The Kenya Life Panel Survey, Round 4 (KLPS-4):

Data User's Guide

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Preface

The Kenya Life Panel Survey (KLPS) is an unusual longitudinal database of educational, health, nutritional, socioeconomic, demographic, and other outcomes for individuals who attended primary school in rural western Kenya at the turn of the 21st century. The primary objective of the database is to estimate the impacts of various randomized health and education interventions during childhood and beyond on long-run life outcomes. The database also serves several secondary purposes, including (among others) the examination of migration, marriage and fertility patterns, as well as the measurement and tracking of social, religious, and ethnic relationships and attitudes among a sample of Kenyans. This fourth round of KLPS (KLPS-4) aims to continue gathering rich and innovative data on the adults. A new feature of KLPS-4 is the collection of detailed information on the health, nutrition, and behavioral and cognitive development of their children. Ultimately, we expect this panel database to be useful for answering a wide range of research questions across numerous academic fields.

Target respondents for the KLPS are individuals who attended selected primary schools in Busia District (now County), Western Kenya – including schools selected to participate in a deworming treatment program conducted during 1998-2002, and schools selected to participate in a program providing merit-based scholarships to upper-primary school girls during 2001-2002. Starting from KLPS-4, respondents also included a sample of children of KLPS respondents and their primary caregivers to better understand potential intergenerational impacts.

Round 1, or KLPS-1, was administered during 2003-2005, and sought a representative sample of 7,527 individuals who were enrolled in schools that participated in the deworming treatment program. A detailed Data User's Guide was published for that data collection round (Miguel and Hamory 2020); that document also describes the early foundations of the KLPS research project.

Round 2, or KLPS-2, was administered during 2007-2009 and tracked the same sample of 7,527 deworming program individuals, to create another data point in the panel database using a revised and updated set of survey instruments. A detailed Data User's Guide has been published for that data collection round as well (Miguel and Hamory 2021).

An additional intervention was implemented between the second and third KLPS round, randomly providing vocational training vouchers to a subset of those individuals who had been eligible for the deworming or scholarship programs in 2009-2010.

Round 3, or KLPS-3, was administered during 2011-2014 and tracked a broader sample of 10,757 individuals (the 7,527 youth from the first two rounds of KLPS data collection, as well as an additional 3,230 youth who were enrolled in a separate set of rural primary schools in 2001 that were eligible for the girls' scholarship program; note that a subset of these youth also participated in the vocational training voucher program implement prior to the data collection round). A detailed Data User's Guide has been published for that data collection round as well (Miguel and Hamory 2022).

In 2013 and 2014 (after being surveyed as part of KLPS-3), a random half of voucher winners and voucher non-winners were given an unconditional cash grant worth Ksh 20,000 (about US $230 at the time).

Round 4, or KLPS-4, was administered during 2017-2021, and tracked a sample of 8,187 individuals (the 7,527 youth from the first three rounds of KLPS data collection, as well as an additional 660 youth that were eligible for the girls' scholarship program and participated in the vocational training voucher program). As noted above, the KLPS-4 round also involved a Kids component, which entailed data collection from selected biological children of the adult KLPS

respondent as well as the respective caregivers of the selected biological children. Also, the Covid-19 pandemic started during KLPS-4; additional phone surveys were conducted with KLPS adult respondents (and some of their spouses), and these data are already publicly available on Harvard Dataverse (Miguel and Walker 2021).

This document serves two key purposes: (i) to describe the aims, design and implementation of the Kenya Life Panel Survey Round 4, KLPS-4; and (ii) to describe key aspects of the KLPS-4 data so as to assist users in data manipulation and analysis. This as well as other KLPS-4 public-use documentation, listed below, will be of interest to researchers and policymakers concerned with educational, socioeconomic, demographic, health, ethnic and religious trends in Kenya and other related settings.

List of Public Documentation for KLPS-4

KLPS-4-DUG	KLPS-4 Data User's Guide (this document)
KLPS-4-E-Module	KLPS-4 Questionnaire—Expenditure+ Module (Wave 1, Wave 2 versions)
KLPS-4-I-Module	KLPS-4 Questionnaire—Integrated Module (Wave 1, Wave 2 versions)
KLPS-4-PC-Module	KLPS-4 Questionnaire—Primary Caregiver Module (Wave 1, Wave 2 versions)
KLPS-4-KT-Module	KLPS-4 Questionnaire—Kids Module (Wave 1, Wave 2 versions)
KLPS-4-KSI-Module	KLPS-4 Questionnaire - Kids Storybook Intervention Follow-up (Wave 1)
KLPS-4-KSSI-Module	KLPS-4 Questionnaire - Kids Storybook and Sleep Intervention Follow-up (Wave 2)
KLPS-4-E-Codebook	KLPS-4 Codebook—Expenditure+ Module Data
KLPS-4-I-Codebook	KLPS-4 Codebook—Integrated Module Data
KLPS-4-PC-Codebook	KLPS-4 Codebook—Primary Caregiver Module Data
KLPS-4-KT-Codebook	KLPS-4 Codebook—Kids Module Data
KLPS-4-KSI-Codebook	KLPS-4 Codebook - KSI Module Data
KLPS-4-KSSI-Codebook	KLPS-4 Codebook - KSSI Module Data

List of Public Data Sets for KLPS-4

KLPS-4-SampleMaster	KLPS-4 Sample Master Data Set
KLPS-4-Status	KLPS-4 Status Data Set
KLPS-4-E	KLPS-4 Expenditure+ Module Data Set
KLPS-4-I	KLPS-4 Integrated Module Data Set
KLPS-4-Kids-SampleMaster	KLPS-4 Kids Sample Master Data Set
KLPS-4-Kids-Status	KLPS-4 Kids Status Data Set
KLPS-4-PC	KLPS-4 Primary Caregiver Module Data Set
KLPS-4-KT	KLPS-4 Kids Module Data Set
KLPS-4-KSI	KLPS-4 KSI Module (Wave 1) Data Set
KLPS-4-KSSI	KLPS-4 KSSI Module (Wave 2) Data Set

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1. Introduction to the Kenya Life Panel Survey

The Kenya Life Panel Survey, or KLPS, is a longitudinal database of educational, health, nutritional, socioeconomic, demographic, and other outcomes for individuals who attended primary school in rural western Kenya at the turn of the 21st century. It was designed to be a comprehensive, high quality panel data set for studying a variety of research topics and questions related to rural development and child welfare, through collection of information on young Kenyans over a period of at least 25 years in multiple rounds of data collection. This document describes the fourth data collection round. This introductory section outlines the background to the KLPS in more detail, including its aims and objectives, and the principal instruments and architects of the data collection effort.

1.1 Background

The KLPS project originally derived as an extension of an evaluation of the Primary School Deworming Program, a randomized primary school health intervention that was conducted during 1998-2002 in Busia, a rural district in western Kenya. In particular, the KLPS originally sought to track a subset of youth who were enrolled in schools that participated in that health evaluation over time in order to explore long run impacts of the program. During the third round of the KLPS, longitudinal data collection effort was expanded to evaluate longer run impacts of two additional youth interventions – a randomized scholarship program targeting girls enrolled in late primary school during 2001-2002 (known as the Girls' Scholarship Program) in a separate set of primary schools in the same district, and a randomized vocational training voucher intervention launched in 2009 for individuals who were a part of either the earlier deworming or scholarship programs. In the fourth round of the KLPS, the original KLPS respondent's children were also surveyed to understand intergenerational correlations and the causal intergenerational effects of the parents' treatment in early-in-life deworming interventions on cognitive and non-cognitive skills, health, and other outcomes. Two interventions (a children's storybook and a sleep promotion intervention) were randomly assigned within this KLPS kids sample. This section describes these four interventions in turn.

1.1.1 The Primary School Deworming Program

In 1998, a local non-governmental organization (NGO) called International Child Support Africa (ICS; formerly Internationaal Christelijk Steunfonds Africa) launched a program known as the Primary School Deworming Program (PSDP) to provide deworming medication to individuals enrolled in 75 primary schools in Busia District, a densely-settled farming region of rural western Kenya adjacent to Lake Victoria. The schools participating in the program consisted of nearly all rural primary schools in Budalangi and Funyula divisions in southern Busia district, and contained 32,565 pupils at the start of the study. Baseline parasitological surveys conducted by the Kenyan Ministry of Health indicated that these divisions had high rates of helminth infection, at over 90%. Using modified WHO infection thresholds (Brooker et al., 2000b), roughly one-third of children in the sample had "moderate to heavy" infections with at least one helminth at the time of the baseline survey, a rate not atypical by regional standards (Brooker et al., 2000a). The 1998 Kenya DHS indicated that 85% of children in western Kenya, in the relevant age range of 8-18 years, were enrolled in school – suggesting that the sample was broadly representative of western Kenyan children as a whole at the time.

The 75 program schools were randomly divided into three groups (Groups 1, 2, and 3) of 25 schools each: the schools were first stratified by administrative sub-unit (zone) and were then listed in order of enrollment, and every third school was assigned to a given project group. Due

to the NGO's administrative and financial constraints, the schools were phased into the program over the course of 1998-2001, and the order of phase-in was randomly determined, creating experimental treatment groups. Group 1 schools began receiving free deworming in 1998, Group 2 schools in 1999, while Group 3 schools began receiving the drugs in 2001. The project design implies that in 1998, Group 1 schools were treatment schools while Group 2 and 3 schools were the control, and in 1999 and 2000, Group 1 and 2 schools were the treatment schools and Group 3 schools the control, and so on. In 2002 all schools received free treatment. Children in Group 1 and 2 schools thus received two to three more years of deworming than Group 3 children, and these early beneficiaries are what we will call the deworming treatment group. Deworming drugs were offered twice per year in treatment schools.

Analysis during the first two years of the deworming intervention showed large, positive gains in height, self-reported health and school attendance (Miguel and Kremer 2004; Miguel and Kremer 2014b). The replication data for this evaluation are published on Dataverse (Miguel and Kremer 2014a). The KLPS project was launched in 2003 to explore longer-term impacts of this program across a range of youth and young adult outcomes. A representative subsample of 7,527 youth were chosen from 1998 PSDP school enrollment lists to be recruited for the KLPS.

1.1.2 The Girls' Scholarship Program

In 2001, the same local NGO that carried out the deworming program introduced a merit scholarship competition known as the Girls' Scholarship Program (GSP) in 34 primary schools randomly selected from a pool of 69 Busia district schools (in administrative divisions separate from those that were a part of the PSDP). The randomization was performed using a computer random number generator, after first stratifying by district, division, and participation in a previous NGO program (that distributed flip-charts as learning aids). In treatment schools, it was announced early in the school year that an award would be given to each Grade 6 girl who performed in the top 15% in the district on the standard government end of year exam. The award was given for two years and included a yearly grant of US$6.40 paid to the girl's school to cover school fees, and a cash grant of US$12.80 paid to the girl's family to cover other school expenses. The program continued in treatment schools in 2002 with only those who had been enrolled in Grade 5 in 2001 in those schools eligible to win.

Analysis performed at the end of the program found improvements in test scores in treatment schools for not only those who were most likely to benefit from the scholarship (the girls at the top of the distribution), but also spillover benefits for others, namely, the girls at the bottom of the initial test score distribution and thus unlikely to win the award, as well as for boys in the same schools (who were entirely ineligible for the award), presumably due to the improved classroom environment. The average treatment effect estimated was an increase in test scores of approximately 0.2 standard deviations, a sizable increase in the education literature, and there were also increases in both pupil and teacher attendance (Kremer, Miguel and Thornton, 2009).

A follow-up data collection modeled on the KLPS-1 was conducted during 2005-2007 for all 3,230 girls enrolled in GSP program schools (treatment and control) in 2001 grades 5 and 6, in order to explore longer run impacts of the program (Friedman *et al.,* 2016). Replication data for an analysis of this data collection can be found on Dataverse (Miguel *et al.,* 2016). In KLPS-3, these 3,230 girls were incorporated into the broader KLPS data collection effort as part of the KLPS sample. For KLPS-4, only a subset of 660 of the GSP participants (those that participated in the vocational training and cash grant interventions noted below) were included in the tracking sample.

