Analysis plan: Building Pathways out of Poverty for Ultra-poor Internally Displaced People in Baidoa

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1. Introduction

The 'Building Pathways Out of Poverty for Ultra-poor IDPs and Vulnerable Host Communities in Baidoa' is a three-year project implemented by World Vision and funded by the U.S. Agency for International Development (USAID)'s Bureau for Humanitarian Assistance (BHA). The project aims to enable ultra-poor internally displaced households to graduate from extreme poverty and begin an upward trajectory to self-reliance. The project site is Baidoa city in Somalia, where there is a large population of internally displaced persons (IDPs).

The objective of this evaluation is to generate rigorous, high-quality evidence about the effectiveness and cost-effectiveness of World Vision's graduation model programming in achieving graduation from extreme poverty for IDPs in Baidoa, Somalia. A randomized controlled trial (RCT) will be conducted using randomization at the household level to assign beneficiaries to receive World Vision services or to be part of the control arm. The evaluation findings will be used to programming both in this context and in other humanitarian contexts in which interventions target internally displaced persons or other vulnerable individuals in urban settings.

2. Research design

Interventions

The key intervention analyzed in this study is the Ultrapoor Graduation Model, a program consisting of four main elements. First, households receive cash transfers of $40 monthly for a period of a year to provide consumption support. Second, they participate in savings' groups designed to promote savings; the regular group meetings are also the forum for training delivered on a range of topics including financial literacy and business management. Third, they receive either a one-time asset transfer or funding to participate in a six-month technical training course at a local training institute to facilitate the establishment of a livelihoods activity that can provide a regular source of income. The choice of assets or TVET training is made by the household. Fourth, they participate in regular (group-based) coaching sessions designed to provide life skills training and encourage social integration.

Eligibility and sample selection

Program eligibility was determined based on household characteristics as measured in an initial vulnerability assessment. More specifically, eligible households were required to meet two criteria: they were characterized as experiencing moderate or severe hunger according to the Household Hunger Scale (HHS), and they were resident in the IDP site for at least one month. These were criteria identified as important for program eligibility by the program team and validated by participants and community members through focus group discussions. Households experiencing hunger are those who have a higher level of need; and households who have been resident at least a month are likely to be more stable residents of the camp and remain at the site for the duration of the program and evaluation.

The initial vulnerability assessment identified 6,323 households who were eligible for the program. Ultimately, 5,000 households were enrolled into the intervention. The original sample design envisioned a sample of 3,000 intervention households in two separate treatment arms (1500 in each treatment arm) – with a further 2,000 households receiving UPG who would not enter the evaluation and would not be surveyed -- and a control arm including an additional 1,500 households. However, given the ultimate number of eligible households was lower than anticipated, the control arm was reduced in size to maintain the target number of intervention households.

In the baseline survey, the survey team targeted 2,980 of these households identified as eligible for treatment for inclusion in the evaluation, and successfully surveyed 2,872.[1] 1,323 households were assigned to the control arm and 1,244 of these households were successfully surveyed. This generated a total sample of 4,116 households entering the evaluation. Households that were not surveyed were excluded for two reasons: they could not be contacted by enumerators during the designated survey period; or they declined to participate.

Randomization

Randomization was conducted by the research team in Stata using the data from the initial vulnerability assessment. The randomization was conducted before the baseline survey conditional on four strata constructed using two binary variables: a binary asset indicator that obtained value 1 if the household had an asset index above the median (zero otherwise). and a binary indicator capturing households' length of stay in the IDP site equaling 1 if the length of stay was more than 1 year (zero otherwise). As previously noted, households were originally randomized into three experimental arms (two treatment arm and one control arm) all of symmetric size, with the objective of comparing two alternate strategies for household

[1] The remaining treatment households were not targeted for inclusion in the evaluation.

coaching (individual- and group-based coaching); subsequently, the decision was made to use only a single coaching model for operational ease, and thus the two treatment arms were pooled.

Surveys

Primary and secondary outcomes

This evaluation has **three primary outcomes** prespecified at baseline: the percentage of households with moderate and severe Household Hunger Scale (HHS) scores; household per capita consumption; and the estimated value of household assets.

