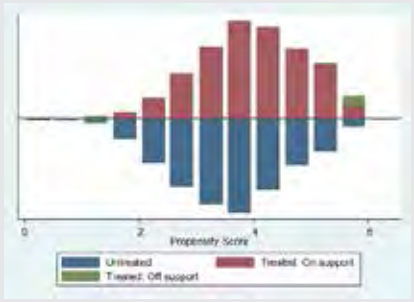
Variables	Balancing		
			
	Bandwith		6
	Trimming		3
	N on common support		4490
	Rubin's B Rubin's R	(before matching)	58.3 0.54
	Rubin's B Rubin's R	(after matching)	11.9 1.04
	ATT		0.88
	BS T Stat		1.504

Figure 27 Livestock ownership: Main PSM model results

Variables	Balancing		
			
	Bandwith		6
	Trimming		3
	N on common support		4376
	Rubin's B Rubin's R	(before matching)	43.17 0.59
	Rubin's B Rubin's R	(after matching)	11.43 1.01
	ATT		4.47
	BS T Stat		3.363

ANNEX A

Figure 28 Livestock purchased in the past 12 months: Main PSM model results

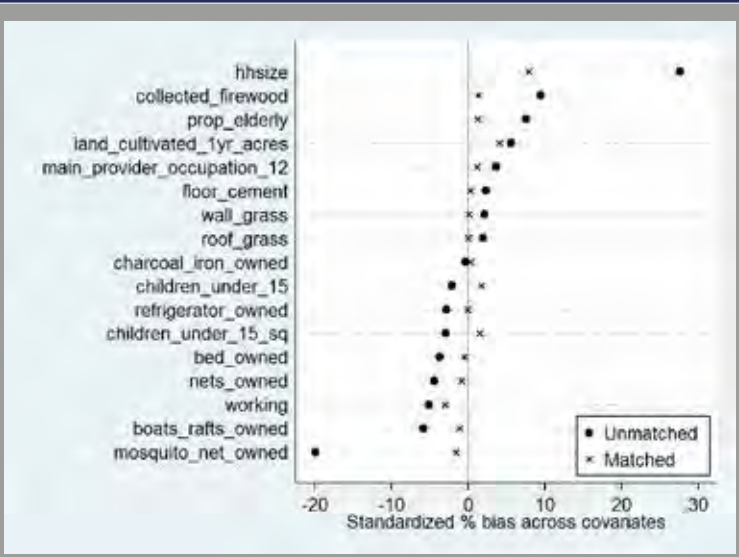
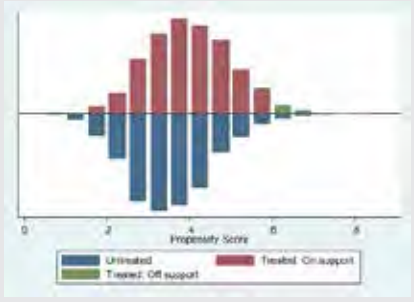
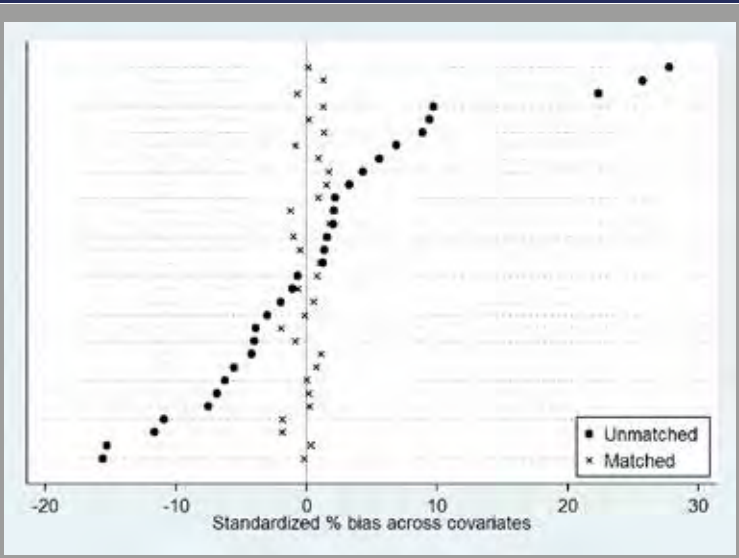
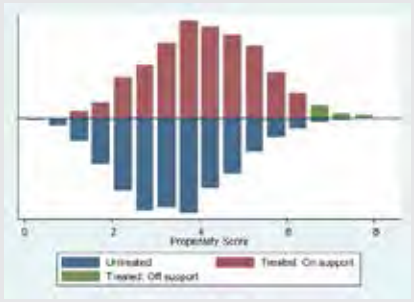
Variables	Balancing		
			
	Bandwith		6
	Trimming		3
	N on common support		4382
	Rubin's B Rubin's R	(before matching)	46.25 0.89
	Rubin's B Rubin's R	(after matching)	13.7 1.14
	ATT		11.81
	BS T Stat		10.53

Figure 29 Livestock sold in the past 12 months: Main PSM model results

Variables	Balancing		
			
	Bandwith		2
	Trimming		3
	N on common support		4460
	Rubin's B Rubin's R	(before matching)	57.22 0.75
	Rubin's B Rubin's R	(after matching)	5.57 1.09
	ATT		-1.13
	BS T Stat		2.385

ANNEX A

Table 24 below shows the range of ATT coefficients across the different bandwidth and trimming options for the preferred PSM model. The final models were then chosen by the performance of various balancing tests and these results are presented in red. As can be seen, the ATTs remain relatively stable across the different model specifications.

Table 24 PSM results under different bandwidth and trimming parameters [46]

Impact area	Outcome variable	BW 2 Tr 3	BW 4 Tr 3	BW 6 Tr 3	BW 2 Tr 5	BW 4 Tr 5	BW 6 Tr 5	BW 2 Tr 8	BW 4 Tr 8	BW 6 Tr 8
Poverty and consumption	Total consumption	42.37	31.52	20.90	35.22	27.25	19.22	33.04	30.54	25.08
	Food consumption	66.48	59.42	50.27	60.59	55.76	48.54	51.03	49.09	44
	Health consumption	-1.22	-0.98	-0.72	-1.4	-1.05	-0.74	-2.8	-2.49	-2.18
	Education consumption	28.45	29.82	31.93	26.87	28.65	30.89	26.23	28.36	30.63
	Poverty	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	Food poverty	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.03	-0.02
	Poverty gap	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	Poverty severity	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Livestock	Livestock owned	4.74	4.61	4.47	4.36	4.27	4.13	4.55	4.5	4.36
	Livestock purchased	11.82	11.81	11.81	11.81	11.82	11.81	12.06	12.06	12.05
	Livestock sold	-1.13	-1.28	-1.5	-1.47	-1.62	-1.86	-1.51	-1.72	-1.96
Asset	Assets owned	1.41	1.41	1.4	1.21	1.29	1.3	1.46	1.51	1.53
	Asset purchased	7	6.96	6.89	7.23	7.18	7.12	7.01	6.99	6.94
	Asset sold	-0.17	-0.17	-0.16	-0.18	-0.17	-0.16	-0.18	-0.17	-0.16
Food security	HHS	-0.15	-0.16	-0.16	-0.16	-0.16	-0.17	-0.17	-0.17	-0.17
	FCS	0.91	0.88	0.88	0.94	0.93	0.94	0.9	0.91	0.94

[46] Those in red are the final chosen model. This choice was made based on the comparison of balancing results. .

ANNEX A

Annex B RD results and diagnostic tests

This annex presents the full set of RD results, as well as some additional diagnostic tests that were performed to assess the validity of the underlying assumptions.

B.1 Diagnostic tests

In addition to the tests presented in section 2.3, we conducted some further tests on the RD model to better understand its performance.

We begin by testing for discontinuities in the probability of being assigned to the routine HSNP beneficiary group away from the PMT eligibility cut-off. The test is the same as that used to test Assumption 3 in section 2.3, but is done separately for the below and above the cut-off samples. This allows us to exclude the already known discontinuity at the original cut-off.

In order to determine the PMT score at which to check for discontinuities, we adopt the approach suggested in Imbens and Lemiuex (2008, p. 632) of taking the median value of PMT scores across the sample, and test for discontinuities in the probability of treatment[47]. As can be seen in Table 25, this is a PMT score of -94.8 in Group A and 164 in Group B.

Table 25 P-values for changes in the probability of assignment to receive routine CTs at different PMT thresholds

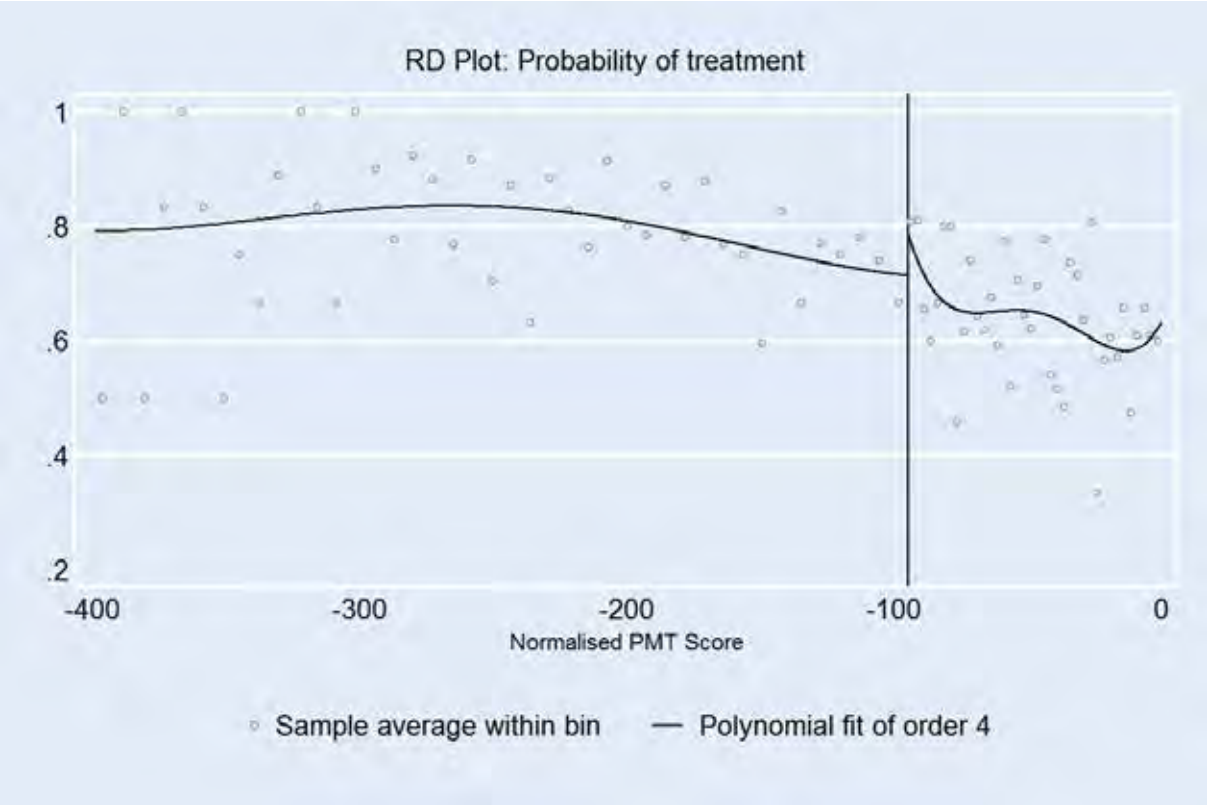
	Cut-off value	Coefficient	P-value
Standard	0	-0.183***	0
Median for Group A	-94.8	-0.021	0.568
Median for Group A observations not receiving a regular payment	-76.58	-0.046	0.236
Median for Group B	164	0.06**	0.033
Median Group B observations receiving a regular payment	54	-0.247***	0

Notes: significance levels: *=p<0.1, **=p<0.05, ***=p<0.001.

Figure 30 shows that there is a slight jump in the probability of treatment at the median PMT value within the Group A sample. However, on closer inspection in Table 25, the magnitude of the jump is small and insignificant. Figure 31 is the corresponding figure for the Group B sample. Here we see a larger jump in terms of magnitude, and this is significant at the 5% level. However, it is worth noting that the size of this magnitude is much smaller than the size of the discontinuity at the cut-off point (PMT score of 0) as well as being less significant.

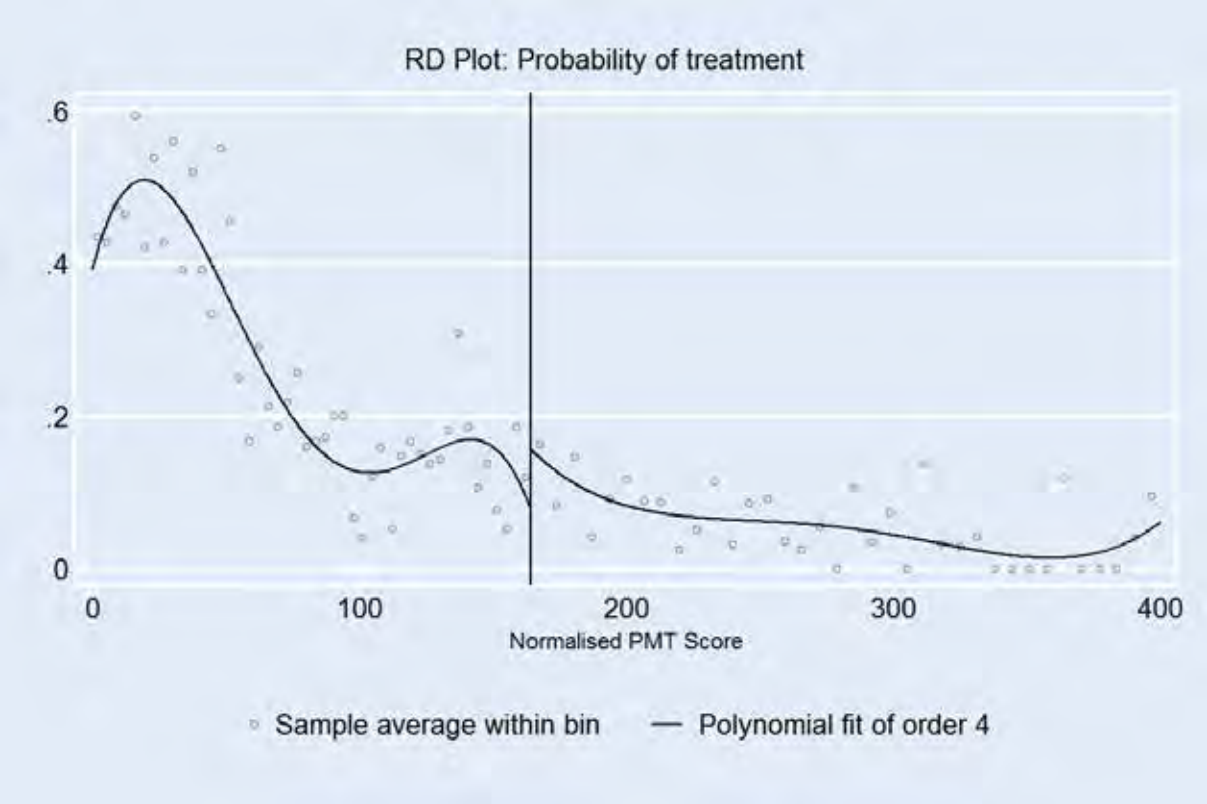
[47] This is done separately for the Group A and Group B samples. See Imbens, G.W. and Lemieux, T. (2008) Regression discontinuity designs: A guide to practice. Journal of econometrics, 142(2), pp.615-635.