1.1.3 The Vocational Vouchers Program (Voced) and Start-up Capital for

Youth (SCY) Program

The vocational training and cash grant program we study, which took place during 2009-2014, included 2,163 (of which 1,503 individuals participated in PSDP and 660 individuals participated in GSP) adolescents and young adults ranging from roughly 17 to 28 years of age who applied for vocational education tuition vouchers. Approximately 70% of these individuals were participants of the Primary School Deworming Program (PSDP, Miguel and Kremer 2004), and the others were participants in the Girls' Scholarship Program (GSP), a separate randomized education intervention that took place in a neighboring area (Kremer, Miguel and Thornton 2009). A randomly selected half of all training program applicants were awarded a vocational training voucher worth approximately 35,000 Kenyan shillings (about US $460), an amount sufficient to fully (or almost fully) cover the tuition costs for most public or private vocational education programs in Kenya. Voucher winners attended courses during 2009-2011. In 2013 and 2014, a random half of voucher winners and voucher non-winners were given an unconditional cash grant worth Ksh 20,000 (about US $230 at the time). In the present analysis, we consider voucher winners as "treated" with respect to the vocational training program if they were randomly selected to receive a voucher, and the cash grant winners as "treated" with respect to the cash grant program if they were selected to receive a grant.

1.1.4 KLPS-Kids Interventions

The KLPS-4 data collection round creates two new dataset based on data collection with children of the KLPS respondent and their primary caregiver (PC) (which we refer to as KLPS-KT and KLPS-PC, respectively) for a sample of children of the original health, training, and grant program participants, which can be linked with the KLPS longitudinal dataset. Using new survey instruments and locally adapted cognitive and non-cognitive development assessments designed for children aged 2.5–5 and 6-8.5, we collect data on health and developmental outcomes for up to two biological children (one per age group) for each KLPS-4 respondent as well as educational, home environment, and health investments made by the KLPS adults.[1]

In addition to collecting data from the KLPS-Kids sample, KLPS-4 also included two interventions targeted to the KLPS-Kids and/or their primary caregivers.

1.1.4.1 KLPS-Kids Storybook Intervention

The first intervention conducted within the KLPS-Kids sample was a light-touch reading promotion intervention, which is referred to as the "storybook intervention." This involved providing reading promotion materials (including age-appropriate storybooks) to the treatment group of the intervention. The exact details of the intervention varied across each of the two representative survey waves.

The KLPS-Kids Wave 1 storybook intervention was designed to estimate the demand for storybooks and the effects of the intervention on reading practices and educational investments. In Wave 1 this was administered after the PC-Module which asked detailed questions about the KLPS child, primary caregiver, and household environment particularly: caregiver characteristics, child health and development, child sleep patterns, home environment, and a child strengths and difficulties questionnaire. Eligibility for the storybook intervention was restricted to KLPS-Kids respondents 6 years old or younger to ensure materials were age-

[1] Early versions of the survey instruments and the child assessments were administered to a small subset of respondents in 2015. They were further piloted, tested, and edited in 2018 to comprise the final version to be used in the current data collection. For additional information about the assessments conducted in 2015, please refer to Fernald, Hicks, Kariger and Miguel (2015).

appropriate. A total of 1,252 children aged 2.5-6 years were selected in Wave 1 of which a total of 1,026 PC-Modules were completed, which we refer to as the Storybook Sample. The Wave 1 reading promotion intervention entailed the following: a small cash grant (up to KES 300, roughly USD 2.30) and an offer to purchase a subsidized storybook at a randomly-selected price OR an offer of a free storybook; an informational script on the benefits of reading to small children and strategies for doing so; a poster summarizing the informational script; and an SMS reminder message to encourage reading 2.5-3.5 months after the PC Module. The control group did not receive any components of the intervention.

As analysis of the Wave 1 demand effects documented high demand for storybooks across all offered prices, the KLPS-Kids Wave 2 storybook intervention involved providing free storybooks and focused on estimating the effects of the intervention on reading practices, educational investments and child cognitive outcomes. Thus, in Wave 2 this was administered after the I-Module, which was conducted in advance of the PC and KT modules. The I Module, asked detailed questions about the child's home environment, reading at home, and school attendance. A total of 1,466 children aged 2.5-6 years were selected in Wave 2 of which a total of 1,352 PC-Modules were completed. As in Wave 1, the storybook intervention was administered to the Storybook Sample, which was the priorly selected 25% of the KLPS-4 Wave-2 sample. The Wave 2 child reading promotion intervention entails the following: three free storybooks that are selected by the Focus Respondent (FR); an informational script on the benefits of reading to young children and strategies for doing so; and a poster summarizing the informational script.

More details on the storybook promotion intervention is provided in Bonds et al. (2019, 2020, 2021).

1.1.4.2 KLPS-Kids Sleep Promotion Intervention

The second intervention within the KLPS-Kids sample was a light-touch sleep promotion activity, which was administered only as part of the Wave 2 sample.

The intervention was administered as part of the PC-Module in order to convey the information treatment and collect baseline information from the primary caregiver of the children. A total of 2,652 children aged 2.5-8.5 years were selected in Wave 2 of which a total of 2,411 PC-Modules were completed and the sleep intervention was administered to the Sleep Sample, which was the priorly selected 25% of the KLPS-4 Wave-2 sample.[2] The child sleep intervention entailed the following: a free pillow; a free blanket; a video explaining the benefits and importance of sleep; a pamphlet explaining the benefits of sleep, how sleep affects learning and memory, and information on how to help your child sleep better; a poster summarizing the video and pamphlet; and an informational script, which walks through the video, pamphlet, and poster.

More details on the sleep promotion intervention is provided in Layvant et al. (2021).

1.2 Aims and Objectives of the Study

The KLPS longitudinal study was designed to provide a comprehensive picture of adolescent and adult life outcomes for a large sample of primary school children in Busia District, supplying data on a wide variety of educational, economic, social, health, demographic, and other characteristics over a period of ten or more years (over multiple rounds of data collection). With its roots in a child deworming study, the original main research question to be addressed by the KLPS was: (1) *What are the long-term impacts of early-in-life deworming interventions on economic,*

[2] The two kids interventions are administered to an exclusive sample.

health, behavioral and other outcomes?

A new focus of the KLPS-4 data collection round is on understanding intergenerational effects. To do this, up to two biological children of KLPS respondents were selected for inclusion in the KLPS-Kids sample. Children in the KLPS-Kids sample were administered age-appropriate assessments to measure cognitive skills, and their primary caregiver was surveyed to collect additional information on their health, non-cognitive skills, and home environment.

The expanded sample for the KLPS as of the KLPS-4 data collection round allows researchers to study an additional main research question: (2) *What are the intergenerational effects of parent human capital interventions on their children's outcomes?*

Note that the KLPS possesses a few special features for studying the effect of child health and nutrition on life outcomes, including experimental assignment to a childhood treatment and long-distance tracking of respondents to minimize sample attrition. The former is discussed in detail in Miguel and Hamory (2020), and the latter will be detailed in Sections 2 of the present document.

Large-scale, long-term longitudinal (panel) household data sets remain rare in low and middle income countries (LMICs), particularly in Sub-Saharan Africa, and there are many possible research uses for this data set that do not rely on the deworming, scholarship and training voucher experiments. For example, the KLPS panel is well-suited to examine questions on several topics, including the relationship between child health and nutrition gains and adult life outcomes, the impact of adolescents' skills and financial capital improvements on adult life outcomes, and the intergenerational gains from youth investments, among others. Some topics are described in more detail in the following sub-section.

1.3 Overview of KLPS-4 Survey Instruments

Four principal survey instruments were employed in KLPS-4.

1. ***Expenditure+ Module (KLPS-4-E+):*** This module was designed to develop a comprehensive estimate of household expenditures and consumption over the previous 12 months, and the sections on income and expenditure follow closely to those administered during the KLPS-3. Additionally, this survey includes information on household economic activities, respondent time use, mental health and wellbeing, and sexual behavior. In KLPS-4, the full sample received this module, and 5,528 respondents were successfully surveyed.

2. ***Integrated Module (KLPS-4-I):*** The KLPS-4 utilized a revised version of the KLPS-3 "Integrated Module" (I-Module) as its core instrument, including information on the respondent's education, economic activities, social capital, ethnicity and religion, health, marital and fertility outcomes, contact information, and family and household characteristics. This module was to be administered to the full sample, and was successfully administered to 5,744 respondents. The instrument was slightly updated between the first and second waves of KLPS-4 data collection, as described in more detail in Sections 3 and 6 of this document.

3. ***Primary Caregiver Module (KLPS-4-PC)***: This module was administered to the adult identified by the KLPS-4 adult respondent as a primary caregiver of the child and was dubbed "Primary Caregiver Module" (PC-Module). The PC-Module captured the caregiver's demographic information, caregiver's mental health, reporting of the selected child's information e.g age, birth weight, child health and development, child's sleep

patterns, home environment information, child's strengths and difficulties. This module was administered to a total of 4,933 primary caregivers of the selected biological children of the KLPS-4 adult respondents.

4. ***Kids Module (KLPS-4-KT)***: This module comprised of a locally adapted cognitive and non-cognitive development assessments designed for children aged 3–5 and 6-8, we collected data on health and developmental outcomes for up to two biological children (one per age group) for each KLPS-4 respondent as well as educational, home environment, and health investments made by the KLPS-4 adults participants. This module was administered to a total of 4,912 of the 5,512 selected biological children of the KLPS-4 adult respondents. This module was complemented by the PC-Module that focused on the health, early development and behavior of the selected child.

5. ***Kids Storybook Intervention Follow-up (KSI) and Storybook and Sleep Follow-up (KLPS-4-KSI/KSSI):*** These short phone surveys collected information from primary caregivers (PCs) on topics related to the interventions, as described below.

These modules are described in further detail in Section 3 below.

In addition to these four modules, a Price Module designed to track prices of key commodities, household goods, and durables in major local rural markets was also collected during the KLPS-4. These prices can be used in combination with the Expenditure+ Module to estimate actual consumption and expenditures. The Price Module data will be documented and posted separately from the rest of the KLPS-4.

1.4 Timeline of Activities

At its outset, the KLPS was designed to provide panel data on a selected sample of 7,527 pupils who were part of the Primary School Deworming Program evaluation, extending the database of baseline characteristics collected from each individual in 1998. The KLPS-4 also included the sample of the 660 girls who were part of the Girls' Scholarship Program evaluation that was conducted during 2001-2002, extending a database of characteristics collected from each individual during that time. Additionally, prior to the launch of the KLPS-4 data collection, the vocational training voucher program was implemented, such that the KLPS-4 allows for evaluation of the longer-term impacts of that program.

The first round of KLPS data collection took place between August 2003 and August 2005 and is known as Round 1 or KLPS-1. The second round of data collection took place between August 2007 and December 2009, and is known as Round 2 or KLPS-2. The third round of KLPS data collection took place between August 2011 and August 2014, which is known as Round 3 or KLPS-3. The fourth round of KLPS data collection took place between March 2017 and December 2021, which is known as Round 4 or KLPS-4. This subsection briefly describes all data collection activities related to the PSDP and GSP, KLPS-1, KLPS-2, the vocational training voucher program, KLPS-3, and KLPS-4.

PSDP and GSP Implementation and Short-term Evaluation Data Collections (1998-2002)

For evaluation of the PSDP, a number of examinations and questionnaires were administered during 1998-2002 to sub-samples of PSDP pupils and parents, located in 75 primary schools in southern Busia District. Information collected from these sub-samples included: parasitological (stool) and hemoglobin (Hb) test results; socioeconomic and anthropometric data; pupil attendance, enrollment, transfer and grade promotion data; cognitive exam performance; residential location and contact information; and demographic data, including mortality, marital

status, fertility, and occupation. Information on height, weight, self-reported health, school participation, grade promotion, and academic exams was gathered for all PSDP pupils during 1998-2002.[3] Much of this data is available on Dataverse (Miguel and Kremer 2014a).

For evaluation of the GSP, data was collected from grade 6 students attending the 69 treatment and control schools during 2001 and 2002, including information on student characteristics and test scores.