HHS is an experience-based food insecurity indicator focusing on hunger specific aspects. The HHS module has a recall period of 4 weeks (or 30 days) and has three occurrence questions and three frequency-of-occurrence questions (Ballard et al. 2011). Household per capita consumption is based on food and non-food consumption modules included in the midline and endline surveys and estimated following the approach outlined in Deaton and Zaidi (2002). Appendix A provides a more detailed description of the consumption data estimation.

The estimated value of household assets is constructed using household reports of assets in 57 categories (a table specifying the categories can be found in the annex of this document); for each category, the household reports the number of assets owned and the estimated price of the asset if it were to be purchased again today at the market. We will use the household-reported prices to construct a median price within the sample and calculate the estimated value of each household's assets using this price information.

Secondary outcomes were specified prior to the follow-up survey and are defined in four outcome families, including a total of 12 variables.

1) Secondary outcomes: assets and financial inclusion

This outcome family includes three variables

   a) Number of livestock owned (measured in tropical livestock units)
   b) A binary variable if the household reports any savings as of the survey date
   c) A binary variable if the household reports any past-year access to credit

2) Secondary outcomes: income

This outcome family includes six variables

   a) Binary and continuous variables reporting whether the household has any income in the past month from agriculture and livestock, and how much income

b) Binary and continuous variables for any non-agricultural household business income over the past month, and how much income
c) Binary and continuous variables for any wage income over the past month, and the amount of wage income

3) Secondary outcomes: consumption and food security

This outcome family includes three additional variables (in addition to the primary consumption variable defined above)

a) Per-capita food consumption expenditure
b) Per capita non-food consumption expenditure
c) Livelihood coping strategies (LCS) index score

4) Secondary outcomes: social cohesion and locus of control
   a) Social cohesion index
   b) Locus of control

This category includes two variables, an index of social cohesion constructed using a series of questions about the individual's perception of the broader community (Humble et al., 2023, and Catholic Relief Services, 2019) and a measure of an individual's (internal or external) locus of control constructed using a series of Likert-scale items (Rotter, 1966).

3. Analyses

Main specifications

To identify the impacts of the interventions of interest, we use the ordinary least squares (OLS) regression method. For outcomes for which we have a baseline measure, we will employ an ANCOVA specification in which each outcome of interest $y_{i,t=1}$ for household i observed at midline or endline (t=1) will be regressed on an indicator variable for assignment to the graduation model arms (T_i), a control variable corresponding to the baseline measurement of the outcome variable of interest $y_{i,t=0}$ as well as a vector of control variables ($X_{i,t=0}$) capturing the randomization strata, including binary variables capturing households above the median in terms of pre-treatment asset level and length of stay in the IDP site:

$$y_{i,t=1} = \alpha + \beta T_i + \vartheta y_{i,t=0} + X'_{i,t=0}\delta + \varepsilon_i. \quad (2)$$

The β coefficient can be interpreted as capturing the mean difference in outcomes between households assigned to the control arm and household assigned to the treatment arms.

For outcomes that were not measured at the baseline (e.g., household per capita consumption), the estimated equation is the same as Eq. (2), excluding the baseline value of the outcome: $y_{i,t=0}$. Since randomization was conducted at the household level (the unit of analysis), the standard errors will not be clustered (Abadie et al. 2023). If necessary, the computed standard errors will be corrected for heteroskedasticity of an unknown form following White (1980). We will also report q-values corrected for multiple hypothesis testing following Simes (1986). We plan to conduct MHT corrections within the set of primary outcomes, and within the set of each family of secondary outcomes. We will also report average standard treatment effects for broader outcome families that pool across primary and secondary outcomes (consumption and food security, assets, savings, and income).

Baseline balance

Table 2 summarizes characteristics of the sample at baseline and presents baseline balance tests. In general, the sample is overwhelmingly IDPs (94% of households are IDPs) and is characterized by a low level of food security and a high level of poverty. 100% of households are characterized by moderate or severe hunger according to the Household Hunger Scale; this was identified as an eligibility requirement for the intervention, and all households surveyed are eligible. 65% are characterized by moderate hunger, and 35% are characterized by severe hunger. With respect to access to non-food items, only 22% of households self-report that they have adequate access to non-food items. Only 1% of report that they are able to fully meet their basic needs. 22% of households report they are using an unsafe water source because they are unable to afford to use a safe water source.