Figure 30 Testing for discontinuities in the Group A sample, away from the cut-off [48]



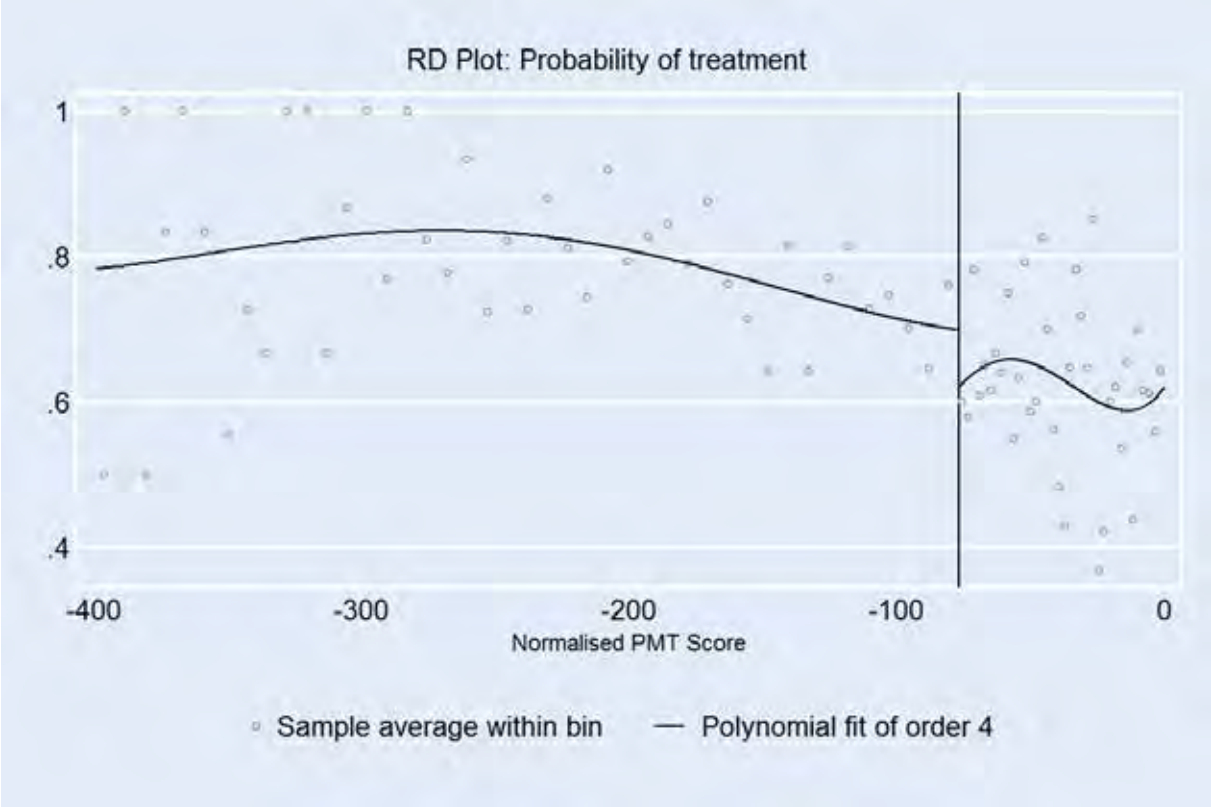
[48] This is done separately for the Group A and Group B samples. See Imbens, G.W. and Lemieux, T. (2008) Regression discontinuity designs: A guide to practice. Journal of econometrics, 142(2), pp.615-635.

Figure 31 Testing for discontinuities in the Group B sample, away from the cut-off



Given our knowledge about the increased fuzziness of the RD sample caused by operational issues in delivering routine CTs to all eligible households, we also look for evidence of any specific discontinuities in the probability of treatment. To do so, we look at additional points in the Group A and Group B samples. The median PMT score for those observations that have not received a routine payment are shown in Table 25 above, and are illustrated below in Figure 32. The graph looks very similar to that of Figure 30, which is unsurprising as the PMT values are not that different. As shown in Table 25 the coefficient of this discontinuity is larger, although still very small, and remains insignificant.

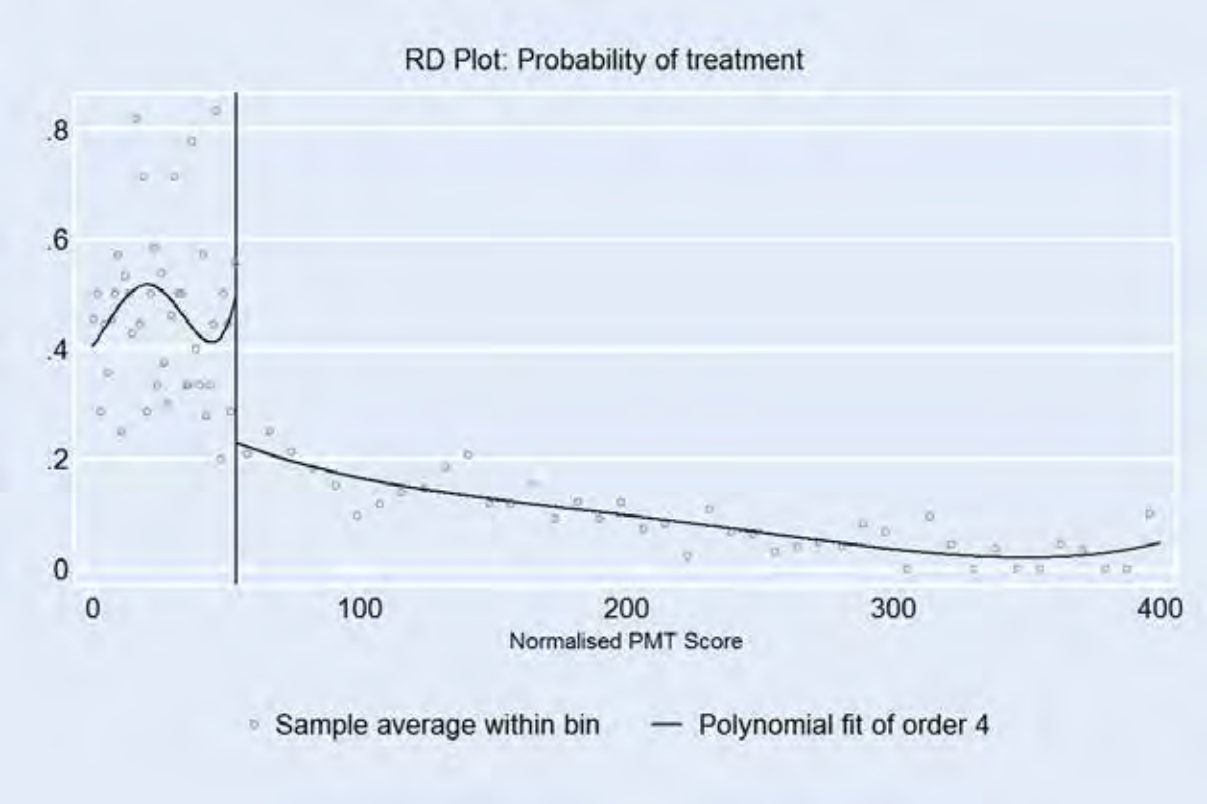
Figure 32 Testing for discontinuities in the Group A sample, away from the cut-off [49]



Finally, we conduct the same test above but for the Group B sample. The median PMT score for the actual routine HSNP beneficiaries is found to be quite different to that who have not. As Figure 33 shows, there is a large and significant discontinuity at the median value. This discontinuity is larger than the one we find at the cut-off, and is strongly significant. This clearly demonstrates that the households in Group B, with PMT scores above the eligibility cut-off, who are receiving routine HSNP payments, are located close to the cut-off. This results in a discontinuity in the probability of treatment in the control group away from the cut-off point.

[49] This uses the median from the observations who have not received a regular payment as the point at which to test for discontinuity.

Figure 33 Testing for discontinuities in the Group B sample, away from the cut-off[50]



[50] This uses the median from the observations who have received a regular payment as the point at which to test for discontinuity.

B.2 RD results

This subsection presents the full results from the FRD estimation. Statistically significant p-values are shown in red.

B.2.1 Consumption and poverty

Table 26 FRD results for total monthly expenditure per adult equivalent

Model	Coefficient	P-value
With full MIS covariates, cluster variance-covariance matrix (VCE) and triangular kernel weights	364.071	0.295
Without covariates, cluster VCE and triangular kernel weights	168.991	0.578
With full MIS covariates, cluster VCE and uniform kernel weights	301.778	0.271
Without covariates, cluster VCE and uniform kernel weights	131.598	0.620

Table 27 FRD results for total monthly food consumption per adult equivalent

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	148.530	0.496
Without covariates, cluster VCE and triangular kernel weights	-126.105	0.770
With full MIS covariates, cluster VCE and uniform kernel weights	135.715	0.494
Without covariates, cluster VCE and uniform kernel weights	-78.424	0.672

Table 28 FRD results for total monthly education expenditure per child

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-22.955	0.836
Without covariates, cluster VCE and triangular kernel weights	144.660	0.276
With full MIS covariates, cluster VCE and uniform kernel weights	5.834	0.818
Without covariates, cluster VCE and uniform kernel weights	110.388	0.248

Table 29 FRD results for total monthly health expenditure *per capita*

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	21.450	0.723
Without covariates, cluster VCE and triangular kernel weights	26.747	0.613
With full MIS covariates, cluster VCE and uniform kernel weights	20.888	0.550
Without covariates, cluster VCE and uniform kernel weights	25.842	0.399

Table 30 FRD results for food share of total monthly expenditure

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-4.834	0.151
Without covariates, cluster VCE and triangular kernel weights	-8.759	0.027
With full MIS covariates, cluster VCE and uniform kernel weights	-3.362	0.123
Without covariates, cluster VCE and uniform kernel weights	-6.050	0.016

Table 31 FRD results for consumption poverty

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-0.042	0.881
Without covariates, cluster VCE and triangular kernel weights	0.020	0.781
With full MIS covariates, cluster VCE and uniform kernel weights	-0.053	0.726
Without covariates, cluster VCE and uniform kernel weights	-0.003	0.872

Table 32 FRD results for food poverty

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	0.012	0.998
Without covariates, cluster VCE and triangular kernel weights	0.122	0.474
With full MIS covariates, cluster VCE and uniform kernel weights	0.003	0.951
Without covariates, cluster VCE and uniform kernel weights	0.089	0.429

Table 33 FRD results for poverty gap

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-0.002	0.827
Without covariates, cluster VCE and triangular kernel weights	0.019	0.475
With full MIS covariates, cluster VCE and uniform kernel weights	-0.012	0.975
Without covariates, cluster VCE and uniform kernel weights	0.004	0.635

Table 34 FRD results for poverty severity

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-0.003	0.982
Without covariates, cluster VCE and triangular kernel weights	0.007	0.700
With full MIS covariates, cluster VCE and uniform kernel weights	-0.006	0.894
Without covariates, cluster VCE and uniform kernel weights	0.001	0.792

B.2.2 Food security

Table 35 FRD results for the HHS score

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	1.139	0.020
Without covariates, cluster VCE and triangular kernel weights	1.005	0.044
With full MIS covariates, cluster VCE and uniform kernel weights	0.725	0.016
Without covariates, cluster VCE and uniform kernel weights	0.632	0.040

Table 36 FRD results for the household FCS

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-2.195	0.613
Without covariates, cluster VCE and triangular kernel weights	2.461	0.829
With full MIS covariates, cluster VCE and uniform kernel weights	0.431	0.523
Without covariates, cluster VCE and uniform kernel weights	3.792	0.854

Table 37 FRD results for whether the household was food insecure in the last food shortage

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	33.513	0.018
Without covariates, cluster VCE and triangular kernel weights	31.847	0.028
With full MIS covariates, cluster VCE and uniform kernel weights	19.502	0.009
Without covariates, cluster VCE and uniform kernel weights	18.000	0.017

B.2.3 Livestock

Table 38 FRD results for the ownership of livestock

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-13.438	0.391
Without covariates, cluster VCE and triangular kernel weights	-15.835	0.299
With full MIS covariates, cluster VCE and uniform kernel weights	-10.316	0.214
Without covariates, cluster VCE and uniform kernel weights	-11.526	0.163

Table 39 FRD results for the purchasing of livestock

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	2.520	0.344
Without covariates, cluster VCE and triangular kernel weights	0.462	0.303
With full MIS covariates, cluster VCE and uniform kernel weights	8.918	0.759
Without covariates, cluster VCE and uniform kernel weights	7.583	0.659

B.2.4 Assets

Table 40 FRD results for ownership of productive assets

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	0.695	0.868
Without covariates, cluster VCE and triangular kernel weights	1.734	0.795
With full MIS covariates, cluster VCE and uniform kernel weights	1.174	0.877
Without covariates, cluster VCE and uniform kernel weights	2.443	0.946

Table 41 FRD results for purchasing productive assets

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-24.127	0.012
Without covariates, cluster VCE and triangular kernel weights	-24.398	0.014
With full MIS covariates, cluster VCE and uniform kernel weights	-12.234	0.012
Without covariates, cluster VCE and uniform kernel weights	-11.861	0.015

Table 42 FRD results for the value of productive assets purchased

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	-2530.740	0.002
Without covariates, cluster VCE and triangular kernel weights	-2054.240	0.007
With full MIS covariates, cluster VCE and uniform kernel weights	-1241.801	0.012
Without covariates, cluster VCE and uniform kernel weights	-898.507	0.038

Table 43 FRD results for selling productive assets

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	0.610	0.318
Without covariates, cluster VCE and triangular kernel weights	0.726	0.284
With full MIS covariates, cluster VCE and uniform kernel weights	0.197	0.465
Without covariates, cluster VCE and uniform kernel weights	0.283	0.417

B.2.5 Financial inclusion

Table 44 FRD results for whether the household has any savings

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	7.141	0.977
Without covariates, cluster VCE and triangular kernel weights	8.478	0.887
With full MIS covariates, cluster VCE and uniform kernel weights	10.551	0.619
Without covariates, cluster VCE and uniform kernel weights	11.039	0.546

Table 45 FRD results for whether the household has borrowed any money

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	1.334	0.918
Without covariates, cluster VCE and triangular kernel weights	5.500	0.607
With full MIS covariates, cluster VCE and uniform kernel weights	0.511	0.726
Without covariates, cluster VCE and uniform kernel weights	2.488	0.505

Table 46 FRD results for whether the household has purchased something on credit in the last three months

Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	23.633	0.005
Without covariates, cluster VCE and triangular kernel weights	27.051	0.005
With full MIS covariates, cluster VCE and uniform kernel weights	10.307	0.006
Without covariates, cluster VCE and uniform kernel weights	12.415	0.005