KLPS Round 1 (2003-2005)

In August 2003, the research team began to build on the initial PSDP evaluation data with the launch of a follow-up survey. Of the nearly 19,000 pupils originally confirmed enrolled in standards 2-7 of 73 PSDP schools, the follow-up questionnaire focused on a representative subsample of 7,527 children. At the start of KLPS-1 data collection, these individuals were primarily aged 12-23. The effective tracking rate for this sample was 84.4%, and the effective survey rate was 82.7%.[4] Data collection was completed in August 2005 and is identified as Round 1. The resulting data set — the Kenya Life Panel Survey Round 1 (KLPS-1) — contains unique longitudinal educational, labor market, health, nutritional, demographic, and other information for these children over five to seven years.

Note that during 2005-2007, an interim data collection round was conducted for all 3,230 girls enrolled in 2001 grades 5 and 6 in GSP schools, using modules very similar to those from KLPS-1. The data that was used in an evaluation of the 5-year impacts of the GSP are available on Dataverse (Miguel *et al.,* 2016). It is this same sample of girls that were incorporated into the KLPS sample in KLPS-3.

KLPS Round 2 (2007-2009)

Between August 2007 and December 2009, the 7,527 PSDP individuals that were included in KLPS-1 were sought again, in a second round of data collection known as the Kenya Life Panel Survey, Round 2 (KLPS-2). Some areas of inquiry in the survey instruments were modified on the basis of analysis of the Round 1 data, in order to explore unexpected or intriguing results or unique opportunities (e.g. those relating to the 2007 post-election violence). At the start of KLPS-2 data collection, focus respondents were primarily aged 16-27. The effective tracking rate for this second round of data collection was 88.0%, and the effective survey rate was 84.8% - slightly higher than even the first KLPS round. The resulting KLPS-2 data set contains an expanded set of outcomes over nine to eleven years (1998-2009).

Implementation of the Vocational Training Voucher Program (2009-2011)

As KLPS-2 data collection began to ramp down in the later months of 2008, attempts were made to reach out to KLPS target respondents (both the PSDP and GSP samples) to invite them to participate in a program in which they would have a chance to be chosen by lottery to receive a voucher for a vocational training program of their choice. Interested individuals were asked to attend two informational meetings in their administrative area, complete a short survey, and submit a letter of support from a school or local authority. After stratifying the 2,150 applicants by vocational course preference, gender, and geographical zone, 530 individuals were randomly selected (using a computer random number generator) to receive "unrestricted" vouchers

[3] For more information on this PSDP data, see Miguel *et al.* (2014). Data used in Miguel and Kremer (2004) and Miguel and Kremer (2014b) is publicly available (see Miguel and Kremer 2014a).

[4] For more detail on the 73 schools included in the sample, how these 7,527 KLPS focus respondents were chosen, and the KLPS-1 data collection, see Miguel and Hamory (2020). The KLPS-1 data set and documentation is publicly available.

redeemable at any institution of their choice, and another 530 assigned "restricted" vouchers redeemable only at public vocational training centers. The remaining 1,090 participants serve as the control group. Vocational training courses were 3 to 21 months in length, and voucher winners began to enroll in early 2009. Lighter touch data collection was performed on subsets of these applicants during 2009-2011, in order to track training program participation and selected outcomes.

KLPS Round 3 (2011-2014)

Between August 2011 and August 2014, 10,757 individuals (the 7,527 PSDP individuals and 3,230 GSP girls, encompassing the nested sample of 2,150 vocational training voucher program applicants) were sought in a data collection round known as the Kenya Life Panel Survey, Round 3 (KLPS-3). Some areas of inquiry in the survey instruments were modified on the basis of analysis of the Round 2 data, in order to explore unexpected or intriguing results or unique opportunities (e.g. more detailed information on individual and household economic activities). At the start of KLPS-3 data collection, focus respondents were primarily aged 20-31. The effective tracking rate for this third round of data collection was 86.8%, and the effective survey rate was 82.9% - on par with the previous two rounds. The resulting KLPS-3 data set contains an expanded set of outcomes over thirteen to sixteen years (1998-2014).

Implementation of the Start-Up Capital for Youth (2013-2014)

In the period 2013 and 2014, a random half of voucher winners and voucher non-winners were given an unconditional cash grant worth Ksh 20,000 (about US $230 at the time) to support the start-up or expansion of small businesses. This intervention was aimed at evaluating the effect of cash grants in relation to (or as a complement to) vocational education in improving individual's ability to open a small business, sustain that business over time, and improve productivity. The stratification where half of the grant recipients had previously received vocational training through an earlier RCT enabled us to compare the relative effectiveness of cash grants and vocational training, as well as the impact of receiving the two in conjunction. Grant winners also received pamphlets with tips for starting and running a business; these, the project hoped, would serve as encouragement to use the money toward an entrepreneurial idea. In the present analysis, we consider the cash grant winners as "treated" with respect to the cash grant program if they were selected to receive an unconditional cash grant.

KLPS Round 4 (2017-2021)

Between March 2017 and December 2021, about 19,067 individuals encompassing 8,187 KLPS adults participants, about 5,513 adult caregivers of the KLPS adult biological children and 5,513 biological children (called KLPS-Kids) of the KLPS adult participants were sought in a data collection round known as the Kenya Life Panel Survey, Round 4 (KLPS-4). Of these, we surveyed a total of about 14,703 individuals encompassing 5,744 KLPS adult respondents, 4,047 primary caregivers of the selected KLPS adult biological children, and 4,912 KLPS-Kids.

One notable feature of KLPS-4 was the fact that a representative half of the sample (Wave 1) was completed in February 2020, just prior to interruptions in data collection due to the Covid-19 pandemic.

1.5 Project Setting

A detailed description of the project setting, including information on the primary study area, the Kenyan schooling system, and the partner non-governmental organization (NGO) that performed the deworming treatment and contemporaneous survey enumeration, was provided

in Miguel and Hamory (2020). We refer readers to that document for more details on those topics.

Innovations for Poverty Action (IPA) was the data collection partner for the KLPS-4, continuing their role on the project from KLPS-3. IPA is an international NGO based in Washington DC, USA with field offices in many countries. IPA had two field offices in Kenya at the time of the KLPS-4 data collection – one in Busia Town and one in Nairobi – and the KLPS-4 data collection team operated from both of these offices.

1.6 Principal Investigator and Co-Investigators

The KLPS-4 data collection was designed by an interdisciplinary and collaborative research team led by the Principal Investigator Edward Miguel, Oxfam Professor in Environmental and Resource Economics and Distinguished Professor of Economics at the University of California, Berkeley. The coauthor lists and acknowledgements in published articles detail the roles of other individuals in many aspects of the research.

1.7 Ethical Approvals

The data collection protocol for KLPS-4 was approved by the Committee on the Protection of Human Subjects (CPHS) at the University of California, Berkeley, Maseno University in Kenya, and the Uganda National Council of Science and Technology.

1.8 Organization of this Document

This document is designed to provide the data user with a comprehensive understanding of KLPS Round 4 data collection. For background on the KLPS project as a whole, including a more complete discussion of the Primary School Deworming Program and the foundations and design of the KLPS research project, see Miguel and Hamory (2020). For a more complete discussion of the Girls' Scholarship Program, see Kremer, Miguel, and Thornton (2009). This document only addresses specifics of the KLPS-4 data collection.

Section 2 describes the sample and tracking methodologies.

Section 3 explores each of the KLPS-4 survey instruments in detail. Objectives of each module, as well as some details on the questions, are provided.

Section 4 reviews the data collection activities, including survey design and tracking protocols, and interview techniques.

Section 5 describes data entry and cleaning procedures, the structure and organization of the final database, and variables and coding conventions of interest.

Section 6 outlines special considerations to incorporate when making use of KLPS-4 data.

Section 7 describes how to combine the KLPS-4 data with other data collected as part of the broader KLPS project.

2. KLPS-4 Sample and Tracking Design

The design of the KLPS sample frame (the population from which the sample was drawn), as well as the selection of the KLPS sample itself, is described in great detail for the PSDP portion of the sample in Miguel and Hamory (2020), and for the GSP portion of the sample in Friedman *et al.* (2016) – we refer readers to those documents to understand the sample frame. In what follows, we provide information on the sample tracked in the KLPS-4 data collection. Note that the primary, or focus, respondent for the KLPS is an individual, and it is these individuals who are tracked over time (not their households). However, as is standard in development economics, many economic variables (i.e., agricultural production and consumption expenditures) are collected at the household level.

2.1 Sample Design

The KLPS-4 data collection employed four principal survey instruments: the Expenditure+ Module (KLPS-4-E+), the Integrated Module (KLPS-4-I), the Primary Caregiver Module (KLPS-4-PC), and the Kids Module (KLPS-4-KT).[5] The KLPS-4 sample contains the KLPS Respondent (Adult) Sample and the Kids and Primary Caregiver sample.

Both the E+Module and I Module surveys were targeted to be administered to the entire KLPS-4 Respondent (Adult) sample. This includes all KLPS PSDP respondents, and GSP respondents that participated in Voced/SCY, which comprises the entire KLPS-4 Respondent (Adult) sample of 8,187 individuals. Following earlier KLPS rounds, data collection for all modules was split into two representative waves. During the I Module visit, up to two biological children of KLPS respondents were selected for inclusion in the KLPS-4 Kids sample, and their primary caregiver (PC) was surveyed to collect additional information. The PC-Module sample comprises 4,047 individuals, and the Kids Module sample includes 5,513 individuals.

2.1.1 KLPS-4 Respondent (Adult) Sample

The entire KLPS-4 Respondent (Adult) Sample includes all KLPS PSDP respondents, and GSP respondents that participated in Voced/SCY. Note that GSP respondents who did not participate in Voced/SCY were not surveyed in this round.

The Expenditure-Plus (E+) Module was the first module administered and collected from 2017-2019, and the I Module was administered and collected from 2018-2021. The total KLPS-4 Respondent (Adult) Sample includes 7,527 PSDP respondents, and 660 GSP respondents who participated in Voced/SCY. See Miguel and Hamory (2020) for a detailed explanation of the former sample, which was drawn from the population of youth enrolled in primary schools in two divisions of Busia District, Western Kenya in 1998. See Friedman *et al.* (2016) for a detailed explanation of the latter sample, which includes the full population of girls enrolled in grades and schools eligible for the GSP in primary schools in a separate set of divisions of Busia District in 2001. Note that the individuals who participated in the vocational training voucher evaluation launched in early 2009 are a subset of these two groups of individuals.

These individuals were further randomly divided in two approximately equally sized groups for tracking purposes, known as tracking "waves." Individuals from the PSDP sub-sample maintained their tracking wave assignment from earlier KLPS data collection rounds. The purpose of the two-wave design was twofold:

[5] There was additionally a Price Module conducted periodically during KLPS data collection. This data will be documented and posted separately from the present effort.

(i) To allow for representative subsamples earlier and later in the data collection window (while also improving overall representativeness for the tracking exercise);

(ii) To use Wave 1 results to adjust the survey modules midway through the data collection round to adjust the survey modules and to make any other necessary improvements (thus allowing the revised module to be launched on a random subsample of the full original sample).

For instance, in KLPS-4 I Module, the Covid pandemic occurred shortly after the completion of Wave 1; Wave 2 started post-pandemic, allowing for a comparison of pre and post-pandemic outcomes (and for the inclusion of additional survey questions on Covid).

KLPS-4 E+ Wave 1 commenced in June 2017 and ran through May 2018 and consisted of 4,076 focus respondents, while the Wave 2 commenced in June 2018 and ran through July 2019 and consisted of the remaining 4,111 respondents. KLPS-4 I-Mod Wave 1 commenced in September 2018 and continued through March 2020, and Wave 2 commenced in October 2020 and ran through October 2021. For each respondent with eligible children, the PC and Kids modules were then collected shortly after the I Module visit. The tracking of the KLPS-Kids sample for Wave 2 extended through December 2021, when KLPS-4 data collection was completed.