In response to these challenges, households are using a range of coping strategies when they experience a lack of food or a lack of money to buy food. The mean coping strategy index, a variable capturing strategies that households are using to cope with challenges in purchasing food, is around 23, relative to a maximum of 42. For the livelihood coping strategies index, no household is identified as in the neutral phase of livelihoods coping strategies. 44% of households are in the stress phase, suggesting they are using strategies such as reducing non-food expenditure, borrowing money, or withdrawing children from school. 29% are in the crisis phase, suggesting they are using strategies such as selling household assets or selling non-productive animals. Finally, 25% are in the emergency phase, suggesting they are using strategies such as selling land, selling their last female animals, or begging. Only 21% of households report that they are earning net income from a livelihood activity.[2]

Analysis of the baseline data shows that the randomization was successful and the two study arms were balanced based on a range of observable characteristics (Table 2).

[2] Note this definition of a livelihoods activity excludes wage employment.

Table 2: Baseline characteristics by intervention arm

	N	Treatment means	Control means	Treatment - Control (P-value of diff.)
Absorptive Capacity Index	1,432	138.80	133.76	0.84
Adaptive Capacity Index	3,475	-0.00	0.04	0.21
Ability to recover from shocks and stressors index	4,015	4.27	4.18	0.06
% HHs believe govt will respond to shocks	3,922	0.55	0.56	0.61
Transformative Capacity Index	1,631	1.31	1.39	0.12
Shock Exposure Index	4,116	17.77	17.74	0.94
Percent of HHs meeting some graduation criteria	4,116	0.29	0.29	0.82
Percent of HHs meeting all graduation criteria	4,116	0.00	0.00	
Social Capital Index	4,116	0.05	0.05	0.74
Reduced Coping Strategy Index (rCSI)	4,116	23.10	23.08	0.88
% HHs with moderate or severe HHS	4,116	1.00	1.00	
FCS Score	4,116	30.04	30.68	0.29
% HHs with FCS = Poor	4,116	0.33	0.33	0.91
% HHs with FCS = Borderline	4,116	0.35	0.34	0.50
% HHs with FCS = Acceptable	4,116	0.32	0.33	0.42
% HHs with moderate HHS	4,116	0.64	0.65	0.41
% HHs with severe HHS	4,116	0.36	0.35	0.41
% HHs able to meet basic needs	4,116	0.01	0.01	0.52
% HHs livelihoods phase - Neutral	4,116	0.00	0.00	
% HHs livelihoods phase - Stress	4,116	0.43	0.44	0.58
% HHs livelihoods phase - Crisis	4,116	0.30	0.28	0.41
% HHs livelihoods phase - Emergency	4,116	0.27	0.25	0.31
% of women who earn cash	3,015	0.23	0.22	0.58
% of men who earn cash	3,015	0.52	0.54	0.29
% women earning cash & reporting participation in decisions about self-earned ca	1,774	0.26	0.26	0.89
% men reporting women's participation in decisions about cash	1,774	0.26	0.26	0.89
% women with access to credit	4,116	0.50	0.51	0.76
% men with access to credit	4,116	0.21	0.22	0.40
% women who make decisions about credit	4,116	0.50	0.51	0.52
% men who make decisions about credit	4,116	0.51	0.52	0.45
% individuals reporting high likelihood of being affected by shock	4,116	0.82	0.82	0.65
% reporting income from livelihoods	4,116	0.20	0.22	0.38

Note: p-values are reported from Wald tests on the equality of means of control and treatment for each variable. * $p<0.1$ ** $p<0.05$; *** $p<0.01$

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Appendix A. Consumption data and poverty estimation

Introduction

The purpose of the household consumption module is to estimate daily per capita consumption expenditures following the approach outlined in Deaton and Zaidi (2002). These estimates are then used to calculate poverty headcount and other poverty indicators.