Land

Table 47 FRD results for ownership of agricultural land

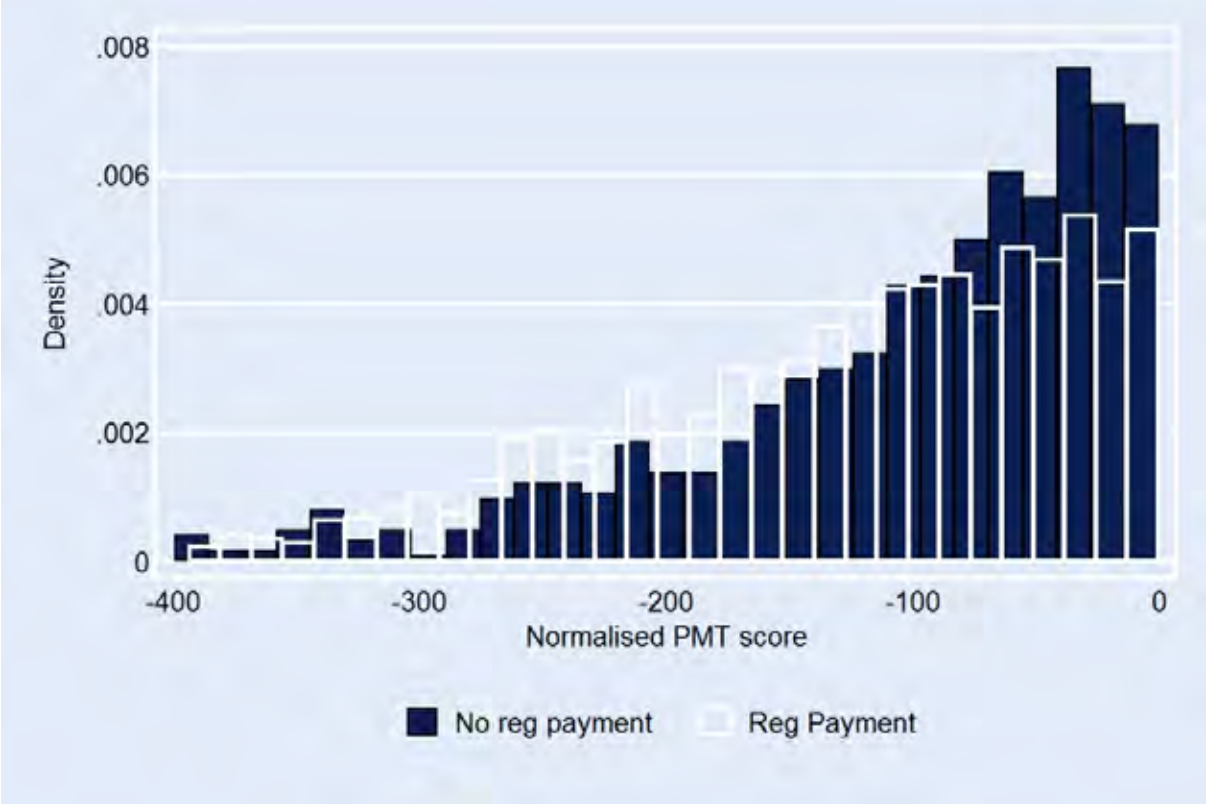
Model	Coefficient	P-value
With full MIS covariates, cluster VCE and triangular kernel weights	1.283	0.926
Without covariates, cluster VCE and triangular kernel weights	0.288	0.889
With full MIS covariates, cluster VCE and uniform kernel weights	3.676	0.838
Without covariates, cluster VCE and uniform kernel weights	3.263	0.788

Annex C Additional descriptive results

Distribution of transfers around the PMT cut-off

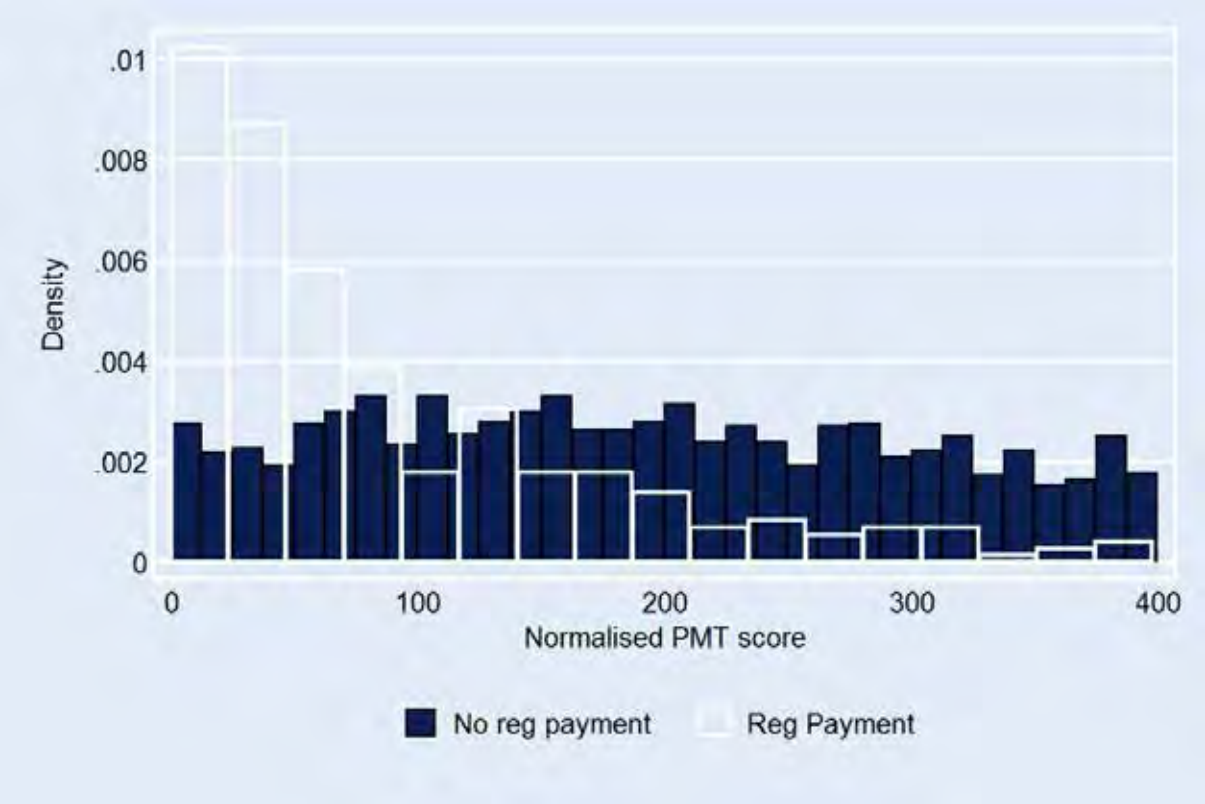
Figure 34 shows the distribution of Group A households that are actual routine beneficiaries. Households that have not received a routine payment are shown to be grouped more closely around the PMT cut-off of 0. If these households perform relatively worse than the actual routine beneficiaries, due to not actually receiving any payments, this may dilute any impact that the FRD finds.

Figure 34 Distribution of Group A observations that have received a routine HSNP payment

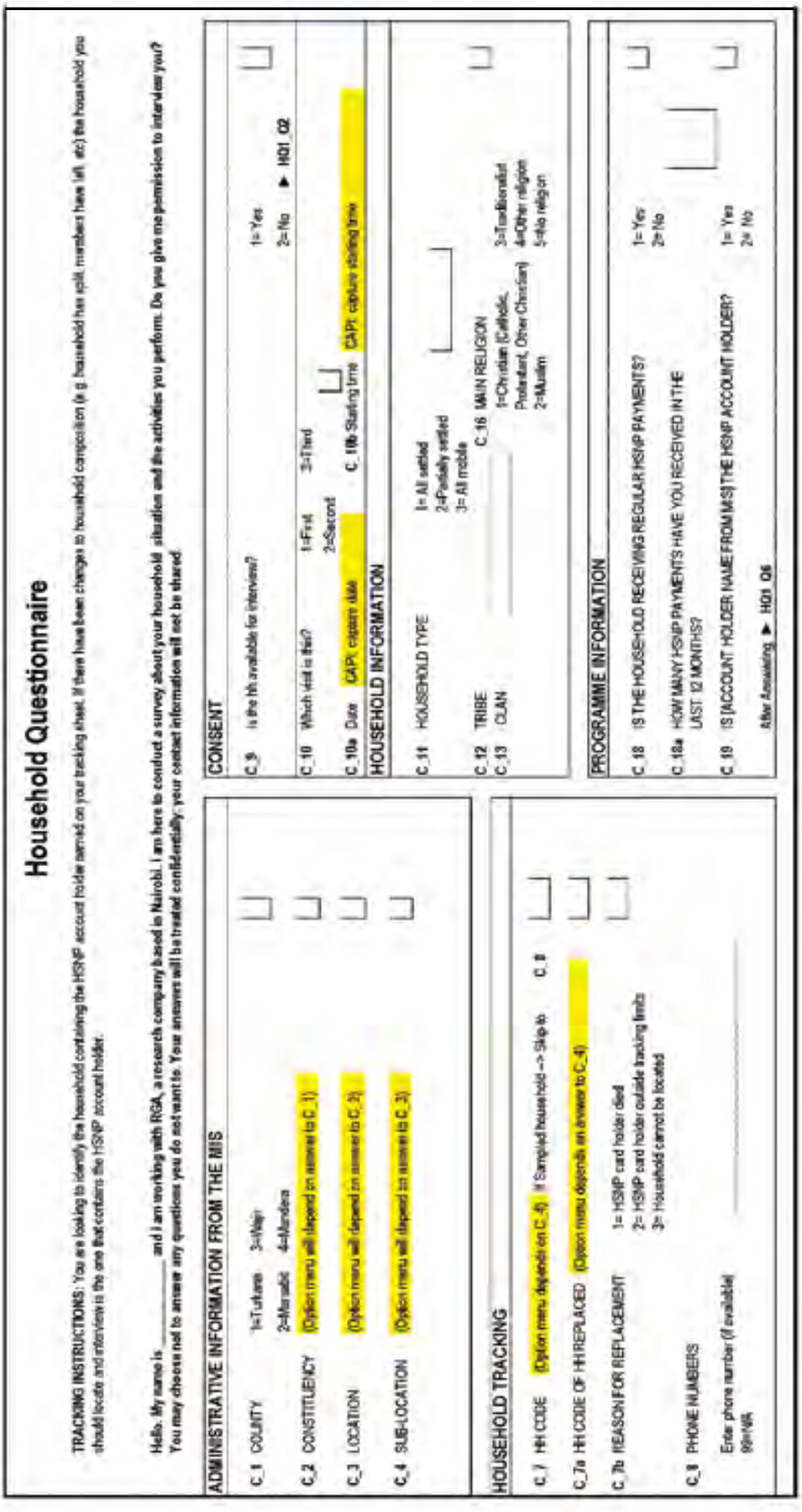


Likewise, Figure 35 shows that the observations in our Group B sample that have received a routine HSNP payment are distributed just to the right of the PMT cut-off. If these observations perform better in comparison to the rest of the control group they may also serve to dilute any impact.

Figure 35 Distribution of Group B observations that have received a routine HSNP payment



Annex D Household survey instrument



Household Questionnaire

TRACKING INSTRUCTIONS: You are looking to identify the household containing the HSNP account holder named on your tracking sheet. If there have been changes to household composition (e.g. household has split, members have left, etc) the household you should locate and interview is the one that contains the HSNP account holder.

Hello. My name is _____ and I am working with RSA, a research company based in Nairobi. I am here to conduct a survey about your household situation and the activities you perform. Do you give me permission to interview you?
You may choose not to answer any questions you do not want to. Your answers will be treated confidentially; your contact information will not be shared.

ADMINISTRATIVE INFORMATION FROM THE MIS

C_1 COUNTY 1=Turkana 3=Wajir 2=Marsabit 4=Mandera
C_2 CONSTITUENCY (Option menu will depend on answer to C_1)
C_3 LOCATION (Option menu will depend on answer to C_2)
C_4 SUB-LOCATION (Option menu will depend on answer to C_3)

HOUSEHOLD TRACKING

C_7 HH CODE (Option menu depends on C_4) If Sampled household --> Skip to C_8
C_7a HH CODE OF HH REPLACED (Option menu depends on answer to C_4)
C_7b REASON FOR REPLACEMENT 1= HSNP card holder died
2= HSNP card holder outside tracking limits
3= Household cannot be located
C_8 PHONE NUMBERS
Enter phone number (if available) 99=NR

CONSENT

C_9 Is the hh available for interview? 1= Yes 2=No ▶ H01_02
C_10 Which visit is this? 1=First 2=Second 3=Third
C_10a Date CAPI: capture date C_10b Starting time CAPI: capture starting time

HOUSEHOLD INFORMATION

C_11 HOUSEHOLD TYPE 1= All settled 2=Partially settled 3= All mobile
C_12 TRIBE
C_13 CLAN
C_16 MAIN RELIGION 1=Christian (Catholic, Protestant, Other Christian) 2=Muslim 3=Traditionalist 4=Other religion 5=No religion

PROGRAMME INFORMATION

C_18 IS THE HOUSEHOLD RECEIVING REGULAR HSNP PAYMENTS? 1= Yes 2= No
C_18a HOW MANY HSNP PAYMENTS HAVE YOU RECEIVED IN THE LAST 12 MONTHS?
C_19 IS [ACCOUNT HOLDER NAME FROM MIS] THE HSNP ACCOUNT HOLDER? 1= Yes 2= No
After Answering ▶ H01_05

INTERVIEW RESULT

	C_20	C_21	C_22			C_23	C_24
	What was the result of the interview?	Why was the interview not completed?	INTERVIEWER: Reschedule time and date to complete the interview			INTERVIEWER Record Name of the contact for rescheduled interview	INTERVIEWER: record contact telephone number/details for rescheduled interview if available
	Completed 1 ► Thank you Not completed 2 _____		DAY	MONTH	TIME		
VISIT ONE							
VISIT TWO							
VISIT THREE							

Thank you:
INTERVIEWER TO STATE: We have now completed the interview. Thank you very much for taking the time to talk us. All the information you have given is completely confidential and your name will not appear in any of the analysis of this data.

AREA FOR COMMENTS:

CAPI: Only display the 'interview result' box on command by the interviewer, during the interview. Otherwise, proceed to section 1 after 'Programme Information'.

1- Interview details

	HQ1_Q2	HQ1_Q3			HQ1_Q4	HQ1_Q5
	Why not? *INTERVIEWER: After answering terminate interview UNLESS answer is 105*	*INTERVIEWER: Reschedule time and date for interview with competent member*			*INTERVIEWER: Record Name of contact for rescheduled interview*	*INTERVIEWER: record contact number/details for rescheduled interview if available*
	101 = HH not known 102 = HH known but beyond the tracking limits 103 = HH within agreed tracking limits but not found 104 = HH refused interview 105 = HH found but not available/reschedule the interview (after answering ► HQ1_Q3) 106 = card holder died and no new card holder 107=HH already interviewed 97 = Other (specify)					
		DAY	MONTH	TIME		
VISIT ONE						
VISIT TWO						
VISIT THREE						

QUESTION NUMBER	QUESTION	ANSWER CODE	ANSWER
HQ1_Q6	What is the main language spoken in the household?	1= Borana 2= Burji 3= Gabra 4= Rendille 5= Samburu 6= Somali 7= Swahili 8= Turkana 9= English 10= Guoda 97= Other (specify)	☐
HQ1_Q7	Was an interpreter used?	1= Yes 2= No	☐

2 - Preamble Tracking

The HSNP programme came and collected information about this household. I would now like to ask you some questions to see if your household has changed and to make sure our information is correct.