2.1.2 KLPS-4 Kids and Primary Caregiver Sample

The Kids Sample includes up to two biological children of each KLPS respondent from age groups 3-5 years, and 6-8 years (one per each age group). Eligibility was determined based on age at the time the I-Module survey wave was launched. This sample is split into two age groups: preschool aged ("younger") children (3 years to 5 years and 11 months, or 36-71 months), and school-aged ("older") children (6 years to 8 years and 11 months, or 72-107 months). These two age groups were defined to align with the transition from pre-school and kindergarten to primary school.

As may have been noted in other parts of this DUG, eligibility for the Kids sample was based on child age at the start of the particular Wave and followed the protocol below:

- Eligibility for inclusion in the sample was based on an eligible birth date range determined by the launch date of the Kids surveys. (This was meant to minimize the risk of having the eligibility for inclusion in the sample being correlated with the difficulty of tracking a respondent.)
- The eligible birth date range was set so children who were 2.5 to 8.5 years old as of the launch date (for each wave) would be included in the sample. This way, most children would be in the appropriate age range at the time of the survey (which was typically several months later).
- For Wave 1 (with a Kids data collection launch date of September 1, 2018), children with birth dates between March 1, 2010 and March 31st, 2016 were eligible for inclusion. For Wave 2 (with a Kids data collection launch date of October 1, 2020), children with birth dates between April 1, 2012 and April 30th, 2018 were eligible for inclusion.
- Eligible children were also selected for either the "Younger" cohort or the "Older" cohort based on their dates of birth. For Wave 1, those eligible children born on or after September 1, 2013 are selected for the Younger cohort (while those born before that date are selected for the Older cohort). For Wave 2, those eligible children born on or after October 1, 2014 are selected for the Younger cohort (while those born before that date are selected for the Older cohort). However, note that all tests in the Kids survey were

administered based on the child's actual age in years at the date of the assessment, where those who were at least six years old received the Older child assessment, and those younger than six years old received the Younger child assessment.

Up to one eligible child per group was selected per KLPS respondent for inclusion in the KLPS-Kids sample, with eligibility first determined based on a biological child roster collected during the I Module. Where possible, eligible children of deceased KLPS respondents were also tracked for sample eligibility and inclusion.[6] In cases where there was more than one child per age group, one child was selected at random at the time of sample selection (using SurveyCTO). At a later visit (usually within weeks), children would complete a battery of age-appropriate assessments. Eligibility status (i.e., being within the specified date of birth ranges for the Wave, as noted above) was confirmed and updated at this stage, if necessary. For instance, this occurred if children were discovered at the time of the test to be ineligible (as a result of being either too young or too old) or eligible for a different age-band, based on new information about the actual child's birth date. In these cases, the original child was replaced with another biological child who was actually eligible, where possible.[7] Based on these criteria and this two-stage selection and eligibility confirmation process, 5,513 children corresponding to 4,278 KLPS respondents were considered eligible for inclusion in the Kids Sample.

Data for each child surveyed in the Kids Sample come from two sources. First, for each child in the sample, a designated caregiver completed a Primary Caregiver (PC) Module. Second, each child completed a battery of age-appropriate assessments (the KT Module).

The Primary Caregiver Sample includes the adult identified by the KLPS respondent as a primary caregiver of the child. In 61% of cases, the Primary Caregiver was also the KLPS respondent. In cases where there were two eligible children per KLPS respondent, the same adult was often (but not always) identified as the Primary Caregiver for both children.

Primary Caregiver (PC) modules were completed for 4,933 children (from 4,047 distinct Primary Caregivers), and 4,919 children completed the battery of assessments. Both the PC Module and the battery of assessments were completed for 4,912 children.

2.2 Tracking Design

For each wave of each survey module with KLPS respondents, enumerators followed a two-stage strategy to locate KLPS target respondents. Within the first stage of tracking, hereafter referred to as "regular" tracking, enumerators sought to locate and survey all the target respondents within that survey wave (excluding those who were marked as deceased, unable due to a disability, or permanent refusals from previous survey rounds, although there were also efforts to obtain some information on deceased respondents). Here, enumerators used phone numbers previously provided during past KLPS survey rounds to locate the respondents, including phone numbers of the KLPS respondent themselves as well as any phone numbers they provided of their friends or relatives. In other cases, enumerators conducted in-person tracking that involved

[6] Child eligibility was determined for 61 deceased respondents (17% of the deceased sample as of KLPS-4). Among these 61 respondents, 28 respondents had eligible children, with a total of 37 eligible children identified. In these cases, eligibility was determined by speaking with family members (parents, siblings, etc.) to collect information on any eligible children.

[7] If there was another biological child truly eligible for a now-vacant eligibility slot, that child would be selected to replace the original child (randomizing, as before, if there was more than one candidate replacement child). For example, if a KLPS respondent had two children in the older age group (6-8 years), one of whom was randomly selected, then later it was determined that the sampled child was in fact 9 years old at the start of the wave (and hence ineligible), we replaced the mistakenly eligible child with the truly eligible child. If a child was initially selected as a "younger" child, then discovered at the time of the assessments to be within the age range of an "older" child (and there was not already an "older child" selected), we would consider that child an "older" child.

visiting the respondent's last known home, speaking with existing or previous neighbors, and visiting relatives. See Baird, Hamory, and Miguel (2008) for additional details on respondent tracking.

After approximately 2/3 of the sample had been located within a survey wave, enumerators proceeded with the second stage of tracking, hereafter referred to as "intensive" tracking. This was done because the remaining unfound focus respondents were increasingly difficult to track, so for reasons of efficiency, time, and budget constraints, a representative subsample of these remaining respondents were selected for intensive tracking (approximately 25% of the remaining 1/3). Here, researchers could then maintain a representative sample by reweighting individuals in this "intensive" sub-sample in the final analysis, so that each respondent in the intensive sample represents the other unfound individuals who were not intensively tracked.[8] Note that this same strategy has been used across all rounds of data collection.

The intensive sample is created separately for each survey module-wave for KLPS respondents (e.g., the E+ and I Modules). Selection of each wave's intensive tracking sample was performed in STATA. For the PSDP portion of the KLPS-4 sample, the remaining sample (those who were not found in regular tracking) were stratified by gender, 1998 grade, and 1998 PSDP treatment group, resulting in 60 strata. For the GSP portion of the KLPS-4 sample, the remaining sample were stratified by treatment group, 2001 grade, and survey module selection status, resulting in 8 strata. A random 25% of focus respondents in each stratum was selected for inclusion in the intensive sample.

Taking into account this two-stage tracking design, and the fact that individuals who were not found during the regular tracking phase and not selected for intensive tracking were no longer sought during this round, we calculate the effective tracking rate (*ETR*) (separately by survey module and wave) as:

$$ETR = RTR + (1\text{-}RTR)*ITR$$

where *RTR* is the tracking rate from the regular tracking phase, and *ITR* is the tracking rate from the intensive tracking phase, where both tracking rates use the probability weights described in Section 2.3. This is equivalent to the tabulation of the weighted tracking rate among those that were either found during regular tracking or sampled for intensive tracking.

2.2.1 E+ Module Tracking Design

Wave 1: Tracking of the 4,076 individuals in the KLPS-4 E+ Wave 1 sample was launched in June 2017. By mid-March 2018, after roughly 10 months of tracking, 2,773 focus respondents, or 68.0% of the Wave 1 sample, had been successfully located (and 2,452 focus respondents had been surveyed). 302 of the remaining 1,303 unfound focus respondents (excluding the prior "do not track" participants consisting of those previously reported to be deceased and those who previously refused to participate) were selected for intensive tracking (23.18%). 208 of these 302 individuals were ultimately interviewed.

The probability weights applied to individuals in this intensive tracking sample are adjusted in the final KLPS-4 data set (Section 2.3 goes into detail on the different weights that can be used for analysis). In particular, the final intensive tracking sample is composed of 302/1,303 = 23.18% of the Wave 1 respondents who were unfound as of April 2018. The reweighting applied to intensively tracked individuals should thus be 4.31 (i.e., 1/0.2318).

[8] Note that a similar procedure was used in the U.S. Moving to Opportunity study (Orr et al. 2003; Kling, Liebman, and Katz 2007).

Wave 2: Tracking of the 4,111 individuals in the KLPS-4 E+ Wave 2 sample was launched in June 2018. By May 2019, after roughly 11 months of tracking, 2,957 focus respondents, or 71.9% of the Wave 2 sample, had been successfully located (and 2,687 focus respondents had been surveyed). 298 of the remaining 1,154 unfound focus respondents (excluding the prior do not track participants consisting of those previously reported to be deceased and those who previously refused to participate) were selected for intensive tracking (25.82%). 181 of these 298 individuals were ultimately interviewed.

The probability weights applied to individuals in this intensive tracking sample are adjusted in the final KLPS-4 data set. In particular, the final intensive tracking sample is composed of 298/1,154 = 25.82% of the Wave 2 respondents who were unfound as of May 2019. The reweighting applied to intensively tracked individuals should thus be 3.87 (i.e., 1/0.2582).

2.2.2 I-Module Tracking Design

Wave 1: Tracking of the 4,076 individuals in the KLPS-4 I-Module Wave 1 sample was launched in September 2018. By September 2019, after roughly 13 months of tracking, 3,079 focus respondents, or 75.5% of the Wave 1 sample, had been successfully located (and 2,682 focus respondents had been surveyed). 251 of the remaining 997 unfound focus respondents were selected for intensive tracking (25.18%). 186 of these 251 individuals were ultimately interviewed.

In particular, the final intensive tracking sample is composed of 251/997 = 25.18% of the Wave 1 respondents who were unfound as of October 2019. The reweighting applied to intensively tracked individuals should thus be 3.97 (i.e., 1/0.2518).

Wave 2: Tracking of the 4,111 individuals in the KLPS-4 I-Module Wave 2 sample was launched in October 2019. By June 2021, after roughly 9 months of tracking, 3,037 focus respondents, or 73.9% of the Wave 2 sample, had been successfully located (and 2,721 focus respondents had been surveyed). 275 of the remaining 1,074 unfound focus respondents were selected for intensive tracking (25.61%). 155 of these 275 individuals were ultimately interviewed.

The probability weights applied to individuals in this intensive tracking sample are adjusted in the final KLPS-4 data set. In particular, the final intensive tracking sample is composed of 275/1,074 = 25.61% of the Wave 2 respondents who were unfound as of July 2021. The reweighting applied to intensively tracked individuals should thus be 3.91 (i.e., 1/0.2561).

2.2.3 KT-Module Tracking Design

As described in Section 2.1.2, the Kids Sample for the KT-Module includes up to two biological children of each KLPS adult respondent from age groups 3-5 years, and 6-8 years (one per each age group) where eligibility is determined based on age at the time the survey wave was launched. This Kids Sample is originally selected as part of the KLPS-4 I-Module, and thus *does not* include a separate two-stage tracking methodology for selecting and locating each child. The team tracked all selected children of KLPS respondents surveyed in the regular tracking phase, as well as for KLPS respondents surveyed in the intensive phase. (The one exception to this is in cases of deceased KLPS respondents, where efforts were also made to track and survey their children.) For the purposes of sample reweighting, we assign each child the same tracking status as the KLPS parent. Eligible children whose parent is included as part of KLPS Wave 1 make up the Wave 1 Kids Sample, and eligible children whose parent is included as part of KLPS Wave 2 make up the Wave 2 Kids Sample.

Wave 1: 2,861 eligible children were selected to be surveyed as part of Wave 1 of the KT-Module (including approximately 1,252 younger children and 1,705 older children). Tracking began in October 2018 and ended in February 2020. By February 2020, after roughly 16 months of tracking, 2,505 children (87.56% of the sample) had been surveyed, i.e., had completed the battery of KT

module assessments with a corresponding completed PC module. (There were 17 additional children with completed PC modules but no corresponding completed KT module in this wave – see discussion of the PC module below).

Wave 2: 2,652 eligible children were selected to be surveyed as part of Wave 2 of the KT-Module (including approximately 1,466 younger children and 1,359 older children). Tracking began in January 2021 and ended in December 2021. By December 2021, after roughly 12 months of tracking, 2,407 children (90.76% of the sample) had been surveyed, i.e., had completed the battery of KT module assessments with a corresponding completed PC module. (There were four additional children with completed PC modules but no corresponding completed KT module in this wave – see discussion of the PC module below).