The consumption modules have been tailored to the context. To do so, we carefully examined the Wave 2 of the Somali High Frequency Survey conducted by the World Bank in 2017 (World Bank 2019). This survey covered nearly all regions of Somalia. More than 6,000 households were interviewed, including 468 households residing in IDP settlements. The consumption modules in the midline survey are based on the consumption modules fielded in the 2017 World Bank survey.[3]

Consumption components

We will ask households to report on their consumption expenditures over a specific time interval. The consumption module has three sub-modules: Household food consumption over the past 7 days; Household expenditures on food consumed away from home in the past 7 days; Household expenditures on non-food items and services. Below we provide more details about each consumption component.

Household food consumption over the past 7 days

The household food consumption module includes 69 food items, listed in Table A1 below. These items are selected using the World Bank 2017 data. We restricted the sample to households residing in the Bay region in which Baidoa is located to capture the typical foods consumed in this region. In addition, since households residing in IDP settlements may have different food consumption patterns, we also considered the food consumption of the 468 IDP households. The food consumption module in the 2017 World Bank survey had 114 food items. For the Baidoa IDP survey, we included food items that were consumed by at least 3 percent of the households residing in the Bay region or IDP settlements in the World Bank 2017 survey (see Table A1).

The enumerators will first go through the list of 69 food items asking whether the household consumed the item in the past seven days or not. The survey instrument will then be programmed to carry forward all food items that the household reported to have consumed in the past seven days to the next section that asks about the quantity ('amount consumed') within the 7 days. For reference, the average household in the Bay

[3] The Wave 2 of the Somali High Frequency Survey used a split-questionnaire design in the consumption module. In this design, the items were grouped into core and optional modules with each household assigned the core module and one optimal module. Within-survey imputation methods were then used to estimate total consumption and poverty status for each household. For more details, see Pape and Wollburg (2019).

region reported consuming 14 out of the 69 items (median = 14) while the corresponding number among the IDP households was food 13 items (median = 13). Therefore, while the list of food items may seem long, the average household will be asked to estimate the consumed amount for about 13 to 14 items.

Households are allowed to report the consumed amounts in any unit. In the analysis stage, we will convert all amounts to kilograms using the conversion factors provided by the World Bank in the 2017 survey. All consumed amounts will then be valued in Somali shilling terms using the food price data collected as a part of the survey (for more details, see below).

Household expenditures on food consumed away from home in the past 7 days

The midline questionnaire will also ask households whether they purchased any prepared food or eaten outside in the last 7 days. If yes, the expenditure amount in shillings will be recorded.

Household expenditures on non-food items and services

The consumption module will also ask about non-food consumption. Following the 2017 World Bank survey, we have four different recall periods: 7-day, 1-month, 3-month, and 12-month. Non-food items that are expected to be purchased weekly (e.g., charcoal, public transport), the recall period is 7 days while items purchased more infrequently have longer recall periods. In total, we have 58 non-food items in the consumption module, listed in Table A2 below. As before, we selected these items by analyzing the 2017 World Bank survey data. The non-food consumption module in this survey had 90 non-food items. Out of these, 60 items were consumed by at least 3 percent of the households residing in the Bay region or by IDP households. We then omitted two items related to expenditures on pets that do not seem relevant in the IDP settlement context (expenditures on these two items were reported by 5-7 percent of the Bay area household, but none of the IDP households).

The enumerators will first go through the list of 58 non-food items asking whether the household purchased the item during the recall period or not. The survey instrument will then be programmed to carry forward all non-food items that the household reported to have purchased to the next section that asks about the amount spent during the recall period. For reference, the average household in the Bay region reported purchasing 5.3 out of the 58 items (median = 5) while the corresponding number among the IDP households was food 5.6 items (median = 5).

Food price data

We need food price data to value the reported food consumption in shillings or USD. The price data will be collected using a price opinion survey. While this approach is not common in consumption or poverty measurement in Africa (Gaddis 2016), a survey experiment conducted in Papua New Guinea suggests that

this method yields accurate price data (Gibson and Rozelle 2005). IFPRI has also used this price collection method in a recent survey in rural Ethiopia.