Interviewer: Clarify the definition of a household before you ask if any members have left or joined. The definition is as follows:
Definition of a household: "A group of people who live in the same homestead (which may consist of more than a single dwelling) and share food and other items bought from a common household budget. This includes people who are away temporarily (e.g. herding, boarding school, sick who have gone away to get treatment)." This is the definition you will be using each time you refer to a 'household' throughout this interview and should be understood by both yourself and the respondent/s.

		HH2_0	HH2_1	HH2_2	HH2_3		HH2_4	HH2_5
	CAPI PROGRAMMER: Fill names and sex of household members from the MIS, starting with the household head and then in descending age order.	Is [NAME] currently a member of the household?	[NAME]'s Sex?	[NAME]'s Age?	Why is [NAME] no longer in the household?		How long has [NAME] not been part of this	Where did [NAME] move to?
		INTERVIEWER: People who are away temporarily are still considered household members		**Children under 1 year: write 0**	01= Marriage 02= Never in the household (error in MIS) ► next person 03= Moved to set up new HH 04= Died 05= Moved in with parents 06= Moved to get support (food, shelter, c 07= Moved to work elsewhere 08= Divorce/Separation	09= Moved for schooling (not boarding school) 10= To take care of relative 11= To follow the animals (herding) 12= Moved to live with other wife 13= Moved to assist with domestic duties 14= Conflict 15= Other, please specify	1 month or less 01 2-6 months 02 More than 6 months 03	Same village 01 Same sublocation 02 Elsewhere (further away) 03 Died 04 Don't know 98
		1= Yes 2= No ► HH2_3 *CAPI: Remove this person from the household roster*	Male=1 Female=2	After answering > Next person				*CAPI: Skip this question if HH2_3 = 4 (died)*
ID	NAME							
1		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
2		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
3		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
4		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
5		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
6		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
7		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
8		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
9		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
10		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
11		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
12		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
13		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
14		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋
15		⌊_⌋	⌊_⌋	⌊_⌋	⌊_⌋		⌊_⌋	⌊_⌋

HQ2_6	Are there any NEW household members that were NOT listed on the MIS HH member tracking sheet? (Include NEWBORNS.)	1=Yes 2 = No → **Next section**	

ID CODE	HQ2_7 What is this person's full name (list all three names if *INTERVIEWER: please list all NEW and 'not listed' household members (including new borns).* CAPI: Add new household member names to the roster.	HQ2_8 Why did [NAME] move into the household? *INTERVIEWER:* Ask for the most important reason Newly born 01 Always been here (missed in the MIS) —> next person 02 Marriage 03 Moved to get support (food,shelter,care) 04 Moved for schooling 05 To take care of household member 06 To work in sub-location 07 To access HSNP cash transfer 08 Divorce / separation 09 To work for the household 10 Adopted 11 Conflict 13 Breakup of former HH 14 Household merged 15 Other, please specify 97	HQ2_9 How long has this person been in this household? 1 month or less 01 2-6 months 02 More than 6 months 03	HQ2_10 What is [NAME]'s Sex? Male 01 Female 02	HQ2_11 What is [NAME]'s Age? Children under 1 year write 0
CAPI: ID CODE for new household member will be determined by the last code in the movers section above		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|
		|_|_|	|_|	|_|	|_|

3 - Roster

			Only HH Members 12+	Only HH Members under 18							
		HQ3_1	HQ3_3	HQ3_4	HQ3_5	HQ3_6	HQ3_7	HQ3_8	HQ3_9	HQ3_10	HQ3_11
ID CODE	CAPI: Enter names of HH members starting with the HH head and then in descending age order. Remove HH members that in the ML5 no longer in the HH and add new members (all the following since agreed not known yet)	What is [NAME]'s relationship to the household head?	What is [NAME]'s Marital Status?	Is [NAME]'s biological father alive?	Does [NAME]'s biological father live in the household?	Who is [NAME]'s biological father? (Select name from dropdown menu listing all male household members aged 12 and above)	Does [NAME]'s biological father suffer from any chronic illness or severe disability?	Is [NAME]'s biological mother alive?	Does [NAME]'s biological mother live in the household?	Who is [NAME]'s biological mother? (Select name from dropdown menu listing all female household members aged 12 and above)	Does [NAME]'s biological mother suffer from any chronic illness or severe disability?
		1 Household Head 2 Wife/Husband/concubine/ally 3 Son/daughter 4 Wife/Husband of son/daughter 5 Grandchild 6 Brother/sister 7 Brother/sister in law 8 Parent 9 Parent in law 10 Uncle/aunt 11 Cousin 12 Nephew/niece 13 Stepchild 14 Other relative 15 Not related 16 Grandparent 17 Ex-wife/husband 18 Stepmother/stepfather	1=Never Married 2=Married (Not Polygamous) 3= Cohabiting 4= Divorced/ separated 5= Widowed 6= Married Polygamous)	Yes 1 No 2 ▶ HQ3_8 Don't know 98 ▶ HQ3_8	Yes 1 No 2 ▶ HQ3_7	After Answering ▶ HQ3_8	Yes 1 No 2 Don't know 98	Yes 1 No 2 ▶ HQ3_12 Don't know 98 ▶ HQ3_12	Yes 1 No 2 ▶ HQ3_11	After Answering ▶ HQ3_12	Yes 1 No 2 Don't know 98
	Full name (name, middle name, surname)										
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											
11											

5

ANNEX D

		Only HH members aged 5+								
ID CODE		H03_12	H03_13	H03_14	H03_15	H03_16	H03_17	H03_18	H03_19	H03_20
	CAPI: Enter names of all members, starting with the HH head and then in descending age order. Remove HH members from the MIS who are gone in the HH and add new members [illegible]	What was [NAME]'s main activity in the last 12 months? [The main activity is what takes up most of [NAME]'s time]	What is [NAME]'s other activity in the last 12 months? [The other activity is the activity that takes up most of the remaining time after the main activity]	Is [NAME] currently attending school?	What is the highest grade [NAME] attained?	Does [NAME] suffer from any disabilities, whether severe or not severe?	Does [NAME] suffer from any severe disability? (Severe Disabilities refer to those who need permanent support including feeding)	What is the nature of [NAME]'s severe disability? **After Answering skip to H03_20** CAPI: Allow multiple responses	Does [NAME] suffer from any less severe disability?	Does [NAME] suffer from any chronic illness? [Defined as being confined to bed or not able to perform normal duties, suffering from HIV/AIDS, cancer or tuberculosis, and has been chronically ill at least for the last 3 months]
		01 = Attending Education/nursery 02 = Herding/Livestock production 03 = Unpaid domestic work 04 = Caring for relatives (children, the sick, the elderly) 05 = Unpaid work in family business 06 = Unpaid other work 07 = Paid Domestic work 08 = Paid work in family business 09 = Collecting bush products for sale 10 = Waged work (not casual labour) 11 = Livestock trader 12 = Casual labour 13 = Self-employed 14 = Collecting bush products for consumption 15 = Attending duksi 16 = Farming/Agricultural production 17 = Fishing 18 = Not working: too old 19 = Not working: too young 20 = Not working: unable 21 = Unemployed (no opportunity to work) 97 = Other (specify)	01 = Attending Education/nursery 02 = Herding/Livestock production 03 = Unpaid domestic work 04 = Caring for relatives (children, the sick, the elderly) 05 = Unpaid work in family business 06 = Unpaid other work 07 = Paid Domestic work 08 = Paid work in family business 09 = Collecting bush products for sale 10 = Waged work (not casual labour) 11 = Livestock trader 12 = Casual labour 13 = Self-employed 14 = Collecting bush products for consumption 15 = Attending duksi 16 = Farming/Agricultural production 17 = Fishing 18 = Not working: too old 19 = Not working: too young 20 = Not working: unable 21 = Unemployed (no opportunity to work) 97 = Other (specify)	1 = Yes 2 = No	01 = None/ nursery 02 = Standard I 03 = Standard II 04 = Standard III 05 = Standard IV 06 = Standard V 07 = Standard VI 08 = Standard VII 09 = Standard VIII 10 = Form I 11 = Form II 12 = Form III 13 = Form IV 14 = Form V 15 = Form VI Grade 5 or 6 17 = Diploma 18 = Certificate 19 = Degree 20 = Post Graduate 97 = Other (specify)	1 = Yes 2 = No ► H03_20	1 = Yes 2 = No ► H03_19	1 = Mentally Challenged 2 = Down syndrome 3 = Cerebral Palsy 4 = Paraplegia/Spinal chord injury 5 = No limbs (both arms and legs) 6 = Severe epilepsy 7 = Multiple disability 8 = Other (specify)	1 = Yes 2 = No	1 = Yes 2 = No
	Full name (name, middle name,	MAIN	OTHER							
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
11										

Beneficiary Information				
H03_21	[illegible] Who is the HSNP account holder?	CAPI: Select name from drop down list of household members [illegible]		[__]
H03_22	Has this household ever received any emergency HSNP payments?	CAPI: Only ask if [illegible]	1= Yes 2= No	[__]

4 - Livestock

		HQ4_1	HQ4_2	HQ4_3	HQ4_4	HQ4_5	HQ4_6	HQ4_7	HQ4_8	HQ4_9	HQ4_10	HQ4_11	HQ4_12	HQ4_13	HQ4_14	HQ4_15	HQ4_16
		Did you or any household member own any [ANIMAL.s] in the past 12 months? (This includes animals that were purchased and immediately slaughtered for consumption)	Did the household purchase/barter any [ANIMAL.s] during the last 12 months?	How many [ANIMAL.s] were purchased/bartered during the last 12 months?	How much was spent in the past 12 months on these purchases of [ANIMAL.s]? (For animals bartered, what was the value of what they gave away?)	From whom did you buy most of these [ANIMAL.s]?	Where does the person who you bought most of these [ANIMAL.s] from live?	Did the household sell/barter any [ANIMAL.]s during the last 12 months (excluding animals given out for dowry)?	How many [ANIMAL.]s were sold or bartered during the last 12 months?	How much did you earn in total from those sales? (For animals bartered, what was the value of what they received?)	To whom did you sell most of the [ANIMAL.] in the last 12 months?	Where was the customer from?	Was any [ANIMAL.] owned by you or any household member slaughtered in the last 12 months?	How many [ANIMAL.s] were stolen (including rustling) or got lost? (If animals were recovered do not include them)	In the past 12 months, did you or any household member own any [ANIMAL.s] which died?	How many [ANIMAL.s] died?	How many [ANIMAL.]s does the household own currently?
		1= Yes 2= No ► next animal	01 Yes, purchased 02 Yes, bartered 03 Yes, purchased and bartered 04 No ► HQ4_7			01= Other households 02= Livestock traders 97= Other (specify)	01= Inside HSNP counties 02= Outside HSNP counties 98= Don't know	01 Yes, sold 02 Yes, bartered 03 Yes, sold and bartered 04 No ► HQ4_12			01= Other households 02= Livestock traders 03= Other business (butcher, meat factory, etc) 97= Other (specify)	01= Inside HSNP counties 02= Outside HSNP counties 98= Don't know	1= Yes 2= No ► HQ4_14		1= Yes 2= No ► HQ4_16		
ANIMALs	CODE				Ksh					Ksh							
Cattle	401																
Goats	402																
Sheep	403																
Camels	404																
Donkey/mules/horse	405																
Poultry	406																
Beehives	407																
Other animals (specify)	408																

CAPI: Ask HQ4_1 for all animals. Then ask the remaining questions only for animal(s) where HQ4_1==1

ANNEX D

ANNEX D

4 - Livestock -2

HQ4_17	CAPI: Only ask if HQ4_3==2 (no animals owned in past 12 months) Do you or anyone in the household herd or rear any animals belonging to someone else?	1= Yes 2= No ► HQ5_1	|__|
HQ4_18	Did you buy any form of livestock insurance in the last 12 months?	1= Yes 2= No	|__|

CAPI: Ask questions HQ4_19 to HQ4_22 for each animal in all households that answered Yes to HQ4_17 and to all households for which HQ4_1=1			HQ4_19 Did you sell any by-products from all [ANIMAL]s owned, reared or herded by members of the household in the past 12 months? 01 Yes 02 No ► Next animal	HQ4_20 How much did you earn in the past 12 months from the sale of [ITEM] obtained from your [ANIMAL]s? (For products bartered, estimate the value) IWER/INTERVIEWER: Prompt for relevant product Ksh	HQ4_21 To whom did you sell most of these [ITEM]s? 01=Other households 02=Trader (weekly markets, itinerant vendors) 03= Other businesses (with a permanent structure) 97= Other (specify)	HQ4_22 Where was this customer based? 1= Inside HSNP counties 2= Outside HSNP counties
ANIMALS	CODE	ITEM				
Cattle	401	Milk and milk products	|__|			
		Hides and skins				
		Dried and fresh meat (including organs)				
		Dung				
		Horns (jewellery)				
Goats	402	Milk and milk products	|__|			
		Hides and skins				
		Dried and fresh meat (including organs)				
		Dung				
		Horns (jewellery)				
Sheep	403	Milk and milk products	|__|			
		Hides and skins				
		Dried and fresh meat (including organs)				
		Dung				
		Mohair wool				
		Horns (jewellery)				
Camels	404	Milk and milk products	|__|			
		Hides and skins				
		Dried and fresh meat (including organs)				
		Dung				
Donkeys/mules/ass	405	Milk and milk products	|__|			
		Hides and skins				
		Dried and fresh meat (including organs)				
		Dung				
Poultry	406	Eggs	|__|			
		Dried and fresh meat (including organs)				
		Dung				
Bees	407	Honey	|__|			
Other animals (specify)	408	Milk and milk products	|__|			
		Hides and skins				
		Dried and fresh meat (including organs)				
		Dung				
		Eggs				
		Horns (jewellery)				
		Mohair wool				

HQ4_23	Did you purchase any of the following inputs in the last 12 months to herd/rear [ANIMAL]? *CAPI: Allow multiple responses*	1= Fodder (including wage of herders) 2= Manufactured feeds, salt 3= Vet services/ drugs/ medicine/ vaccines 4= Water 5=Bells 97=Other (specify) 7= None ▶ HQ5_1		

CAPI: Ask only for input selected in question HQ4_23		HQ4_24	HQ4_25	HQ4_26
		During the last 12 months, how much did you spend on [INPUT], including transport?	Who did you purchase most of [INPUT] from?	Where was the supplier from?
			1=Other households 02=Traders (weekly markets, itinerant vendors) 03= Other businesses (with a permanent structure) 4=Other institutions and organisations 97= Other (specify)	1= Inside HSNP counties 2= Outside HSNP counties
CODE	INPUT	Ksh		
410	Fodder			
411	Manufactured feeds, salt			
412	Vet services/ drugs/ medicine/ vaccines			
413	Water			
414	Bells			
415	Other (specify)			