2.2.4 PC-Module Tracking Design

As described in Section 2.1.2, the Primary Caregiver (PC) Sample includes the adult identified by the KLPS-4 adult respondent as a primary caregiver of each eligible child. During the KLPS-4 I-Module survey, KLPS adult respondents are asked to identify the primary caregiver of the child as someone who knows the child very well and spends a substantial amount of time with the child each week. In cases where the KLPS respondent (the biological parent of the child) meets these requirements, we prioritized surveying the KLPS respondent as the primary caregiver. In most cases, PC-Module surveys took place on the same date as KT-Module for the corresponding primary caregiver.

Like the Kids Sample, the PC Sample does not include a separate two-stage tracking methodology for selecting and locating each child (and instead follows the I-Module). For the purposes of sample reweighting, we assign each primary caregiver the same tracking status as the KLPS respondent. Primary caregivers of children in the Wave 1 Kids Sample are included as part of the Wave 1 PC Sample, and primary caregivers of children in the Wave 2 Kids Sample are included as part of the Wave 2 PC Sample.

Wave 1: 2,080 primary caregivers corresponding to 2,522 children (88.15% of the eligible child sample) were surveyed in Wave 1. For 1,535 children (60.86% of the Kids Sample with completed PC modules), the KLPS respondent was the surveyed primary caregiver.

Wave 2: 1,967 primary caregivers corresponding to 2,411 children (90.91% of the eligible child sample) were surveyed in Wave 2. For 1,480 children (61.39% of the Kids Sample with completed PC modules), the KLPS respondent was the surveyed primary caregiver.

2.3 Sampling Weights

2.3.1 Adult Sampling Weights

Within the KLPS-4 data sets, sampling weights have been created in order to allow for preservation of initial population proportions in analysis. These sampling weights can be found in the KLPS-4 Status dataset. The most appropriate weights will depend on the research question and population of interest.

***klps_popweight*:** Initial probability weights were calculated for each individual in the data set by dividing the total population of the stratum from which the person was selected by the number of individuals selected for enumeration from that stratum. This simple probability weight is named *klps_popweight* and is identical in KLPS Rounds 1, 2, 3, and 4 for the PSDP sample. This is because the sample of PSDP respondents sought across rounds was identical. All GSP

respondents have a weight of 1. These weights have not been adjusted for intensive sampling as described in Sections 2.2.1 and 2.2.2.

noklpsweight_intonly: This set of weights only accounts for the two-stage tracking methodology described in Section 2.2 and does not account for any probability weights of the initial population. Here, all respondents found in the regular phase of tracking are given an equal weight of 1. The weights for those respondents not found in the regular tracking phase but sampled for the intensive tracking phase are as described in Sections 2.2.1 and 2.2.2, namely, by multiplying the weight by the intensive sampling adjustment factor. These adjustments were carried out separately for the PSDP and GSP samples. For the PSDP sample, the intensive sampling adjustment factor equals 4.30 and 3.89 for Waves 1 and 2 of the E+ Module, respectively, and 3.97 and 3.91 for Waves 1 and 2 of the I-Module, respectively.[9] For the GSP sample, the intensive sampling adjustment factor equals 4.50 and 3.88 for Waves 1 and 2 of the E+ Module, respectively, and 4.00 and 3.44 for Waves 1 and 2 of the I-Module, respectively.[10] This weight is missing for those respondents not found in the regular tracking phase and not sampled for intensive tracking.

klps_weight_all*:* This set of weights accounts for both the initial probability weights of the KLPS sample (of both PSDP and GSP respondents) and the two-stage tracking methodology described in Section 2.2. This weight is the product of the *klps_popweight* and *noklpsweight_intonly* weights described above.

klps_weight: This set of weights is equal to *klps_weight_all* for the PSDP sample and is set to missing for the GSP sample.

klps_psdpweight: This set of weights also accounts for an adjustment for the respondents who participated in the Voced/SCY interventions. In particular, it is useful in analyses in which members of the Voced or SCY treatment groups are excluded. Similar to *klps_weight*, this weight is constructed by first assigning initial probability weights to all respondents – the *klps_popweight*. This weight is then set to be missing for any KLPS respondents that are either part of the GSP sample, or any PSDP respondents who were selected to be in the treatment group of either the Voced or SCY intervention (or both). The remaining PSDP respondents who volunteered to participate in the Voced and SCY interventions, but were not selected for either treatment (approximately 25% of the Voced/SCY sample), i.e., the double control group, are then reweighted to be representative of the complete PSDP Voced/SCY subsample. In particular, the probability weights of these Voced/SCY double-control respondents are multiplied by a Voced/SCY adjustment factor. For both the E+ Module and I-Module, this adjustment factor equals 3.59 and 3.34 for Waves 1 and 2, respectively.[11] (Note that the Voced/SCY adjustment factor is the same across both survey modules because the KLPS-4 sample is the same in both modules and wave assignment is the same across all survey rounds.) Finally, these weights are adjusted for the remaining respondents (PSDP respondents who were not part of the Voced/SCY

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[9] Similar to Sections 2.2.1 and 2.2.2, the intensive sampling adjustment factors for PSDP respondents in KLPS-4 are found by dividing the number of unfound focus respondents by the number of respondents selected for intensive sampling in that wave. For KLPS-4 E+ Wave 1, this equals 1,213/282 = 4.30. For KLPS-4 E+ Wave 2, this equals 1,124/289 = 3.89. For KLPS-4 I-Module Wave 1, this equals 961/242 = 3.97. For KLPS-4 I-Module Wave 2, this equals 1,043/267 = 3.91.

[10] Similar to Sections 2.2.1 and 2.2.2, the intensive sampling adjustment factors for respondents in KLPS-4 are found by dividing the number of unfound focus respondents by the number of respondents selected for intensive sampling in that wave, separately for PSDP and GSP respondents. The PSDP adjustment factors are the same as those reported in footnote 17. For GSP respondents, the adjustment factors are as follows: for KLPS-4 E+ Wave 1, this equals 90/20 = 4.50. For KLPS-4 E+ Wave 2, this equals 30/9 = 3.33. For KLPS-4 I-Module Wave 1 , this equals 36/9 = 4.00. For KLPS-4 I-Module Wave 2, this equals 31/8 = 3.88.

[11] The Voced/SCY adjustment factor is found by dividing the number of PSDP respondents in the Voced/SCY samples by the number of PSDP respondents who were not selected as part of the treatment group in either intervention. For KLPS-4 Wave 1 (for both the E+ Module and I-Module), this equals 825/230 = 3.59. For KLPS-4 Wave 2 (for both the E+ Module and I-Module), this equals 678/203 = 3.34.

treatment groups) in the intensive tracking sample. Here, the weights are multiplied by an intensive sampling adjustment factor that is re-calculated (following the methodology described in Sections 2.2.1 and 2.2.2) excluding GSP respondents and PSDP respondents selected for treatment in the Voced or SCY interventions. Thus the intensive sample adjustment is slightly different than above: the intensive sampling adjustment factor equals 4.26 and 3.91 for Waves 1 and 2 of the E+ Module, respectively, and 3.94 and 3.91 for Waves 1 and 2 of the I-Module, respectively.[12] In practice, the weight assigned to respondents who were in the Voced/SCY double-control group, and happened to be selected for intensive tracking in a given wave, is relatively large as it is roughly the product of the population weights, intensive weights, and Voced/SCY adjustment. When conducting analysis on the effects of PSDP, in isolation from any interactions with the Voced or SCY treatments, we recommend the data user employ the *klps_psdpweight* in analysis.

2.3.2 Kids Sampling Weights

Various weights for the analysis of the KLPS-Kids data are provided, where their use depends on the analyst's goal. One set of sampling weights allows for analysis representative of the initial baseline adult population (i.e., using weights appropriate for analysis with the full adult sample or with a specific intervention subsample). Another set facilitates analysis representative of the overall child population in the next generation (i.e., using weights that additionally account for the total fertility of KLPS respondents and/or for the number of eligible children included in the Kids Sample).

In particular, before presenting the weights themselves, we discuss the following variables which are used to construct these weights, which can be found in the KLPS-4-Kids-Status dataset:

surveyed_kids_klps4: The number of children of a respondent in the eligible age range who were successfully surveyed in the KLPS-4 Kids data collection. In cases where the adult respondent did not complete the KLPS-4 I-Module survey, in general we did not collect KLPS-4 Kids or associated PC surveys, with the important exception of respondents that we know to be deceased (as determined during survey tracking activities). During these tracking activities for deceased respondents, enumerators asked surviving relatives (or friends) about whether the respondents had any children in the eligible age range for KLPS-Kids surveys, and these children were identified and selected for surveys when possible.

eligible_kids_klps4: The number of kids in the eligible age range for KLPS-Kids surveys as was determined during KLPS-4 I-Module surveys or in tracking surveys among deceased respondents. When divided by ***surveyed_kids_klps4***, this ratio captures how much additional weight should be given to a KLPS Kids survey observation in order to maintain representativeness of all the respondent's children in the eligible age range.

total_kids_klps4: The total fertility of the KLPS respondent, both in the eligible age range and outside of that range. When divided by ***surveyed_kids_klps4***, this ratio captures how much additional weight should be given to a KLPS Kids survey observation in order to maintain representativeness of all biological children of the respondent.

[12] Similar to Sections 2.2.1 and 2.2.2, the intensive sampling adjustment factors for PSDP respondents in KLPS-4 (who were not selected for treatment in the Voced/SCY interventions) are found by dividing the number of unfound focus respondents by the number of respondents selected for intensive sampling in that wave. For KLPS-4 E+ Wave 1, this equals 1,096/257 = 4.26. For KLPS-4 E+ Wave 2, this equals 1,071/274 = 3.94. For KLPS-4 I-Module Wave 1, this equals 911/231 = 3.94. For KLPS-4 I-Module Wave 2, this equals 998/255 = 3.91.

In practice, we typically determine the fertility of a respondent (both in the eligible age range and outside of it) using the number of living, biological children reported by the respondent as part of the KLPS-4 I-Module. In the cases of deceased adult respondents, we did not typically have a complete fertility history (since the tracking survey had focused on identifying kids in the eligible age range alone). Data on total fertility was obtained in the KLPS-3 I-Module for deceased respondents where available. When KLPS-3 I-Module data was not available for a deceased respondent, they are assigned the average realized fertility of the full sample of KLPS respondents as of KLPS-3. (In the small number of cases where the KLPS respondent was surveyed in KLPS-4, and is not deceased, but there is missing or incomplete information on their fertility – for instance, due to early survey termination or the respondent's desire to skip those questions – they are assigned the average realized fertility of the full sample of KLPS respondents as of KLPS-4.)

The appropriate weights depend on the user's analysis goals. In general, the adult weights described above (i.e., ***klps_popweight***) can be multiplied by the appropriate ratio (i.e., ***total_kids_klps4/surveyed_kids_klps4)*** to generate the appropriate sample representativeness.

As described above, separate variables for the total fertility of each KLPS respondent (*total_kids_klps4*) as well as the number of eligible kids selected for each KLPS respondent (*eligible_kids_klps4*) and number of surveyed kids (*surveyed_kids_klps4)* are included. These variables can be used to construct additional child weights if the ones provided are not sufficient for the user's desired analyses. When conducting analysis on the effects of PSDP, we recommend the data user employs *klps_psdpweight* multiplied by the appropriate ratio of child weighting variables described above.

3. Further Details on the Kenya Life Panel Survey

The KLPS-4 questionnaire was designed to collect current and retrospective information on a wide array of health, socioeconomic, demographic and cognitive data for the same set of PSDP individuals who were sought during KLPS-1, KLPS-2, and KLPS-3 data collection (who compose a representative sample of the 1998 PSDP treatment and comparison school pupils) as well as females enrolled in grades and schools eligible for the 2001-2002 GSP that participated in Voced/SCY programs. KLPS-4 also collected data for a sample of children of targeted respondents and their primary caregivers, which can be linked with the KLPS longitudinal dataset. This section describes important features of the KLPS-4 questionnaire design and provides a detailed description of the individual modules and their components.