The price module will ask households to estimate food prices in their locality (i.e., in Baidoa). The list of food items in the price module matched the food items in the food consumption modules. However, households were not asked to estimate the price of all food items. Instead, each household will be asked to estimate only 4 food items. The items will be randomly selected from the list of 69 items. With 4,000 households, this approach will result in a total of 16,000 price estimates for the city of Baidoa. Considering the 69 food items in the price module, this translates into 232 estimates per food item. Households will be allowed to report the price in any unit. We will use the same approach as described above to convert the non-standard units to kilograms. To reduce the influence of outliers, we will take the median estimate for each item to represent the price in Baidoa.

Consumption aggregate

The consumption aggregate will then be formed of the three consumption components listed above. All consumption amounts will be transformed into daily terms by dividing the reported amount by the number of days in the recall period.

Daily household consumption expenditures will be reported on a per capita basis by dividing the consumption expenditure by household size.

Appendix A references

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Appendix A tables

Table A1. Food items included in the Baidoa consumption module

Food item	% consumed by Bay region households *	% consumed by IDP households *
Paddy, Basmati	52.5	44.2
Rice, husked	37.7	48.9
Green maize cob	31.6	14.7
Maize, grain	58.2	48.3
Maize, flour	52.0	48.3
Millet, grain	65.5	39.0
Millet, flour	47.5	32.3
Sorghum, grain	16.2	31.9
Sorghum, flour	16.6	18.4
Wheat, grain	11.4	22.9
Wheat, flour	14.7	32.8
Barley	0.0	6.9
Bread	30.9	20.3
Biscuits	10.4	12.0
Cooking oats, corn flakes	0.0	3.4
Macaroni, spaghetti	46.5	50.0
Goat or sheep meat	30.6	46.8
Cattle meat (including mince sausages)	4.8	6.2
Offal (liver, kidney)	5.8	16.7
Canned meat	0.0	3.4
Bones sauce	16.7	8.6
Fresh camel meat	63.5	30.3
Fresh chicken - local	4.4	0.0
Fresh fish	0.0	4.2
Groundnuts in shell, cashew nuts, and almonds	6.6	5.1
Sweet/ripe bananas	58.7	37.6
Oranges/tangerines	25.9	9.5
Grapefruits	11.6	4.3
Lemons, guavas, limes	39.6	25.9
Mangoes	24.7	10.2
Pawpaw	16.6	4.2
Melons	15.7	5.1
Dates - import (timir)	10.8	14.5
Potatoes	68.7	79.3
Cooking bananas, plantains	3.9	5.2
Peas, dry	12.5	13.5
Beans, dry	42.0	20.1
Lentils	4.7	15.3

Food item	% consumed by Bay region households *	% consumed by IDP households *
White beans	6.0	9.4
Carrots	13.2	11.5
Garlic	46.0	44.2
Onion	81.2	87.0
Leeks	4.0	0.0
Lettuce	5.3	3.4
Tomatoes	77.4	87.8
Pumpkin	14.8	6.8
Bell pepper	5.3	0.0
Begel	7.0	16.7
Ginger (zanjabiil)	5.7	12.1
Eggs	28.5	7.8
Cow milk (fresh or pasteurized)	17.4	13.2
Camel milk	62.6	11.3
Milk Powder	32.6	59.0
Coconut oil	0.0	14.4
Butter or margarine	7.0	0.0
Cooking oil (vegetable)	84.3	84.4
Olive oil	0.0	4.3
Vimto (squash)	9.3	5.2
Sugar	94.9	95.5
Honey	5.8	0.0
Salt	84.2	88.2
Red or black pepper	3.1	0.0
Cardamom (heyl)	9.6	20.3
Cinnamon (qarfo)	8.7	9.3
Clove (dhago yare)	0.0	8.5
Foster Powder	0.0	6.8
Parsley - local (kabasr caleen)	4.3	10.2
Tea (leaves)	83.9	81.2
Coffee (beans, ground, or instant)	3.5	0.0

* Source: Wave 2 of the Somali High Frequency Survey, conducted by the World Bank in 2017