ANNEX D

5 - Assets

	ITEM	CODE	HQ5_1 In the last 12 months, did you own any [ITEM] (in working condition)? (This includes items that have been bought on credit and	HQ5_2 How many [ITEM]s does your household currently own?	HQ5_3 Did you purchase/acquire any [ITEM] in the past 12 months? (Include items bought on credit)	HQ5_4 How many [ITEM]s were purchased in the past 12 months?	HQ5_5 How much did the household spend in total buying these [ITEM]s in the past 12 months?	HQ5_6 From where were most of these [ITEM]s purchased?	HQ5_7 Where does the person/where most of these [ITEM]s were purchased from live?	HQ5_8 Did you sell or trade any [ITEM] in the past 12 months?	HQ5_9 How much did the household receive from selling these [ITEM]s in the past 12 months? Please estimate the value of any items bartered	HQ5_10 After or were most of these [ITEM]s sold to?	HQ5_11 Where was the customer from?
			01 Yes 02 No ► **Next item**		01 Yes, purchased 02 Yes, bartered 03 Yes, received as a gift 04 Yes, purchased on credit 05 No ► HQ5_5		For better, estimate the value	1= Other households 02= Traders (weekly markets, itinerant vendors) 03= Other businesses (with a permanent structure) 07 = Other (specify)	1= Inside HSNP counties 2= Outside HSNP	1= Yes, sold 2= Yes, traded 3= Yes, both sold and traded 4= No ► **Next item**	KSh	1= Other households 02=Traders (weekly markets, itinerant vendors) 03= Other businesses (with a permanent structure) 07= Other (specify)	1= Inside HSNP counties 2= Outside HSNP counties
PRODUCTIVE ASSETS	Animal cart	001											
	Water drum (21 to 250 litres)	002											
	Water Tank (OR litres +)	003											
	Plough	004											
	Wheelbarrow	005											
	Sickle	006											
	Axe	007											
	Hoe (Jembe)	008											
	Spotlight	009											
	Spade	010											
	Machete (panga)	011											
	Sewing machine	012											
	Fishing line	013											
	Fishing net	014											
	Pick	015											
	Spinning/weaving machine	016											
	Chisel/hammer	017											
	Brick mould	018											
	Grinding mill	019											
	Planter	020											
	Tractor	021											
	Handcart	022											
	Water	023											
	Bows/bow and arrow/dart	024											
	Adult	025											

			HOS 1	HOS 2	HOS 3	HOS 4	HOS 5	HOS 6	HOS 7	HOS 8	HOS 9	HOS 10	HOS 11
			In the last 12 months did you own any [ITEM] (in working condition)? (This includes items that have bought on credit and items that have been sold in the last 12 months)	How many [ITEM]s does your household currently own?	Did you purchase/barter any [ITEM] in the past 12 months? (include items bought on credit)	How many [ITEM]s were purchased in the past 12 months?	How much did the household spend buying these [ITEM]s in the past 12 months?	From whom were these [ITEM]s purchased?	Where does the person who these [ITEM]s were purchased from live?	Did you sell or barter any [ITEM] in the past 12 months?	How much did the household receive from selling these [ITEM]s in the past 12 months? Please estimate the value of any items bartered	Who were these [ITEM]s sold to?	Where was the customer based?
			01 Yes 02 No ► Next item		01 Yes, purchased 02 Yes, bartered 03 Yes, purchased and bartered 04 Yes, purchased on credit 05 No ►			1= Other households 02=Traders (weekly markets, itinerant vendors) 03= Other businesses (with a permanent 4= Other (specify)	1= Inside HSNP counties 2= Outside HSNP counties	01 Yes, sell 2=Yes, barter 3=No ► Next item		1= Other households 02=Traders (weekly markets, itinerant 03= Other businesses (with a permanent structure) 4= Other (specify)	1= Inside HSNP counties 2= Outside HSNP counties
	ITEM	CODE			HOS_5		Ksh				Ksh		
BASIC HOUSEHOLD GOODS	Charcoal/ wood stove (jiko)	526											
	Kerosene stove	527											
	Leather/ stick bed	528											
	Mattress	529											
	Knife	530											
	Metal box/trunk	531											
	Blanket	532											
	Mosquito net	533											
	Gourd	534											
	Bucket	535											
	Mat (Mkeka)	536											
	Stool	537											
	Torch (electric lamp)	538											
	Jerry can (5l, 10l, 20l)	539											
CONSUMER DURABLES	Mobile telephone	540											
	Radio	541											
	Beads (necklaces/ bracelets)	542											
	Other jewellery (gold, silver)	543											
	Bicycle	544											
	Wheelbarrow	545											
	Portable solar panel/charger	546											
	Paraffin lamp	547											
	Tin Lamp	548											

ANNEX D

			HQ5_1	HQ5_2	HQ5_3	HQ5_4	HQ5_5	HQ5_6	HQ5_7	HQ5_8	HQ5_9	HQ5_10	HQ5_11
			In the last 12 months did you own any [ITEM] (in working condition)? (This includes items that have bought on credit and items that have been sold in the last 12 months)	How many [ITEM]s does your household currently own?	Did you purchase/barter any [ITEM] in the past 12 months? (Include items bought on credit)	How many [ITEM]s were purchased in the past 12 months?	How much did the household spend buying these [ITEM]s in the past 12 months?	From whom were these [ITEM]s purchased?	Where does the person who these [ITEM]s were purchased from live?	Did you sell or barter any [ITEM] in the past 12 months?	How much did the household receive from selling these [ITEM]s in the past 12 months? Please estimate the value of any items bartered.	Who were these [ITEM]s sold to?	Where was the customer based?
			01 Yes 02 No ► **Next item**		01 Yes, purchased 02 Yes, bartered 03 Yes, purchased and bartered 04 Yes, purchased on credit 05 No ► HQ5_8			1= Other households 02= Traders (weekly markets, itinerant vendors) 03= Other businesses (with a permanent 4= Other (specify)	1= Inside HSNP counties 2= Outside HSNP counties	01 Yes, sell 2= Yes, barter 3= No ► **Next item**		1= Other households 02= Traders (weekly markets, itinerant vendors) 03= Other businesses (with a permanent structure) 4= Other (specify)	1= Inside HSNP counties 2= Outside HSNP counties
	ITEM	CODE					Ksh				Ksh		
FURNITURE	Modern chairs/sofas												
	Modern table												
	Modern bed (wood/metal)												
	Sofa set												
	Wardrobe												
	Chest of drawers												
	Shelves												
OTHER EXPENSIVE DURABLES	Car												
	Motorcycle/scooter												
	Computer												
	Television												
	Satellite Dish												
	Washing machine												
	Fixed solar panel												
	Fridge												

5 - Assets - 2

HO5_12	What are the walls of the household's main dwelling predominantly made of?	Stone	1	|__|__|
		Brick/ block/ cement	2	
		Mud/ dung	3	
		Wood	4	
		Grass/ reeds	5	
		Corrugated iron	6	
		Sticks/ palm/leaves	7	
		Tin	8	
		Various (sticks, plastic, sheets, etc.)	9	
		Other (specify)	97	
HO5_13	What is the main flooring material of the household's main dwelling?	Cement	1	|__|__|
		Tiles	2	
		Wood	3	
		Sand/earth/dung	4	
		Other (specify)	97	
HO5_14	How many rooms in total are there in the household? (exclude toilets and bathrooms) Rooms need to have a roof and walls)			|__|__|
HO5_15	What is the main cooking appliance?	Traditional fire	1	|__|__|
		Ordinary jiko	2	
		Improved jiko	3	
		Kerosene stove	4	
		Gas cooker	5	
		Electric cooker	6	
		Other (specify)	97	
HO5_16	What is the main source of cooking fuel?	Electricity	1	|__|__|
		Paraffin	2	
		Gas	3	
		Purchased firewood	4	
		Collected firewood	5	
		Charcoal	6	
		Biomass residue (agricultural waste)	7	
		Other (specify)	97	
HO5_17	What is the main source of lighting fuel?	Electricity	1	|__|__|
		Paraffin	2	
		Gas	3	
		Battery torch	4	
		Solar	5	
		Purchased firewood	6	
		Collected firewood	7	
		Candle	8	
		Biomass residue (agricultural waste)	9	
		Other (specify)	97	

ANNEX D

HQ5_18	What kind of toilet facility does your household currently use?	Flush to sewer Flush to septic tank Pan/ bucket Covered pit latrine Uncovered pit latrine Ventilation improved pit latrine Bush Other (specify)	1 2 3 4 5 6 7 97	|_|_|
HQ5_19	What is your main source of drinking water currently?	Piped water into dwelling or compound Piped water to yard/plot Public tap/Standpipe Tubewell/Borehole Protected dug well Unprotected dug well Protected Spring Unprotected Spring Rainwater Collection Bottled water Cart with small tank/drum Tanker-truck stream, canal, irrigation, channel) Other (specify)	1 2 3 4 5 6 7 8 9 10 11 12 13 97	|_|_|
HQ5_20	How long does it currently take to go there, get water and come back?	Note: (if HQ5_19 Answer = 1 then put 0 hours and 00 minutes).		|_| hours |_|_| minutes

	HQ5_22		
	How long does it take to walk to and from the nearest [AMENITY]?		
	AMENITY	HOURS	MINS
HQ5_22_1	place where you do basic shopping (maize, flour, oil, batteries etc		
HQ5_22_2	primary education facility		
HQ5_22_3	health facility (do not include a very small dispensary, traditional healer or pharmacy)		

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6 - Land and crops

HQ6_1	Did your household **own** any land that was used for crop production in the past 12 months? This includes all plots, **including kitchen/ garden plots,** owned, shared-out, shared-in or rented-out by he household in the previous 12 months.	1= Yes 2= No	
HQ6_2	In the past 12 months, did your household cultivate any plots that were not owned?	1= Yes 2= No► HQ7_1	
HQ6_3	How many plots do you own or cultivate all together?		

CAPI: The number of rows in this roster should be equal to the number of plots owned or cultivated altogether: (The answer to HQ6_3)

	HQ6_4	HQ6_5	HQ6_6	HQ6_7
	What is the cultivated area of plot [PLOT ID]?	What is your tenure on plot [PLOT ID]?	What type of arrangement did you have on plot [PLOT ID] in the previous season ?	What was the principal use of plot [PLOT ID] in the previous season?
	For small plots less than 0.5 acres where exact size is unknown, mark 888 *Don't know (larger than 0.5 acres) 999*	01 Owned 02 Rented in ► HQ6_7 03 Borrowed or free-leased in ► HQ6_7 04 Communal ► HQ6_7 05 Sharecropped in ► HQ6_7 97 Other ► HQ6_7	01 Used by the household 02 Sharecropped out 03 Rented out 04 Lent or free-leased out 97 Other	01 Crop/vegetables 02 Kitchen/garden plot 03 Orchard 97 Other
PLOT ID	ACRES			
1				
2				
3				
4				
5				
6				
7				

HQ6_8	Were any of the plots planted with grains, legumes, vegetables or fruit during the last 12 months? (Probe for other types including cereals, tobacco, maraa, etc) Do not consider plots that have been rented out	1= Yes 2= No ► HQ7_1	

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		HQ6_9	HQ6_10_1	HQ6_10_2	HQ6_11_1	HQ6_11_2
		Was [CROP] grown in the past 12 months on any of the household plots?	What was the **total harvest** of [CROP] in the previous season (before any sharing)?		How much of the harvest did the household receive (or is expected to receive) in the previous season?	
		INTERVIEWER: This includes kitchen garden plots, but excludes plots that were rented or let out	For Mira, banana, kale and sugar cane quantify for the last 12 months If 0 ► next crop		*CAPI Only ask if HQ6_5==5 or HQ6_5==2 (sharecropping)*	
		01 Yes 02 No ► next crop	Unit codes 1= Kg 2= 50 kg bag 3= 90 kg bag 4= Tonnes 5= Number		Unit codes 1= Kg 2= 50 kg bag 3= 90 kg bag 4= Tonnes 5= Number	
CODE	Name		Number	Unit code	Number	Unit code
601	Maize					
602	Sorghum					
603	Cassava					
604	Wheat					
605	Millet					
606	Beans					
607	Peas					
608	Green grams/ dengu/ lentils					
609	Potatoes					
610	Sunflower					
611	Barley					
612	Oats					
613	Tobacco					
614	Miraa					
615	Rice					
616	Sugar cane					
617	Cotton					
618	Banana					
619	Kale					
620	Cabbage					
621	Other crop (specify)					

CAPI: Only ask HQ5_11 to HQ6_16 if question HQ6_10_a is different from 0

		HQ6_12	HQ6_13_1	HQ6_13_2	HQ6_14	HQ6_15	HQ6_16
		Did you sell or barter any of the harvest of [CROP] in the previous season?	How much of the harvest did you sell/barter in the previous season?		How much was earned from these sales of [CROP] in the previous season? (In case of barter estimate the value)	To whom did you sell or barter [CROP] from the harvest in the previous season? *(Only write the most important costumer)*	Where was this customer from?
		1= Yes, sell 2= Yes, barter 3= Yes, sell and barter 4= No ► next crop	Unit codes: 1= Kg 2= 50 kg bag 3= 90 kg bag 4= Tonnes 5= Number		*Please estimate the value of sales in kind.*	1= Other households 02= Traders (weekly markets, itinerant vendors) 3= Other businesses 4= Other (specify)	1= Inside HSNP counties 2= Outside HSNP counties
CODE	Name		Number	Unit code	Ksh		
601	Maize						
602	Sorghum						
603	Cassava						
604	Wheat						
605	Millet						
606	Beans						
607	Peas						
608	Green grams/ dengu/ lentils						
609	Potatoes						
610	Sunflower						
611	Barley						
612	Oats						
613	Tobacco						
614	Miraa						
615	Rice						
616	Sugar cane						
617	Cotton						
618	Banana						
619	Kale						
620	Cabbage						
621	Other crop (specify)						

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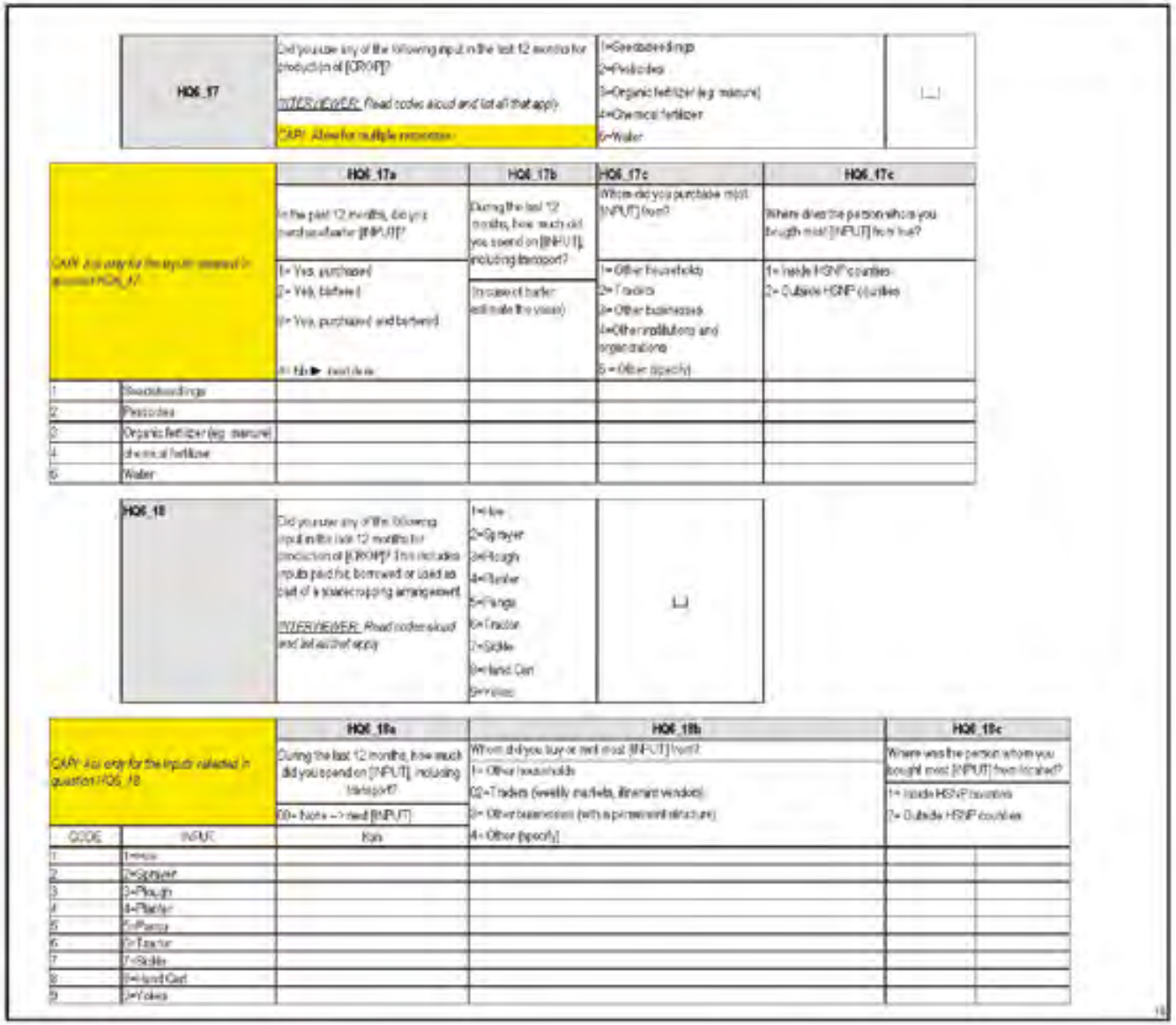
ANNEX D