3.1 Principal Elements of the Questionnaire Design

The principal elements of the questionnaire design include the objectives of the study, the organization of the survey instruments, the language in which the surveys were conducted, and the interview time and respondent burden imposed by the questionnaires. These topics are addressed in detail below.

3.1.1 Objectives

There were many research objectives and aims of the KLPS-4 activity. The following pre-analysis plans registered on the American Economic Association (AEA) RCT Registry describes many of them: Baird et al. (2017) and Baird et al. (2019) outline pre-specified analyses around the long-term effects of school-based deworming for adult economic and additional domains, respectively; Alfonsi et al. (2019a) looks at long-term effects on economic preferences; Alfonsi et al. (2019b) and

Muller (2019) make use of survey responses and within-survey experiments to examine truth-telling and recall of reproductive desires, respectively; and Miguel et al. (2019) examines gender and competitiveness preferences within the KLPS sample.[13] Fernald et al. (2019) investigates causal intergenerational impacts on the KLPS-Kids sample, while Bonds et al. (2019, 2020, 2021) outline analyses related to the storybook promotion intervention and Layvant et al. (2021) covers analyses on the sleep promotion intervention.[14]

Due to the wide range of questions raised in the KLPS panel survey, there also may be many possible research uses for this data set that do not rely on any of the underlying experiments or as outlined in these PAPs.

3.1.2 Language

Surveys with KLPS respondents were predominantly conducted in Kiswahili, which is one of the two national languages of Kenya, together with English. Kiswahili operates as a *lingua franca* throughout Kenya and our sample of respondents are almost universally fluent in it. A small number of surveys were conducted in English, if the respondent preferred this language.

Beyond Kiswahili and English, many Kenyans also speak local vernacular languages, which in our population was mainly different Kiluhya dialects. For the KLPS Kids sample, a majority of the children already spoke Kiswahili (either at home or at school) and so assessments were nearly all conducted in Kiswahili, or in English; in a small number of cases (especially for the youngest respondents) assessments were administered at least partially in a Kiluhya dialect.

In order to track the language of administration, at the completion of the interview the survey required the field officers to rate the respondent's proficiency in Kiswahili and whether some clarification in a local vernacular tongue was required.

3.1.3 Interview Times and Respondent Burden

Interview time and respondent burden varied depending on the survey instrument in question. Part of the motivation for conducting multiple visits and modules with respondents was to reduce the respondent burden from any particular visit. In general, respondents were patient and cooperative.

Expenditure-Plus Module (E+): The average length to complete this survey was about 2 hours and 15 minutes. Refusals numbered 150, or less than 1.84% of the sample tracked. Respondents were provided with a gift worth approximately US$2.50 in return for their time.

Integrated Module (I): The survey instrument took about two and half hours to complete. There was, however, a considerable amount of heterogeneity in interview length. Refusals numbered 116, or just over 1.96% of the sample tracked. In return for their time, respondents were given a gift worth approximately US$3.50.

Primary Caregiver Module (PC): The KLPS-4 Primary Caregiver Module took about 45 minutes to complete. Refusals numbered 194, or 3.73% of the surveyed sample. In return for taking this survey, respondents were given a gift worth approximately US$1.50 per child.

Kids Assessment Module (KT): The KLPS-4 Kids Assessment Module is also relatively short considering kids' patience. On average, kids took around 60 minutes to complete the survey, with

[13] These pre-analysis plans can be found as part of AEA Trial Registry #1191, under the "Analysis Plan" section at https://www.socialscienceregistry.org/trials/1191.

[14] These pre-analysis plans can be found as part of AEA Trial Registry #3995, under the "Analysis Plan" section at https://www.socialscienceregistry.org/trials/3995.

slightly shorter surveys for the younger respondents. All the children whose parents consented to be surveyed also assented themselves and so refusal was only based on the number of the Primary Caregiver refusals. Kids were given a gift worth approximately US$1.00 in the form of educational materials for their participation.

3.2 Expenditure Plus Module (KLPS-4-E+)

The Expenditure Plus (E+) Module was designed to collect exhaustive information concerning household demographic characteristics, assets ownership, transfers, income, consumption and expenditures. The data enables computation of a consumption-based measure of household per capita income. Such an approach, pioneered by the World Bank's Living Standard Measurement Survey (LSMS), is now widely used in studies which focus on rural areas of low and middle-income countries (LMIC) for which only a minor share of population is employed in the wage sector and most consumption does not occur through the formal market.

In some cases, the KLPS respondent (the focus respondent, or FR) would ask for information from other households members for details on specific items or consumption expenditures, if they themselves were not familiar with all household shopping decisions, for instance.

The module is organized in eighteen separate sections. The structure of each of these sections is described below.

3.2.1 Section 1: Pre-Interview Information & Consent

This section provides identification information for each respondent. The start time and date of interview were also recorded in this section, as well as interviewer identification numbers in order to track the progress and performance of individual staff over time.

3.2.2 Section 2: Confirmation of Identity

Section 2 records personal details and current address information for the respondent.

The first few questions of this section detail the respondent's name(s), parent's names, date of birth, place of birth, and baseline school and grade-level, in order to confirm the identity of the respondent. In cases where the name was different than the one on record, the enumerator asked for their reasons, which included getting married and taking the spouse's name, taking a baptismal name, etc.

If all the identification questions were consistent with the information on record, then the enumerator continued on to the next section. If one or more questions did not match what was on record, the enumerator was asked question 2.8 which allowed the enumerator to record any suspicions that the respondent was not the sought-after individual. This component is important for future analysis since one may want to exclude surveys for which the identity of the respondent was in doubt; in practice, these cases are rare.

It was expected that these interviews would be conducted under a variety of circumstances (such as in person in various locales, or in exceptional cases by phone), and accordingly question 2.9 was designed to make these circumstances explicit. Question 2.10 noted the presence of other individuals during the enumeration of the survey. The interviewer was reminded to interview the respondent alone, as the quality of answers could be affected by the presence of family and elders. The presence of other persons was noted again in the final section of the E+-Module (see below). If individuals that appeared to be over the age of 5 remained in the room for the interview, the enumerators were instructed to list them using the G4 relationship codes in the code sheet document.

3.2.3 Section 3: Contact Information

Details of the respondent's current address and contact information, as well as information for two sets of additional contacts who would know where the respondent had gone (but likely not move with them) if they were to move, were collected in this section. The purpose of this information was to facilitate relocation during survey re-checking and future information collection activities.

3.2.4 Section 4: Household Roster

The E+-Module in KLPS-4 contains a full household listing of all of the FR's household members. Just like the KLPS-3 criterion which was based on much discussion with our local collaborators and survey instrument piloting, we defined a household as "those who eat from the same pot and spend 4 nights or more in an average week sleeping in your home" – this is a slightly more specific definition than was used in earlier KLPS rounds (Rounds 1 and 2). Adults are defined as individuals 18 years of age or older. Children are individuals 17 years of age or less.

Respondents were asked a series of questions as the household roster was built, in order to ensure that all of the relevant individuals were listed on the roster. On the roster, household members were listed individually, documenting their age, sex, the highest level of education level achieved[15], occupation, and relationship to the respondent. Information was first collected about adults in the household, and then children.

In some circumstances the focus respondent was not asked for their household roster, or was only asked for a subset of household members. If the focus respondent was a live-in house help or live-in guard, the household roster was only collected for the FR's spouse and/or other dependent(s) living in the household (employers or the employers' family were not counted in the household roster).

3.2.5 Section 5: Dwelling Characteristics

This section collects information about the FR's household characteristics and asset ownership. This information is important because it can be used as components of wealth indices, and to ascertain access to utility services (i.e. electricity and water) and sanitation facilities. Since households can have multiple structures inside their housing compound, we only refer to the main house and exclude other buildings such as *simbas* (i.e. sleeping huts for unmarried men). This section is asked about homes regardless of whether the current residence is owned or not. We ask specific questions for rentals and leased homes. This section was extended from KLPS-3 to capture more details which will be discussed below. Note that in KLPS-3, this section (Section 6: Home Characteristics and Assets) was included in the I-module.

Questions 5.1-5.2 ask about the material characteristics of the floors and roofs of the main house of the compound. The codes for these two questions remain the same as wave 2 in KLPS-3. Question 5.5 asks the number of separate rooms. Note that the order has been changed from KLPS-3.

For questions 5.3-5.4, we collect information on electricity and sanitation facilities. Questions were added since KLPS-2 to capture the type of facilities the home uses. The focus respondent was asked about all electricity sources they use for any of their electricity usage since electricity source can vary and homes can be powered by multiple alternate sources if the main source is intermittent.

[15] Education levels are based on the Kenyan education system at the time respondents were children. If the focus respondent moved to Uganda, the relevant Ugandan codes are used.

Questions 5.6-5.7 extend the water use questions from KLPS-3 to include the quantity of water the household uses and the source of their main water supply. Given the repeated and regular nature of the transaction, the recall period was kept to 7 days. Note that question 5.6 added questions related to water connection. To capture important water quality information, the focus respondent was asked if the water has ever been treated with any of the water purification methods listed, as well as recent usage in the last seven days (question 5.8).

Land ownership status, size, and usage are important information to collect to measure wealth, income, expenditures, and to supplement analysis of agricultural activities. Questions 5.9-5.11 ask about the FR's own land, the land they rent out, as well as land they rent from others outside of the household. Questions about rented land captured the amount, length, and value of that land in terms of the monthly rent that is paid or received for that land. In addition to land, the focus respondent was asked about the household they reside in, including their ownership status, and amount they pay in rent (if the household is a rental) in question 5.12.

Question 5.13 asks whether the respondent was displaced from his/her home due to a natural disaster in months preceding the survey, a question that attempts to uncover large income/consumption shocks to the household. Note that questions on the ownership of a list of items that are commonly consumed, or used as a productive asset or store of wealth were removed in KLPS-4.

The last several questions in Section 5 (questions 5.15-5.19) collect information on time spent doing household chores by both household members and those from outside the household. These questions were included in order to understand respondent time use as well as labor used to complete household tasks. Note that 5.18a, 5.19a, and 5.19b are new in KLPS-4.

3.2.6 Section 12: Transfers

This section on transfers is numbered as Section 12 as per the initial set-up of the KLPS-4 E+ but for logistical reasons, the section was moved between 5 and 6 and kept its original numbering. This section collects information on any inter-household remittances occurring within the 12 months preceding the survey. Remittances are a common phenomenon, often occurring between relatives who live in different households. In KLPS-4, as in KLPS-3, transfers in both directions (to and from the household) were recorded. The questions focus both on cash and in-kind transfers, collecting a monetary valuation for both. The relationship between the household and the beneficiary was also noted. Transfers that come from the same sender (or individuals in the same household) and are meant for the same receiver are considered one "transfer relation".

This section also collects information on the location of the sender and/or receiver of the remittance. For this, information on country, county, district, and town/city were collected. Finally, the main usage of the most recent transfer of money or goods was recorded. Note that this section is labeled as Section 7 in the E+ module of KLPS-3. Note that 12.4e, 12.4f, 12.13e, 12.13f, were dropped in KLPS-4.

3.2.7 Section 6: Livestock

This section builds on the "Economic Activities" sections in KLPS-3 E+, asks the focus respondent about the livestock this household owns, plus any livestock the respondent owns that is at another location. Livestock are not only an important source of income and sustenance for a household, but also function as a store of wealth. More formal and monetary means of saving are not available to many households, and so investments are often made in animals. Thus livestock ownership is an important indicator of household wealth. For each of the livestock, this section asks the number of livestock the household has owned in the last 12 months and the amount, the total amount of money used (on this livestock), and the number of livestock this household

currently owns. This section also asks if the household has sold any livestock in the past 12 months (and the amount), and the amount of veterinary expenses.