Table A2. Non-food items included in the Baidoa consumption module

Non-food item	% consumed by Bay region households *	% consumed by IDP households *
7-day recall		
Charcoal	42.1	46.2
Cigarettes or other tobacco	6.6	3.4
Matches	37.4	51.1
Public transport - bicycle taxi	0	6.4
Public transport - bus/minibus	5.1	17.9
Public transport - other (truck, oxcart, animal, etc.)	3.4	12.5
Khat	0	3.8
1-month recall		
Candles	6.8	11.9
Milling fees, grain	19.3	11.2
Bar soap (body soap or clothes soap)	41.3	53.4
Clothes soap (powder, paste)	58.1	73.9
Toothpaste, toothbrush	9.6	5.9
Glycerine, Vaseline, skin creams	5.3	10.3
Non-electrical razor blades	31.1	20.3
Cosmetics	10.1	6.6
Shampoo	66.8	69.7
Light bulbs	8	6
Batteries	17.1	5.2
Recharging batteries, cell phones	6.7	0
Expenditures for electricity	4.6	10.3
3-month recall		
Infant clothing	42.2	33.6
Baby nappies/diapers	16.7	9.5
Boy's trousers	38.4	33.9
Boy's shirts	21.3	31.9
Boy's jackets	7.1	21.6
Socks and underwear	11.4	7.8
Men's trousers	21	22.9
Men's shirts	28.5	25
Men's jackets	12.3	18.6
Men's headwear	5.2	0
Girl's blouse or shirt	10.2	15.5
Girl's dress or skirt	20.6	31.9
Belt	27.6	13.8
Lady's blouse or shirt	15.7	14.4
Chitenje cloth	11.8	10.3
Lady's dress or skirt	17.9	29.7
Lady's headwear	20	20.3

Non-food item	% consumed by Bay region households *	% consumed by IDP households *
Boy's shoes	42.8	26.3
Men's shoes	34.2	25
Girl's shoes	41.3	36.2
Lady's shoes	47.2	39
Cloth, thread, other sewing material	12.8	6.8
Laundry, dry cleaning, tailoring fees	7.2	3.4
Cooking utensils (cookpots, stirring spoons etc.)	8.7	4.2
Cleaning utensils (brooms, brushes, etc.)	10.5	8.6
Torch or flashlight	35.1	39.7
Umbrella	6.4	5.9
Books (not for school)	4.7	0
12-month recall		
Carpet, rugs, drapes, curtains	10.6	0
Linen - towels, sheets, blankets	15.7	11
Mat - sleeping or for drying maize flour	22.4	22.4
Mosquito Net	25.3	24.6
Construction timber	0	3.6
Educational expenses - tuition/fees	19.2	10.5
Educational expenses - stationary, books, school uniforms, other expenses for school	4.3	10.9
Healthcare expenditures - Medicine	22.8	24.8
Healthcare expenditures - Medical and laboratory	6.9	11.8
Firewood	3.5	0

* Source: Wave 2 of the Somali High Frequency Survey, conducted by the World Bank in 2017

Table A3. Assets included in the Baidoa consumption module

Plough (oxen-pulled)
Farm tractor
Sickle
Pick axe
Axe
Hammer
Hand saw
Panga
Hand mattock
Hoe
Spade or shovel

Traditional beehive

Modern beehive

Knapsack chemical sprayer

Mechanical water pump

Motorized water pump

Stone grain mill

Manual gain mill

Motorized grain mill

Wheelbarrow

Hand-held motorized tiller

Individual granary (at homestead) traditional

Grain bag

Tarpaulin

Agricultural land (hectares)

Sewing machine

Donkey

Donkey cart

Bicycles

Motorbikes

Automobiles

Houses with hard roof

Traditional houses

Plastic sheeted buuls

Corrugated iron sheet houses

Mobile phones

Radio

Televisions

Generators

Solar panels

Grams of gold/silver jewelry

Oxen

Cattle

Sheep

Goats

Camel

Poultry

Horses

Fruit trees
Kiosks (small shop)
Seeds for agriculture
Fish pond
Boats / pirogues
Other asset