HQ6_17	Did you use any of the following input in the last 12 months for production of [CROP]? *INTERVIEWER: Read codes aloud and list all that apply* *CAPI: Allow for multiple responses*	1=Seeds/seedlings 2=Pesticides 3=Organic fertilizer (eg manure) 4=Chemical fertilizer 5=Water

CAPI: Fill only for the inputs selected in question HQ6_17

CODE	INPUT	HQ6_17a: In the past 12 months, did you purchase/barter [INPUT]? 1= Yes, purchased 2= Yes, bartered 3= Yes, purchased and bartered 4= No ► next item	HQ6_17b: During the last 12 months, how much did you spend on [INPUT], including transport? In case of barter: tell me the value	HQ6_17c: Where did you purchase most [INPUT] from? 1= Other households 2= Traders 3= Other businesses 4=Other institutions and organizations 5 = Other (specify)	HQ6_17c: Where does the person who you bought most [INPUT] from live? 1= Inside HSNP counties 2= Outside HSNP counties
1	Seeds/seedlings				
2	Pesticides				
3	Organic fertilizer (eg manure)				
4	chemical fertilizer				
5	Water				

HQ6_18	Did you use any of the following input in the last 12 months for production of [CROP]? This includes inputs paid for, borrowed or used as part of a livestock rearing arrangement *INTERVIEWER: Read codes aloud and list all that apply*	1=Hire 2=Sprayer 3=Plough 4=Planter 5=Panga 6=Tractor 7=Sickle 8=Hand Cart 9=Other

CAPI: Fill only for the inputs selected in question HQ6_18

CODE	INPUT	HQ6_18a: During the last 12 months, how much did you spend on [INPUT], including transport? 00= None --> next [INPUT] Ksh	HQ6_18b: From did you buy or rent most [INPUT] from? 1= Other households 2=Traders (weekly markets, itinerant vendors) 3= Other businesses (with a permanent structure) 4= Other (specify)	HQ6_18c: Where was the person whom you bought most [INPUT] from located? 1= Inside HSNP counties 2= Outside HSNP counties	
1	1=Hire				
2	2=Sprayer				
3	3=Plough				
4	4=Planter				
5	5=Panga				
6	6=Tractor				
7	7=Sickle				
8	8=Hand Cart				
9	9=Other				

7 - Consumption expenditures - Part A: Weekly food consumption

HQ7_1	INTERVIEWER: The respondent for this section should be the person who is the most informed about household food consumption. Who is the respondent for this section?	Roster ID code: |_|_|

	FOOD	CODE	HQ7_2 Was your household consumed [FOOD] during the past 7 days? (1= Yes; 2= No= Next FOOD)	HQ7_3 How many days did the household consume this item in the last 7 days?	HQ7_4 What was the total quantity consumed in the past week? NUMBER	HQ7_4 UNIT CODE	HQ7_5 What is the total value of the [FOOD] you consumed during the past 7 days? KSH	HQ7_6 What was the main source of the [FOOD / ITEM]? (1= Households from HSNP counties; 2= Households from outside HSNP counties; 3= Traders (weekly markets, itinerant vendors) from inside HSNP counties; 4= Traders (weekly markets, itinerant vendors) from outside HSNP counties; 5= Other businesses from inside HSNP counties; 6= Other businesses from outside HSNP counties; 7= Self production; 8= Food Aid; 97= Other (specify))
Cereals	Maize - grain	1						
	Maize - flour (pre-packed)	2						
	Maize - flour (Posho)	3						
	Wheat flour	4						
	Rice - pre-packed	5						
	Rice - loose	6						
	Other grains (sorghum, millet, other types)	7						
	Pasta - pre-packed	8						
	Pasta - loose (macaroni)	9						
	Bread	10						
Roots and tubers	Potatoes (Irish)	11						
	Other roots and tubers (sweet potatoes, cassava, arrow roots, yams)	12						
Pulses, legumes, nuts	Dried beans (cowpeas/mbaazi)	13						
	Other pulses	14						
	Nuts/seeds	15						
Eggs	Eggs	16						
Milk and milk products	Fresh milk	17						
	Powdered milk	18						
	Soured milk (Mala)	19						
Meat, poultry, offal	Goat meat/ sheep meat	20						
	Chicken	21						
	Camel meat	22						
	Beef	23						
	Other meat (bush meat, pork, donkey, etc)	24						
	Blood	25						
Fish	Fresh fish	26						
	Dried fish	27						
Oils/fats	Cooking oil (liquid)	28						
	Cooking fat (solid)	29						

LIST Codes			
Kilogram	1	Heap	11
Gram	2	Table spoon	12
Litre	3	Teaspoon	13
Millilitre	4	Big (polythene)	14
Small roll	5	Bottle	15
Packet	6	Jerry can	16
Bunch	7	Small Sack (less than 20kg)	17
Tin (Big) (gorogoro)	8	Big Sack (more than 20 kg)	18
Small Tin (small coffee)	9	Basket (debe)	19
Cup	10	Other (specify)	97

			HQ7_2	HQ7_3	HQ7_4			HQ7_5	HQ7_6
			Has your household consumed [FOOD] during the past 7 days? 1= Yes 2= No --> Next FOOD	How many days did the household consume this item in the last 7 days?	What was the total quantity consumed in the past week?	Unit Codes: 1 Kilogram 2 Gram 3 Litre 4 Millilitre 5 Single unit 6 Packet 7 Bunch 8 Tin (2kg) (garageni) 9 Small tin (tomato paste) 10 Cup 11 Heap 12 Table spoon 13 Tea spoon 14 Bag (polythene) 15 Bottle 16 Jerrycan 17 Small Sack (less than 20kg) 18 Big Sack (more than 20 kg) 19 Bucket (debe) 97 Other (specify)	What is the total value of the [FOOD] you consumed during the past 7 days?	What was the main source of this [FOOD ITEM]? 1= Households from HSNP counties 2= Households from outside HSNP counties 3= Traders from inside HSNP counties 4= Traders from outside HSNP counties 5= Other businesses from inside HSNP counties 6= Other businesses from outside HSNP counties 7= Self production
	FOOD	Code			NUMBER	UNIT CODE		KSH	
Sugar	Sugar	30							
Salt, spices	Salt	31							
	Spices (chili, etc.)	32							
Vegetables	Kale (Sukuma wiki)	33							
	White cabbage	34							
	Tomatoes	35							
	Tomato paste	36							
	Onions	37							
	Other vegetables (pepper, lettuce, etc)	38							
Fruits	Bananas (ripe)	39							
	Cooking bananas	40							
	Other fruits (lemon, mango, melon, etc.)	41							
Drinks	Tea leaves	42							
	Coffee	43							
	Other non-alcoholic drinks	44							
	Alcoholic beverages (beer, wines, spirits, home brew)	45							
Other	Meals eaten out (Exclude school meals)	46							
	Compound meals/Foods	47							
	Other ready made foods (biscuits, snacks)	48							
	Tobacco (cigarettes, khat/ Miraa)	49							
	Chat/ salt/ miraa	50							
Wild food	Nuts/seeds	51							
	Roots/flour	52							
	Fruit/berry	53							
	Leaf/flower	54							

ANNEX D

8a - Monthly non-food consumption

HQ8a_1	INTERVIEWER: The respondent for this section should be the person who is the most informed about household consumption. Who is the respondent for this section?	Roster ID code [__][__]

ITEM	CODE	HQ8a_2 Over the past 30 days did any member of the household pay for [ITEM]? Yes=1 No=2 ► HQ8a_2a	HQ8a_3 How much did you or any other household member spend on [ITEM] in the past 30 days? KSH	HQ8a_4 What was the main source of this [ITEM]? 1= Households from HSNP counties 2= Households from outside HSNP counties 3= Traders (weekly markets, itinerant vendors) from inside HSNP counties 4= Traders (weekly markets, itinerant vendors) from outside HSNP counties 5= Other businesses from inside HSNP counties 6= Other businesses from outside HSNP counties 7= Assistance (NGOs, Aid, etc) 8= Other institutions or organisations 9= Self-production
Water for household consumption (that you pay for)	801			

ITEM	CODE	HQ8a_2a Over the past 30 days, did any member of the household acquire or purchase (pay for) [ITEM]? Yes=1 No=2 ► next item	HQ8a_3a What was the total value of the [ITEM] that you obtained in the past 30 days? KSH	HQ8a_4a What was the main source of this [ITEM]? 1= Households from HSNP counties 2= Households from outside HSNP counties 3= Traders (weekly markets, itinerant vendors) from inside HSNP counties 4= Traders (weekly markets, itinerant vendors) from outside HSNP counties 5= Other businesses from inside HSNP counties 6= Other businesses from outside HSNP counties 7= Assistance (NGOs, Aid, etc) 8= Other institutions or organisations 9= Self-production
Paraffin/kerosene	802			
Charcoal (including self-produced)	803			
Firewood (including gathered)	804			
Other utilities (electricity, gas)	805			
Soap (toilet/laundry)	806			
Other toiletries (shampoo, toothpaste, hair cream, etc)	807			
Washing powder detergents	808			
Other cleaning materials, equipment (brushes, shoe polish, etc)	809			
Razors and razor blades	810			
Matches candles	811			
Batteries, bulbs	812			
Bus fares, matatu, taxis, boda boda	813			
Other transport expenses (bicycle, car repair, petrol etc) excluding transport to and from school or health facilities	814			
Haircut and other personal services	815			
Communications (phone calls - landline and/or mobile - post office expenses, etc)	816			
Bribes ("to cooperate")	817			
Rent (actual)	818			
Animal fodder (purchased fodder for donkeys etc)	819			
Water for animals (that you pay for)	820			

8b - 3 Months non-food consumption

ITEM	CODE	HQ8b_1 Over the past 3 months did any member of the household pay for [ITEM]? Yes=1 No = 2 ► next item	HQ8b_2 How much did you or any other household member spent on [ITEM] in the past 3 months? KSH	HQ8b_3 What was the main source of this [ITEM] ? 1= Households from HSNP counties 2= Households from outside HSNP counties 3= Traders (weekly markets, itinerant vendors) from inside HSNP counties 4= Traders (weekly markets, itinerant vendors) from outside HSNP counties 5= Other businesses from inside HSNP counties 6= Other businesses from outside HSNP counties 7=Assistance (NGOs, Aid, etc) 8=Other institutions and organisations
Medicines and medical supplies (e.g. bandages etc)	823			
Consultation and treatment fees (including gifts)	825			
Laboratory and diagnostic test fees	826			
Any other health expenditure	828			

ITEM	CODE	HQ8b_1a Over the past 3 months did any member of the household acquire or purchase (pay for) [ITEM]? Yes=1 No = 2 ► next item	HQ8b_2a What was the total value of the [ITEM] that you obtained in the past 3 months? Estimate value if in-kind KSH	HQ8b_3a What was the main source of this [ITEM] ? 1= Households from HSNP counties 2= Households from outside HSNP counties 3= Traders (weekly markets, itinerant vendors) from inside HSNP counties 4= Traders (weekly markets, itinerant vendors) from outside HSNP counties 5= Other businesses from inside HSNP counties 6= Other businesses from outside HSNP counties 7=Assistance (NGOs, Aid, etc) 8= Other institutions and organisations
Recreation (football, television, etc)	821			
Personal articles (umbrella, watch, lighter, belts, etc)	822			
Transport to and from health facilities	824			
Visits to traditional healers	827			

22

8c - Annual non-food consumption

ITEM	CODE	HQ8c_1 Over the past 12 months did any member of the household pay for [ITEM]? Yes=1 No = 2 ► next item	HQ8c_2 How much did you or any other household member spent on [ITEM] in the past 12 months? KSH	HQ8c_3 What was the main source of this [ITEM] ? 1= Households from HSNP counties 2= Households from outside HSNP counties 3= Traders (weekly markets, itinerant vendors) from inside HSNP counties 4= Traders (weekly markets, itinerant vendors) from outside HSNP counties 5= Other businesses from inside HSNP counties 6= Other businesses from outside HSNP counties 7=Assistance (NGOs, Aid, etc) 8=Other institutions and organisations
School fees (registration, tuition, exams, etc - NOT INCLUDING DUKSI and Madrassah)	839			
ITEM	CODE	HQ8c_1a Over the past 12 months did any member of the household acquire or purchase (pay for) [ITEM]? Yes=1 No = 2 ► next item	HQ8c_2a What was the total value of the [ITEM] that you obtained in the past 12 months? Estimate value if in kind KSH	HQ8c_3a What was the main source of this [ITEM] ? 1= Households from HSNP counties 2= Households from outside HSNP counties 3= Traders (weekly markets, itinerant vendors) from inside HSNP counties 4= Traders (weekly markets, itinerant vendors) from outside HSNP counties 5= Other businesses from inside HSNP counties 6= Other businesses from outside HSNP counties 7=Assistance (NGOs, Aid, etc) 8=Other institutions and
Adult men's clothing	829			
Adult women's clothing	830			
Children's clothing excluding school uniforms and shoes for school	831			
Material and tailoring items for clothes made at home	832			
Beads, jewellery and other ceremonial items	833			
Footware excluding school shoes (including repair costs)	834			
Mosquito nets	835			
Other textiles - not for clothes (blankets, bedsheets, towels etc.)	836			
Kitchen equipment (cutlery, pots, plates, kettle, jiko, etc)	837			
Lanterns, lamps, torches	838			
Private tuition	840			
Transport to and from school	841			
Uniforms including school shoes	842			
School supplies including textbooks	843			
School Food (apart from Free School Feeding Progamme)	844			
Religious education (duksi etc)	845			
Contributions (to religious groups/institutions, political parties, etc)	846			
Vet services and medicines for animals	847			