3.2.8 Section 7: Durables

This section collects information about expenditures on durable goods in the 12 months preceding the survey. Forty of the most common durables – including bicycles and stoves – were explicitly mentioned in the questions; each of these items is denoted by a three-digit code for subsequent analysis purposes. Questions were asked on the number of times each item was acquired and on the time of the last transaction. Durables acquired as gifts or via bartering are more difficult to price, but the respondent is asked to estimate the value of these objects, and this estimate was recorded. Note that in KLPS-4, the total number of the items currently owned by the household was added. Additionally, the list of the durable items was updated accordingly in KLPS-4. Note that this section is labeled as Section 9 in the KLPS-3 E+ module.

3.2.9 Section 8: Frequent Non-Food Purchases

This section focuses on non-food consumption goods that are purchased and consumed on a regular basis, particularly personal care goods. Questions referred to the value of each item in the 7 days preceding the survey and in a typical month, as well as to goods received as gifts in the 12 months preceding the survey. Note that this section is labeled as Section 10 in KLPS-3 E+. Additionally, the list of items was updated for KLPS-4.

3.2.10 Section 9: Non-Frequent Non-Food Purchases

This section collects data on non-food consumption goods that are purchased and consumed on an infrequent basis. An extensive list was provided, including clothing, transport, health goods and services, school and village fees, and ceremony expenses. For each of these, questions were asked about expenses in the seven days preceding the survey and in a typical month. Explicit information was also collected about items received as gifts in the 12 months preceding the survey. Note that this section is labeled as Section 11 in KLPS-3 E+ Module. Additionally, the list of the items was updated in KLPS-4.

3.2.11 Section 10: Food Consumptions

This section provides information on food consumed at home. Food is divided in four major alimentary groups: staples (section 10.A), vegetable and legumes (section 10.B), meat and dairy (section 10.C), and fruit (section 10.D). A fifth group (section 10.E) composed items which do not fit in any of the previous (e.g. cooking fat, sugar, salt, spices, alcohol, etc.). Section 10.F asked the usage of different sources of fuel.

Each of the subsections follow the same format. For each item, enumerators record previous week and typical month data to measure total consumption, which may be further subdivided into market purchases and home production. Gifts are also assessed on the previous 12-month period.

In conjunction with the Price Module (documented separately from the KLPS-4 survey), home production listed in the E+ Module may be priced according to the market price of that item. This is done to impute values for autarkic consumption, such that a household's measured consumption will not depend on their propensity to sell their agricultural goods at the market or consume them at home. Note that in questions 10a.5, 10b.5, 10b.5, 10c.5, 10d.5, 10e.5, and 10f.5 were updated in KLPS-4 a statement to clarify that we wanted participants to focus on the consumption of the items that the household produced. Note that this section is labeled as Section 13 in the KLPS-3 E+ module.

3.2.12 Section 11: Daily Meal/Snack Consumption

In poor households in low and middle-income countries, food consumption is expected to represent a large share of household consumption. In the module, food consumption is divided into further standard sub-categories. It is possible to distinguish between food consumption inside or outside of the home. Section 11 focuses on the latter; questions concern meals/snacks consumed by household members in hotels, restaurants or at other persons' houses. The number of meals consumed in the last 7 days as well as the value were recorded. (Note that snacks, soda/bottled water, and alcoholic drinks were moved to section 10e in the KLPS-4 E+ module.)

Other than the food consumption, we also collected nutritional intake. A full caloric intake module would have been burdensome given project budgets and logistics; as a result, meals eaten each day and the number of times meat or fish were eaten per day, and days household members went to bed hungry, as well as self-reported appetite, were collected (questions 11.17-11.22). Note that questions related to nutrition were asked in the I-module in KLPS-3, but were moved and expanded in KLPS-4. Note that this section is labeled as Section 12 in the KLPS-3 I Module.

3.2.13 Section 13: Interaction with Other NGOs and Government Programs

This section asks about aid received from non-governmental organizations (NGO), church-based organizations (CBO) and government social protection programs. Specifically, we asked about assistance programs that may have provided something to the focus respondent directly, such as money, food, extension services, or a job. In KLPS-4, we asked the participants if they received cash or in-kind, and job assistance from a Government Program, an NGO, church/mosque, Community-Based Organization, and directly from an individual politician or government official. Aside from those three groups' assistance, the focus respondent was asked to list any others they received benefits from. We ask the focus respondent to estimate the monetary value of any in-kind assistance. In KLPS-4, a clear distinction was made for assistance in the form of Cash, in-kind or Jobs. Note that this section is labeled as Section 4 in the KLPS-3 E+ Module.

3.2.14 Section 15: Economic Activities

Section 15 is divided into four subsections in order to collect detailed information on the economic activity of the respondents and their household members. Section 15.1 focuses on agricultural activities, section 15.2 focuses on entrepreneurial and self-employment activities, section 15.3 focuses on wage employment activities, and section 15.4 focuses on other household members' income. Note that this section was in the Section 9 of the I-module in KLPS-3.

Section 15.1. Farming and Agriculture

Participation in and characteristics of agricultural activities are central adult life outcomes tracked for survey respondents. Section 15.1 gathers information on household participation in agriculture, livestock farming, poultry farming, and fish pond agriculture. Question 15.1.2 asked about up to four agriculture or pastoralist activities in the past 12 months. Starting from question 15.1.3, information was collected on up to two agriculture or pastoralist activities, including the land, irrigation, revenue from sales, the time spent by the respondent, household and externally hired labor, and spending on inputs. Note that current agriculture or pastoralist activities were categorized into two categories (Agriculture and Non-Crop Farming Agricultural Activities), instead of the four used in KLPS-3. Note that this section is labeled as Section 9.1 in KLPS-3 I-Module dataset; although detailed crop by crop information was collected in KLPS-3, this was replaced in KLPS-4 with a different set of somewhat more consolidated questions.

Section 15.2. Self-Employment: Current and History

This section examines current and historical entrepreneurship of respondents. Up to three current primary businesses were recorded. Respondents running a business at the time of the survey

were asked about the three self-described "most important" businesses, including details on industry (question 15.2.2), whether the respondent was the main decision-maker (question 15.2.3), time worked (question 15.2.4-15.2.6), other people involved in the business (employees and other household members, question 15.2.7-15.2.13). Detailed questions on salary paid to employees, revenues and profits, resale value, premises and license, experience of destruction, vandalism, or theft were also recorded (question 15.2.15-15.2.35). Information on profits was asked outright, but can also be calculated using the component questions on revenues and costs. Then, a similar (but less detailed) set of questions were asked about all businesses closed, transferred, or sold by the respondent since the last year in which they were interviewed (question 15.2.36-15.2.47). Business plans, perceptions such as their perceived constraints and barriers to entry were also asked (question 15.2.48-15.2.49).

Note that KLPS-4 asked much more details on the current business compared to KLPS-3, so we encourage the users to make careful comparisons before merging or appending panel data. Also note that MONTH was added to question 15.2.37 in wave 2 of KLPS-4. Note that this section is labeled as Section 9.2 in KLPS-3 I-Module dataset.

Section 15.3. Employment: Current and History

This section collects information on current or retrospective work for pay, as well as non-wage work. The respondent was asked to detail, for their 3 self-described "most important" positions, their occupation, working patterns, earnings and search for this work (questions 15.3.2-15.3.16). Questions 15.3.17-15.3.20 also inquired if the respondent is currently looking for another job. Then, they were asked to detail any previous employment since the year of the last KLPS interview (question 15.3.21-15.3.31). Due to the prevalence of unemployment and underemployment in Busia, an attempt was made to measure under-employment in focus respondents. Note that question 15.3.11a was added in KLPS-4 to ask the amount of taxes deducted from the salary during the past 30 months. Questions related to on-the-job training were removed from KLPS-3. Also note that for wave 2, questions 15.3.13a and 15.3.13b were added to ask how the respondent heard about this job opportunity and if the person who hired the respondent was ever a primary schoolmate. Note that this section is labeled as Section 9.3 in KLPS-3 I-Module dataset.

Section 15.4. Household Member Income

This section collects information on the income of other members of the respondent's household. For up to 15 household members, information on whether the household member was self-employed or employed as well as the earnings and profits in the last 30 days was gathered. This section can be used to better understand the household's income as a whole. This was a new section added to the KLPS-4 round.

3.2.15 Section 18: Conclusion

This section is for the enumerator to record the time of survey ending and to make comments on overall survey quality and reliability. Note several questions were added in KLPS-4 in this section. Question 18.2 asked the respondent's skills of speaking or understanding Kiswahili (from the enumerator's perspective); question 18.4 asked if the respondent became impatient or tired during the survey; the new question 18.6 gathered information on the location of the interview. GPS was recorded if the survey took place in the respondent's residence, place of work, or school. Note that this section is labeled as Section 14 in KLPS-3.

3.3 Integrated Module (KLPS-4-I)

This section provides an overview of questions in the KLPS-4 Integrated (I) Module. This module is a core instrument for the KLPS-4, designed to record information on the respondent's education, economic activities, social capital, ethnicity and religion, health, contact information, and family and household characteristics.

The I-Module is divided into 25 separate sections. The purpose of each of these sections, and the specific questions contained in them, is discussed below. It is important to note that many of the questions and concepts included in the KLPS-1 were repeated or expanded upon in the KLPS-2, KLPS-3, and KLPS-4 in order to generate a panel dataset of respondent outcomes that would be useful to researchers in many disciplines. We recommend individuals who seek to use the panel element of the data compare questions carefully across rounds, as the wording or emphasis sometimes changes. Also, there are some slight differences in the Wave 1 and Wave 2 versions of the KLPS-4 I-Module, especially given that the Wave 1 data was collected before the Covid-19 pandemic and Wave 2 was collected afterwards. Some questions were refined or cut/added in between survey waves; we attempt to highlight some of those differences here, and encourage the data user to carefully examine the survey modules.

3.3.1 Section 1: Pre-Interview information and consent

Section 1 provides personal identification information for each respondent, including name, gender, baseline (1998 PSDP or 2001 GSP) school, baseline standard, and a unique KLPS identification (ID) number. The ID number is composed of 7 digits. Questions 1.1-1.7 were completed prior to initiating the interview, allowing the enumerator to identify the survey according to the information already on record pertaining to the focus respondent. The start time and date of interview were also recorded in this section, as well as interviewer ID.

The survey enumerator then consented the respondent following the approved protocol. If the respondent was not able to be surveyed because they were mentally ill or disabled, the enumerators still collected some basic information on the individual from either the respondent themselves, or their caregiver, such as the type of disability, their highest level of education, occupation, and marital status, as well as whether they had any children and their children's ages.

3.3.2 Section 2: Confirmation of Identity

Section 2 records personal details and current address information for the respondent. Confirmation of identity was the same as the approach in the E+ Module; see above.

3.3.3 Section 3: Contact Information

Details of the respondent's current address and contact information, as well as information for two contacts who would know where the respondent had gone (but likely not move with them) if they were to move, were collected in this section. The purpose of this information was to facilitate relocation during survey re-checking and future information collection activities.

3.3.4 Section 4: Biological Child Roster

As opposed to the I-Module of KLPS-3 that captured the household members listing, the I-module in KLPS-4 contains a full listing of all of the FR's biological children who are alive. This list was used in selecting eligible children for inclusion in the KLPS-Kids sample. See above for selection of individuals into the KLPS-Kids sample.

3.3.5 Section 5: Family

Section 5 collects information on the nature and size of the respondent's natal family. Number of siblings, parental death and parental educational attainment may correlate with important respondent characteristics and adult life outcomes.

Questions 5.1-5.11 collects information on the respondents' mother and father, including education level and main occupations. Information on the tribe of the respondents' parents is also collected, as well as marital history questions. Questions 5.12-5.14 collects information on the respondents' grandparents, including age and whether they are still alive or not. Questions 5.16-5.21 collects detailed information on siblings who share the same mother and father as the respondent, including their first name, age, gender, where they live, marriage status, age of marriage, and education level. To be specific, question 5.20b was asked only in Wave-1 but later was removed in Wave 2.

3.3.6 Section 6: Economic Preferences

[Note that there is no section 6.1 in the KLPS-4 I-Module survey.]

Note that for Wave 2, Section 6 was skipped for the small number of respondents who were surveyed by phone.