ANNEX D

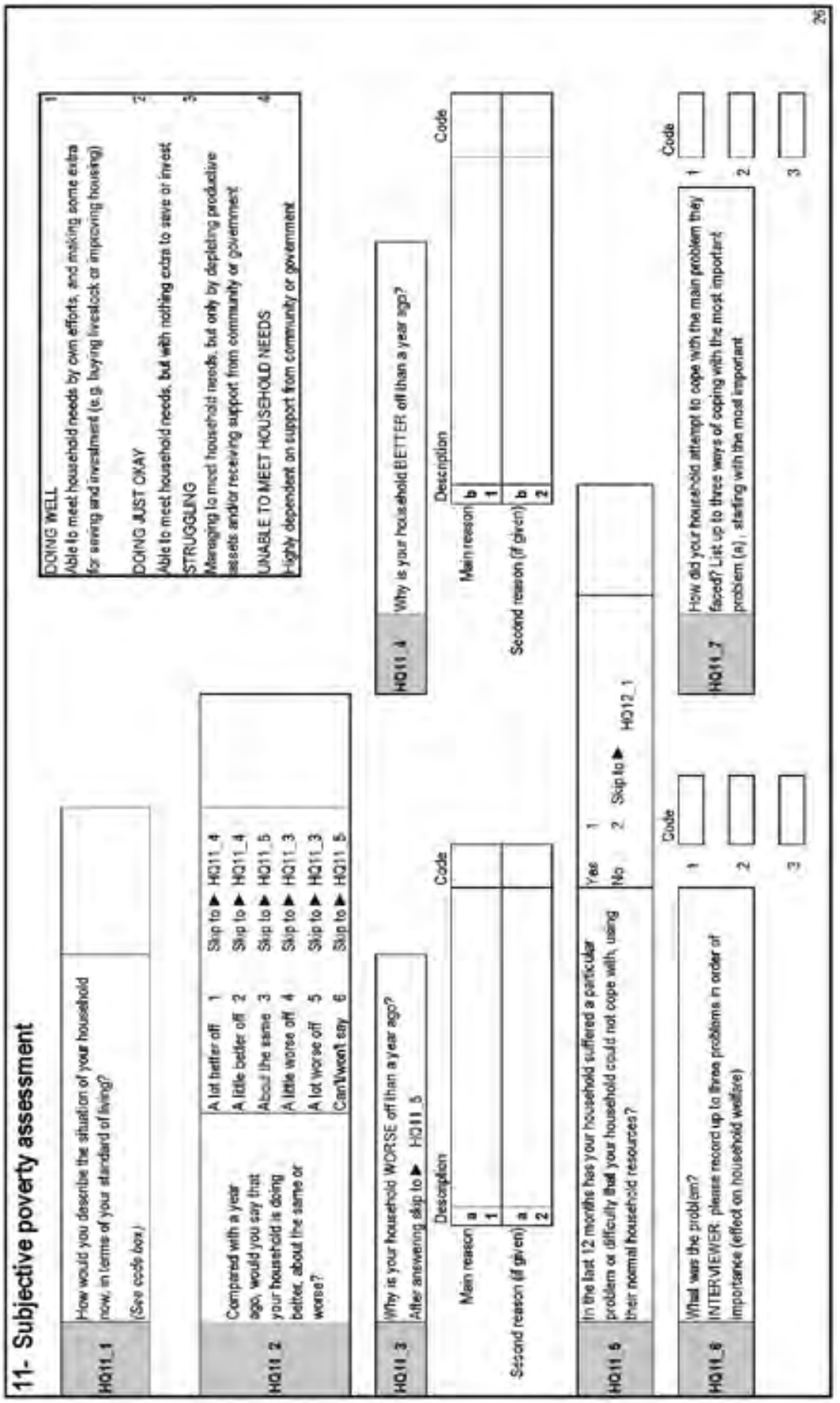
9 - Formal/Informal Transfers

	FORMAL TRANSFERS RECEIVED		
HQ9_1	Has anyone in your household received **Food Aid** in the last 12 months?	1=Yes 2=No ► HQ9_3	
HQ9_2	How many packages were received in the last 12 months?		
HQ9_3	Has anyone in your household received support through a **school feeding programme** in the last 12 months?	1=Yes 2=No	
HQ9_4	Has anyone in your household received support through a **supplementary feeding programme** in the last 12 months?	1=Yes 2=No	
HQ9_5	Did anyone in your household participate in an **employment programme** that gave food or cash for work in the last 12 months (NGO or government programme providing employment for people who don't have any other source of livelihood)?	1=Yes 2=No	
HQ9_6	Did you or anyone in the household receive any cash help from government agencies in the past 12 months, excluding the HSNP (for example, the CT-OVC)?	1=Yes 2=No	
HQ9_7	Did you or anyone in the household receive any in-kind help from government agencies in the past 12 months (excluding school feeding)? (examples: seeds, tools..)	1=Yes 2=No	
HQ9_8	Did you or anyone in the household receive any in kind help from NGOs or religious organisations in the past 12 months?	1=Yes 2=No	
HQ9_9	Did you or anyone in the household receive any in kind help from NGOs or religious organisations in the past 12 months?	1=Yes 2=No	
	INFORMAL TRANSFERS RECEIVED		
HQ9_10	Did you or anyone in the household receive any cash help from households located outside the HSNP counties (including from Nairobi, or other countries) in the past 12 months? (e.g gifts in cash from relatives and friends)	1=Yes 2=No ► HQ9_12	
HQ9_11	What was the total value of the cash help in the last 12 months from households located outside the HSNP counties (including from Nairobi, or other countries)? (e.g gifts in cash from relatives and friends)	Ksh	
HQ9_12	Did you or anyone in the household receive any other cash help from households inside the HSNP counties in the past 3 months? (e.g gifts in cash from relatives and friends)	1=Yes 2=No ► HQ9_14	
HQ9_13	What was the total value of the cash help in the last 3 months from households inside the HSNP counties in the past 3 months?	Ksh	
HQ9_14	Have you or anyone in the household received any in-kind transfers in the past 3 months from other household (relatives, friends)?	1=Yes 2=No	
	INFORMAL TRANSFERS GIVEN		
HQ9_15	In the past 12 months have you or anyone in the household given any cash to any other households?	1=Yes 2=No	
HQ9_16	In the past 3 months, have you or anyone in the household given any in-kind transfers to any other households?	1=Yes 2=No	

10 - Food Security

HQ10_1	**In the past 30 days**, was there ever no solid food to eat of any kind in your house because of lack of resources to get food?	01 = Yes, there was no food 02 = No, there was always solid food ► HQ10_3	⌊_⌋
HQ10_2	How often did this happen **in the past 30 days**?	01 = Rarely (1 – 2 days) 02 = Sometimes (3 – 10 days) 03 = Often (More than 10 days)	⌊_⌋
HQ10_3	**In the past 30 days**, did you or any household member go to sleep at night hungry because there was not enough food?	01 = Yes 02 = No ► HQ10_5	⌊_⌋
HQ10_4	How often did this happen **in the past 30 days**?	01 = Rarely (1 – 2 days) 02 = Sometimes (3 – 10 days) 03 = Often (More than 10 days)	⌊_⌋
HQ10_5	**In the past 30 days**, did you or any household member go a whole day and night without eating anything at all because there was not enough solid food?	01 = Yes 02 = No ► HQ10_7	⌊_⌋
HQ10_6	How often did this happen in the past 30 days?	01 = Rarely (1 – 2 days) 02 = Sometimes (3 – 10 days) 03 = Often (More than 10 days)	⌊_⌋
HQ10_7	In which period was the shortage of food most acute for your household?	01 = Before Long rains 02=During Long rains 03 = After Long rains 04 = Before Short rains 05=During Short rains 06 = After Short rains 07 = No periods of food shortages ►HQ11_1	⌊_⌋
HQ10_8	During the worst period, did your household skip entire days without eating? (this does not include liquids, i.e tea)	01 = Rarely (1 – 2 days) 02 = Sometimes (3 – 10 days) 03 = Often (More than 10 days) 04 = Never	⌊_⌋

Questions	Meaning of the question
HQ10_1 No food of any kind in the house	This question asks about a situation in which there is no food to eat of any kind in the house because food was not available to household members through usual means (e.g. through purchase or barter, gifts, from the garden or field, from storage structures).
HQ10_3 Go to sleep hungry because there was not enough food	This question asks whether the respondent or other household members felt hungry at bedtime because they did not have enough food to eat during the day and evening.
HQ10_5: Go a whole day and night without eating	This question asks whether any household member did not eat from the time they awoke in the morning to the time they awoke the following morning because there was not enough food. A person who chooses not to eat for a whole day for reasons other than a lack of food (e.g. if fasting) should not respond affirmatively to HH13 Q5


11- Subjective poverty assessment
HQ11_1
How would you describe the situation of your household now, in terms of your standard of living?
(See code box.)
DOING WELL
Able to meet household needs by own efforts, and making some extra for saving and investment (e.g. buying livestock or improving housing)
DOING JUST OKAY
Able to meet household needs, but with nothing extra to save or invest
STRUGGLING
Managing to meet household needs, but only by depleting productive assets and/or receiving support from community or government
UNABLE TO MEET HOUSEHOLD NEEDS
Highly dependent on support from community or government
HQ11_2
Compared with a year ago, would you say that your household is doing better, about the same or worse?
A lot better off 1 Skip to ▶ HQ11_4
A little better off 2 Skip to ▶ HQ11_4
About the same 3 Skip to ▶ HQ11_5
A little worse off 4 Skip to ▶ HQ11_3
A lot worse off 5 Skip to ▶ HQ11_3
Can't/won't say 6 Skip to ▶ HQ11_5
HQ11_3
Why is your household WORSE off than a year ago?
After answering skip to ▶ HQ11_5
HQ11_4
Why is your household BETTER off than a year ago?
Description
Code
Main reason a
1
Second reason (if given) a
2
Main reason b
1
Second reason (if given) b
2
HQ11_5
In the last 12 months has your household suffered a particular problem or difficulty that your household could not cope with, using their normal household resources?
Yes 1
No 2 Skip to ▶ HQ12_1
HQ11_6
What was the problem?
INTERVIEWER: please record up to three problems in order of importance (effect on household welfare)
Code
1
2
3
HQ11_7
How did your household attempt to cope with the main problem they faced? List up to three ways of coping with the most important problem (a), starting with the most important
Code
1
2
3
26

Codes HQ11_3 HQ11_6	
Loss of HHs own animals	1
Loss of land or water resources	2
Loss of productive assets	3
Loss of non-productive assets	
Loss of access to land, water or other natural resources for production	4
Loss of aid (ex. NGO programme finishing)	5
Loss of job/less frequent work	6
Loss of productive household member (death or leaving)	7
Illness/injury of household member	8
Less income from animal husbandry, fishing or farming	9
Less income from HH business	10
Increased number of dependents	11
Increased cost of food	12
Increased cost of fuels, transport or other necessities	13
Large expenditure on social obligations	14
Debt repayments	15
Conflict	16
Less income from other job	17
Other - specify	97

Codes HQ11_4	
Increase in animals owned	1
Better access to land, water or other natural resources for production	2
Increase in HHs own land or water resources	3
Increased income from animal husbandry,fishing or farming - higher production	4
Improved housing conditions	5
HH member got a (better) job / better paid	6
Increased income from household business	7
Increase in number or quality of labour (hh members)	8
Aid project (ex. New NGO programme)	9
Increase in income because of HSNP programme	10
Increase in income because of HSNP emergency transfer	11
Lower food costs	12
More support from remittances / other households	13
Decreased number of dependents	14
Purchase/investment in other productive assets	15
Other - specify	97

Codes for HQ11_7	
01 = Mortgage assets	11 = Reduce consumption
02 = Sell assets/land	12 = Consume lower quality food/ less preferred food
03 = Sell livestock	13 = Help provided by relatives and friends
04 = Use savings	14 = Help provided from local governments
05 = Withdraw children from school	15 = More wage employment
06 = Sent children for wage employment	16 = Change crop choices to avoid bad weather or pest attack
07 = Sent children to live elsewhere	17 = Improve technology
08 = Migration	18 = Work as self employed
09 = Formal borrowing	19 = Increased agricultural labor supply
	20 = HSNP Emergency transfer
	21=migration
	22=Nothing
	23=Pray
10 = Informal borrowing	97 = Other (specify)

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ANNEX D

12 - Saving and borrowing

HQ12_1	Do you or does anybody in this household currently have any cash savings/money? This includes savings in cash, savings in a formal bank account, or other kind of savings.	1 Yes 2 No ► HQ12_7	
HQ12_2	Where do you keep your savings/money? Please indicate all that apply	1= At home 2=Merry-go-round 3= NGO/ MFI 4= Cooperative/ SACCO/savings groups 5= Bank/ formal financial institution (not HSNP account) 6= With a trader or shop 7= In an HSNP bank account 8=Mobile Money (M-PESA, etc) 97=Other (specify)	
HQ12_3	What is the total value of all savings held by the household?	Ksh	
HQ12_4	What is the value of all the cash savings held by the household in hand?	Ksh	
HQ12_5	***NOTE:*** *Only ask if HQ12_2==5* What is the value of the savings held by the household in a formal bank account?	Ksh	
HQ12_6	***NOTE:*** *Only ask if HQ12_2==7* What is the the current balance of your HSNP bank account?	Ksh	
HQ12_7	Have you or anybody in your household borrowed any money in the last 12 months? (exclude airtime)	1 Yes ► HQ12_10 2 No	
HQ12_8	If not, why not?	1=No-one would lend: no-one has money 2=No-one would lend: not credit worthy 3=Prefer not to owe money 4= Don't need it 5= Religious reason 97= Other (specify)	

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HQ12_9	Do you or does anyone in the household have any outstanding loans to repay?	1= Yes 2 No ► HQ12_11	
HQ12_10	How much money do you currently owe in total (KSh)? (Amount outstanding)	Ksh	
HQ12_11	Have you or anybody in your household paid back any loans in the last 12 months?	1 Yes 2 No ► HQ12_13	
HQ12_12	How much money did you pay back in the last 12 months?	Ksh	
HQ12_13	Have you bought anything on credit in the last 3 months?	1 Yes ► HQ12_15 2 No	
HQ12_14	If not, why not? CAPI After Answering ► **Job Section if HQ12_7==2 HQ12_17 if HQ12_7==1**	1=No-one would lend: no-one has money 2=No-one would lend: not credit worthy 3=Prefer not to owe money 4=Don't need it 5= Religious reason 97=Other (specify)	
HQ12_15	What is the value (Ksh) of all goods bought on credit in the last 3 months?	Ksh	
HQ12_16	The last time you bought something on credit, what did you buy?	1=Food 2=Basic supplies (batteries, gas, etc) 3=Livestock 4=Inputs for livestock rearing 5=Agricultural inputs 6=Household asset 7=Cell phone airtime 97=Other (specify)	

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CAPI: Ask only if HQ12_7==1		HQ12_17 During the last 12 months, did you borrow any cash from [LENDER]? 1=Yes 2=No> **Next LENDER**	HQ12_18 How many times did you borrow from [LENDER] in the last 12 months?	HQ12_19 How much did you borrow (Total KSh) from [LENDER] in the last 12 months?	HQ12_20 What was the last loan you took from [LENDER] mainly for? 1=Food 2=Health cost 3=Education cost 4=Production/ 5=Social obligations 97=Other (specify)
CODE	LENDER				
121	1=Private (family/friend/etc.)				
122	2=Trader				
123	3=Money Lender				
124	4=Bank/Formal financial institutions				
125	5=NGO/MFI				
126	6=Religious organisation				
127	7=Merry-go-round				
128	8=Cooperative/ SACCO/savings groups				
97	97=Other (specify)				

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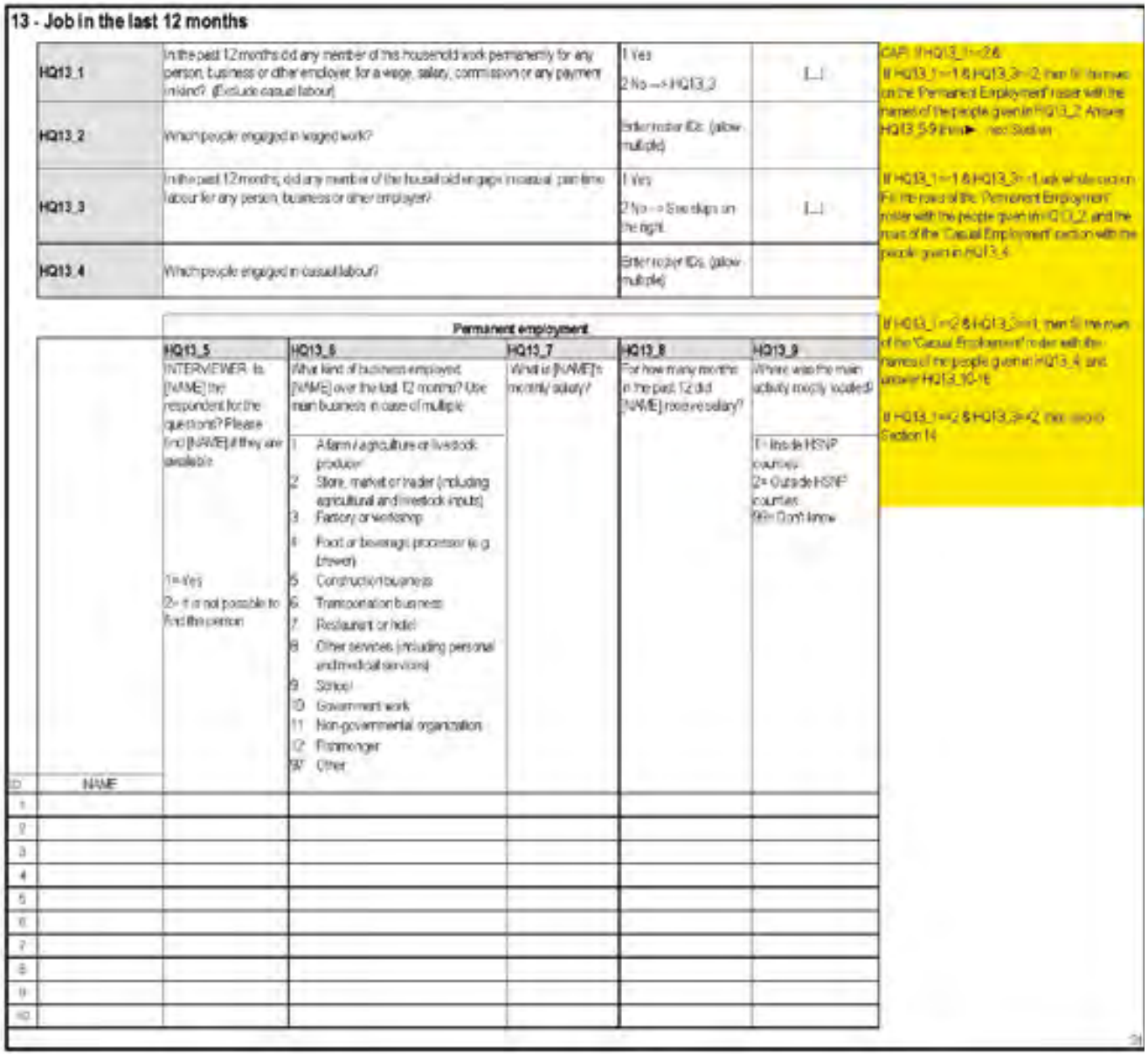

13 - Job in the last 12 months

HQ13_1	In the past 12 months did any member of this household work permanently for any person, business or other employer, for a wage, salary, commission or any payment in kind? (Exclude casual labour)	1 Yes 2 No --> HQ13_3	[__]
HQ13_2	Which people engaged in waged work?	Enter roster IDs. (allow multiple)	
HQ13_3	In the past 12 months, did any member of the household engage in casual part-time labour for any person, business or other employer?	1 Yes 2 No --> See skips on the right	[__]
HQ13_4	Which people engaged in casual labour?	Enter roster IDs. (allow multiple)	

CAPI: If HQ13_1=2 &

If HQ13_1=1 & HQ13_3=2 then fill the rows on the 'Permanent Employment' roster with the names of the people given in HQ13_2. Answer HQ13_5-9 then ► next Section

If HQ13_1=1 & HQ13_3=1 ask whole section. Fill the rows of the 'Permanent Employment' roster with the people given in HQ13_2 and the rows of the 'Casual Employment' section with the people given in HQ13_4

If HQ13_1=2 & HQ13_3=1, then fill the rows of the 'Casual Employment' roster with the names of the people given in HQ13_4 and answer HQ13_10-16

If HQ13_1=2 & HQ13_3=2 then go to Section 14

		Permanent employment				
		HQ13_5	HQ13_6	HQ13_7	HQ13_8	HQ13_9
		INTERVIEWER: Is [NAME] the respondent for the questions? Please find [NAME] if they are available 1= Yes 2= If or not possible to find the person	What kind of business employed [NAME] over the last 12 months? Use main business in case of multiple 1 A farm / agriculture or livestock producer 2 Store, market or trader (including agricultural and livestock inputs) 3 Factory or workshop 4 Food or beverage processor (e.g. brewer) 5 Construction business 6 Transportation business 7 Restaurant or hotel 8 Other services (including personal and medical services) 9 School 10 Government work 11 Non-governmental organization 12 Fishmonger 96 Other	What is [NAME]'s monthly salary?	For how many months in the past 12 did [NAME] receive salary?	Where was the main activity mostly located? 1 = Inside HSNP counties 2= Outside HSNP counties 99= Don't know
ID	NAME					
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

ANNEX D

		Casual Employment				
		HQ13_10	HQ13_11	HQ13_14	HQ13_15	HQ13_16
		INTERVIEWER: Is [NAME] the respondent for the questions? Please find [NAME] if they are available. 1= Yes 2= It is not possible to find the person.	For whom did [NAME] do this casual labour? 1 A farm / agriculture or livestock producer 2 Store, market or trader (including agricultural and 3 Other household 4 Factory or workshop 5 Food or beverage processor (e.g. brewer) 6 Construction business 7 Transportation business 8 Restaurant or hotel 9 Other services (including personal and medical services) 10 School 11 Government work 12 Non-governmental organization 13 Fishmonger 97 Other	For how many total days did [NAME] do casual labour over the past 3 months?	What was the average daily wage [NAME] received for the days worked at casual labour over the past 3 months? ESTIMATE CASH VALUE OF ANY INKIND PAYMENTS RECEIVED.	Where was the main activity mostly located? 1= Inside HSNP counties 2= Outside HSNP counties 98= Don't know
ID	NAME					
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

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14 Business

BQ1_1	Does your household run any business?	1=Yes 2= No---> Skip to C_20	⌊_⌋
BQ1_2	Which type of business? (If multiple businesses select the most important one)	01= Grocery / corner shop 02= Petty trade 03= Food processing (juice) 04= Butchery 05= Hardware (tin) 06= Agricultural input store 07= Mill (e.g., maize mill) 08= Charcoal / firewood 09= Mechanic / tire repair 10= Carpenter 11= Traditional healer 12= Taxi / moto taxi 13= Hotel / guest house 14= Bar / restaurant / take away 15= Electronics / phone repair 16= Tailor/ clothes repair 17= Hairdresser / cosmetician/ barber 18= Crafts (basket/ mechnic making, brickmaking etc.) 19=Construction material dealer 20= Clothing / shoe store 21= Livestock trader --> **skip to LQ2_1** 22= Fishmonger --**>skip to BQ3_1** 23= Financial services (M-PESA) 24 Transport (motorcycle, tuktuk) 96=Other (specify) _____	⌊_⌋
BQ2_1	*INTERVIEWER: The respondent for this section should be the person who is most knowledgeable about the business - the owner or the person in charge. Who is the respondent for this questionnaire?*	1= The owner 2= The person in charge of the day to day running of the business 3= Neither the owner nor the person in charge are available --> Skip to C_23	⌊_⌋
BQ2_1a	Who is the respondent for this section?		Roster ID code: ⌊_⌊_⌊
BQ2_2	Who is the owner of the business?		Roster ID code: ⌊_⌊_⌊
BQ2_3	In the last 12 months, for how many months did [ENTERPRISE] operate?		⌊_⌊
BQ2_4	Who is the most common type of customer of this business?	01= Households inside the HSNP counties 02= Households outside the HSNP counties 03= Traders inside the HSNP counties. 04= Traders outside the HSNP counties 05= Other businesses inside HSNP counties. 06= Other businesses outside HSNP counties. 98= Don't know	⌊_⌊_⌊

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BQ2_5	In the last 12 months, for how many months did the owner work for [ENTERPRISE]?		
BQ2_6	In the last 30 days, for how many days did the owner work for [ENTERPRISE]?		
BQ2_7	In the last 7 days, for how many hours did the owner work for [ENTERPRISE] on an average day?		
BQ2_8	Aside from the owner, are there any people currently working for [ENTERPRISE] who are not paid (e.g members of the household)?	1= Yes 2=No > Skip to BQ2_11	
BQ2_9	How many unpaid employees are currently working at [ENTERPRISE] in total, including family members who help in the business without being paid?		
BQ2_10	Do most of these unpaid workers work full time or part time?	1= Full time 2= Part time	
BQ2_11	Aside from the owner, are there any paid employees currently working for [ENTERPRISE]?	1=Yes 2=No > Skip to BQ_18	
BQ2_12	How many paid employees are there in total, (excluding the owner)?		
BQ2_13	In the last 12 months, for how many months did most of these paid workers work for [ENTERPRISE]?	*Report the most frequent number of months or, if difficult to establish, take the average*	
BQ2_14	In the last 30 days, for how many days did most of these paid workers work at [ENTERPRISE]?	*Report the most frequent number of days or, if difficult to establish, take the average*	
BQ2_15	In the last 7 days, for how many hours did most of these paid workers work at [ENTERPRISE] on an average day?	*Report the most frequent number of hours or, if difficult to establish, take the average*	
BQ2_16	In the last 30 days, how much did [ENTERPRISE] pay to these employees in total?	*Ksh*	
BQ2_17	Where do most of these employees live?	01= Inside HSNP counties 02= Outside HSNP counties 98= Don't know	

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		BQ2_18	BQ2_19	BQ2_20
		In the past 30 days, did you spend any money/paid in kind on [COST] for the operation of [ENTERPRISE]?	In the past 30 days, how much was paid for [COST] for the operation of [ENTERPRISE]?	Where does the person to whom money for [COST] was paid live?
		1=Yes 2=No —> next COST		01= Inside HSNP counties 02= Outside HSNP counties 03=Mobile money (eg. M-PESA) 98= Don't know
COST	**CODE**		Ksh	
rent	101	__		__
electricity	102	__		__
running water (piped in the business)	103	__		__
other water (e.g from a bucket)	105	__		__
transport costs (this includes any costs of vehicles, fuel, maintenance, costs of drivers, porters)	106	__		__
taxes, licenses (to the central government)	107	__		__
taxes, licenses (to the local government)		__		__
bribes and other fees	108	__		__
communications (e.g.Air time)	109	__		__
Insurance	110	__		__
Equipment, Machinery, tools	111	__		__

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		BQ2_21	BQ2_22	BQ2_23	BQ2_24		BQ2_25	BQ2_26	
		Do you buy in cash or in kind [INPUT] for this [ENTERPRISE]?	The last time you stocked up, how much did you spend on [INPUT] ? (For in-kind purchases estimate the value) RECORD HERE ONLY FROM INSIDE HSNP COUNTIES	Whom did you buy most of this [INPUT] from? RECORD HERE ONLY FROM INSIDE HSNP COUNTIES	Starting from the time you last stocked up, how long do you expect this [INPUT]? RECORD HERE ONLY FROM INSIDE HSNP COUNTIES		The last time you stocked up, how much did you spend on [INPUT]? RECORD HERE ONLY FROM OUTSIDE HSNP COUNTIES	Starting from the time you last stocked up, how long do you expect this [INPUT] to last for? RECORD HERE ONLY FROM OUTSIDE HSNP COUNTIES	
		1= Yes *2= No --> next INPUT*	*00= None --> BQ2_25*	*1= Household's* *2= Traders* *3= Other businesses/producers*		*1= Days* *2= Weeks* *3= Months*	*00= None --> BQ2_27*		*1= Days* *2= Weeks* *3= Months*
INPUT	**CODE**		Ksh		NUMBER	UNIT	Ksh	NUMBER	UNIT
livestock and livestock products	110	|_|		|_|	|_|_|	|_|		|_|_|	|_|
crops or other agricultural produce	111	|_|		|_|	|_|_|	|_|		|_|_|	|_|
merchandise or inputs from traders or wholesalers	112	|_|		|_|	|_|_|	|_|		|_|_|	|_|
inputs from other producers	114	|_|		|_|	|_|_|	|_|		|_|_|	|_|

BQ2_27	In the past 30 days, what was the total revenue from sales earned by this [ENTERPRISE]?	Ksh	
BQ2_28	Was this revenue about the same as in a normal month, more or less?	1= About the same 2= More than normal 3= Less than normal	|_|
BQ2_29	DO NOT READ OUT What is your opinion on the reported revenue?	1= I think stated revenue is underestimated 2= I think stated revenue is accurate 3= I think stated revenue is 4 = Don't know	|_|

CAPI: For BQ2_23, do not show code 3 for INPUT 114. Also, add a check that BQ2_22 and BQ2_25 can't both be 00.

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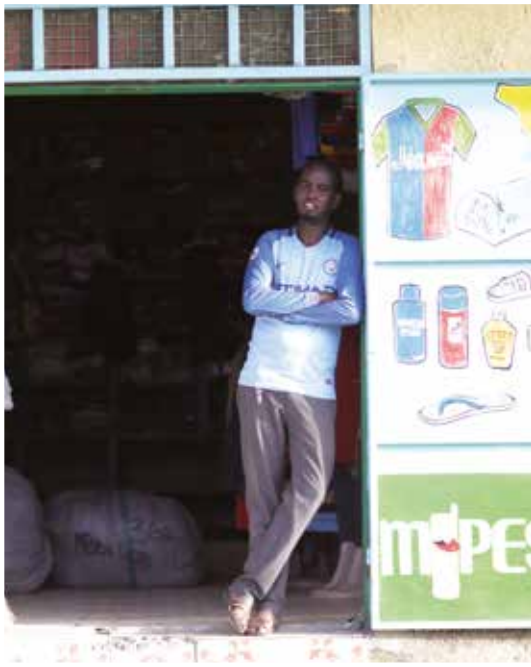


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