Section 6.2: Risk Preferences

This measure was based on the Global Preference Survey in Kenya, from Falk et al. (2018), and adapted and validated in Bauer et al. (2020). In particular, respondents were asked a series of questions between a lottery and a sure payment in order to estimate risk aversion, where the questions and their order were adaptive based on respondent choices. In addition, the respondents who choose the sure payment amount across all five standard questions were asked to make a sixth binary choice between a lottery and a sure payment of zero Kenyan Shillings, to capture individual aversion to entering a lottery (which some respondents saw as a form of immoral gambling). In Wave 2, we also added a question for those who choose zero over a draw the reason for their choice to ascertain if they were opposed to gambling or participating in a lottery.

The following set of instructions was read aloud to the respondent:

"Please imagine the following situation: You can choose between a sure payment of a particular amount of money, or a draw, where you would have an equal chance of getting 900 shillings or getting nothing. We will present you with five different situations."

Risk aversion measurement in KLPS-4 was different from the approach in KLPS-3 (which was in Section 11.1 in that earlier round).

Section 6.3: Social Preferences

Section 6.3 measures social preferences, with survey questions also based on validation work from Bauer et al. (2020). See survey instrument for details. (Note that this section is new in KLPS-4 and was not included in the KLPS-3.)

Note that there were some adjustments made for Wave 2 to improve measurement: In particular, choices in Wave 2 were incentivized by allowing a random one of six decisions made by the respondent to lead to an actual payout. The amounts offered in Wave 2 were also adjusted down as part of the introduction of actual payouts. Note that question numbers 6.3.6 and 6.3.7 were swapped in Wave 2 (compared to Wave 1).

Section 6.4: Time Preferences

Section 6.4 measures time preferences, with survey questions also based on validation work from Bauer et al. (2020). See survey instrument for details.

In particular, respondents were asked a series of questions regarding whether they preferred money immediately or at a future point in time, to estimate time discounting, where the questions and their order were adaptive based on respondent choices. The specific amounts of money are taken from Bauer et al. (2020), but we decided to use a shorter delay between the earlier and later payment, at a horizon of one month instead of twelve months, in order to increase variation in responses in the sample. In addition, the respondents who always chose to receive money today across all five questions were asked to make a sixth binary choice between 10 KSh today versus a very large amount (namely, 644 KSh) in one month. In Wave 2, a follow-up question was added to ask the reason if the respondent again chose the smaller amount (10 KSh).

Section 6.5: Ambiguity

To measure ambiguity aversion, following the approach in Ellsberg (1961), the respondent was asked to draw from 1 of 2 bags with 10 balls that were either yellow or red. A visual aid was provided. The first bag has a known distribution of red and yellow balls (4 and 6 respectively), and the second bag has an unknown distribution of red and yellow balls. They then were asked to choose a bag to draw one ball from. If they chose bag 1, then they would win 50 shillings if they drew a red ball, and if they chose bag 2, they would choose a color, and they would win 50 shillings if they drew that color from the bag. Ambiguity aversion was measured based on whether they drew the bag with the known distribution vs the bag with uncertain distribution. (Note that this section was also administered in KLPS-3 as Section 11.2.)

3.3.7 Section 7: Ethnicity and Religion

Ethnic identity and religion, as well as religious participation, are components of social identity and community and social capital that play a very important role in identity in Kenya. In section 7, questions were asked about the respondent's religion (and denomination) and tribe, and changes in religion since the last time we surveyed this individual. Similar questions were also asked during the earlier rounds (KLPS-1, KLPS-2, and KLPS-3).

Moreover, since the religious setting is complex in Kenya and converting between different religions/denominations is not uncommon, this section asked detailed questions (7.1-7.7) on whether the respondent had converted during the study period, and what religion/denomination they converted from. Further questions (8.8-8.13) attempted to determine how important religion was to the respondent. Questions 8.14-8.16 asked the respondent's tribe. As part of KLPS-4, we also collected more detailed data on religious behavior, experience, and attitudes for those who are currently Christian, which is nearly the entire sample. (Note that this section is labeled as Section 16 in the KLPS-3 I Module.)

3.3.8 Section 8: Community Groups, Social Capital and Political Attitudes

Participation in community groups, social identity, and the general level of social trust and capital are the focus of Section 8. These topics (with an overlapping set of questions) were also covered in earlier KLPS rounds. In KLPS-4, questions were added about respondent donations to community groups (8.2-8.3). We also collected detailed data on respondents' political attitudes, knowledge, and participation, as well as individual identity, trust, media consumption, and contact with the criminal justice system, similar to earlier KLPS rounds. (Note that this section is labeled as Section 15 in the KLPS-3 I Module.)

3.3.9 Section 9: Savings and Credit

Section 9 contains a series of questions on both formal financial services (e.g. savings accounts in a local bank) and informal financial services, including Rotating Savings and Credit Associations (ROSCAs), Savings and Credit Cooperatives (SACCOs), moneylenders, and direct dealings with friends, relatives, or acquaintances outside the household.

Since many households turn to their social networks for financial help, even if formal financial institutions exist, we collected information on how much lending and borrowing occurred in the past 12 months. The relationship to those people were recorded using the same relationship codes as Section 4 of the I-Module.

The section asks about use of mobile money, mobile banking services, and digital credit services. The questions include the travel time to the nearest shop where they can use those services.

This section was part of the E-Module (Section 3) in KLPS-3, but was moved to the I-Module for KLPS-4.

3.3.10 Section 10: Coin Game

[Note that the ordering of the appearance of this section was randomized in SurveyCTO between Section 7, 8 and 9. This was done to provide random variation in priming to different topics before the Coin Game was administered.]

The design of the Coin Game builds on Greene and Paxton (2009) and Jiang (2013), and is typically known as the Mind Game in the related literature. In this section, the respondents were told that they will be shown five 40 KSh coins (on the tablet), each of which can display either heads or tails. Before revealing the outcome to the enumerator, they are asked to choose which side of the coin is the winning side. (Further details are provided in the survey, including variants where the respondent is asked to choose the winning side in an actual coin held in their hand, versus just choosing it in their mind.) At this stage, they do not report their choice. Then, the subjects are shown the outcome, they report their choice of the winning side and are paid the monetary payoff based on this report. Specifically, they receive 40 KSh for each coin which displays the winning side they reported. Since respondents self-report their choice only after they see the outcome of the coin toss, they can lie about the winning side they chose in order to get higher earnings.
Because respondents make their choice in their mind, it is impossible to detect whether the reported choice is the one they actually made for each individual respondent. Nevertheless, at the sample level, it is possible to compare the share of reported winning to what would be expected if there were truthful reporting, allowing the analyst to infer the level of truth-telling or cheating among the sample as a whole or among subgroups.
The total amount that the respondent reported winning was recorded (either 0, 40, 80, 120, 160, or 200 KSH). This amount was later paid to the respondent. (Note that for Wave 2, this section was skipped in the phone survey.) This section is new to KLPS-4 and was not included in earlier rounds.

3.3.11 Section 11: Competencies

This section tested the respondent's abilities in a variety of areas, including following instructions, mathematics skills, and reading and listening comprehension, using two real-world scenarios. In particular, the first scenario (called "Making Change") required correctly calculating the amount of change due while grocery shopping, and the second scenario (called the "Farming Scenario") required the respondent to determine which location (out of two options) would result in the highest profits selling maize. Pencil and scratch paper were provided for the respondent to complete the computation, and the time to complete was recorded. Each of

the two tests allowed up to 4 minutes for the respondent to complete calculation. Note that this section replaces reading and math comprehension sections from KLPS-3.

3.3.12 Section 12: Raven's Tests

A Raven's test was administered to the respondent. Note that the first two items in Part A (items 1 and 2) of this test were example items, and should not be considered in the overall score. The dataset has an indicator for correct/incorrect responses for each test question. Note that this section is labeled as Section 7.3 in KLPS-3 I-Module.

3.3.13 Section 13: Schooling History

Section 13 builds upon the educational outcomes collected in previous KLPS rounds, including questions on attainment, grade promotion, drop-out history, standardized test performance, and post-secondary school and professional or technical training. This information was collected since the last year the respondent was interviewed. While most respondents had completed their schooling in advance of KLPS-4, this allows for the construction of a full schooling history by merging with KLPS data from previous rounds.

When a participant attended multiple schools and/or standards in a single year, the table recorded the highest standard attended in that year, and/or the most recent school. Question 13.5 recorded whether the respondent attended the school for the full year, which provides the analyst with some general information on school participation.

Information was collected on any formal or semi-formal college, bible school, vocational training school, university, and other (questions 13.11-13.17). Note that this section is labeled as Section 8.1 in the KLPS-3 I Module.

3.3.14 Section 14: School Attitudes

Section 14 collects information on respondent attitudes and perceptions toward schooling, using a four-point scale (completely agree, agree somewhat, disagree somewhat, completely disagree). Question 14.1 asked the respondent's belief of education's positive return on earnings. Questions 14.2-14.7 presented statements referring to the respondent's own children (the respondent was asked to imagine the attitudes if he/she has no children). Question 14.2-14.3 asked the respondent's beliefs about letting his/her children work before primary/secondary school. Question 14.4-14.5 asked the respondent's attitudes on letting his/her daughter get married before completing primary/secondary school. Question 14.6-14.7 asked the respondent's belief on the returns to education for their children. Questions 14.7-14.8 asked the respondent's attitudes on disciplinary strategies. Note that in wave 2, questions 14.4-14.5 were removed. Note that this section is labeled as Section 8.2 in the KLPS-3 I Module.

3.3.15 Section 15: Migration

This section asked respondents about places in which they have lived since the last KLPS interview year. In KLPS-4, were broadly similar to previous rounds with some modest changes. A full migration history can be constructed for each respondent by merging the KLPS-4 migration history with data from the previous round in which the respondent was interviewed. Note that this section is labeled as Section 12 in the KLPS-3 I Module.

3.3.16 Section 16: Health and Nutrition

This section collected information on the respondent's self-reported physical health, medical expenditures, and disability-related questions. Note that in KLPS-4, some nutrition-related

questions (including some that were included in previous KLPS rounds) were asked in the E+ module.

Questions 16.1-16.2 asked the respondent's general and current feelings such as being happy and being alert. Question 16.3 asked respondents to recall all episodes of illness and treatment during the four weeks preceding the survey. Symptoms used to prompt the individual included fever, worms, typhoid, malaria and stomach pain. Questions 16.4-16.5 collected information on medical expenses. To get an idea of the effect of illness on the individual, respondents were asked how many days of work, school or housework were missed due to illness in the month preceding the survey. More serious health problems since the last KLPS interview year were collected in questions 16.11-16.15. Respondents were asked to describe the problem and its impact on their lives. Disability-related questions (16.16-16.18) about self-care, walking, and fatigue were added in KLPS-2 and have been included in the survey since then. In KLPS-4, the Washington Group Set on Disability was added, including questions such as the difficulty of seeing, hearing, walking or climbing steps, remembering or concentrating, and communicating (Washington Group on Disability Statistics, 2009). Note that for wave 2, COVID-19 related questions (16.25) were added. Note that this section is labeled as Section 17 in KLPS-3.

3.3.17 Section 17: Crime Victimization

This section asked the respondent whether he/she experienced any crime victimization during the past 12 months, including for several major crime categories. Note that this section was not included in KLPS-3.

3.3.18 Section 18: Marriage

Section 18 collects a variety of marriage-related demographic information for each marriage, including:

Age at each marital event (question 18.5-18.6); whether anyone else got involved in the decision of marriage (question 18.9); the comparative financial status of the two families (the respondent's and the spouse's) (question 18.10); bride price related questions (question 18.11); birth control related questions (question 18.15-18.16); the status of each marriage (question 18.17-18.20); marriage partner characteristics (including ethnicity, education, religion, occupation, and salary) to examine marriage market "success" (questions 18.21 – 18.29); and polygamy (18.30-18.31).

In Wave 1, these questions were asked about any marriages since the last KLPS round in which the respondent was surveyed. In Wave 2, these were asked for each marriage, starting from their first marriage, regardless of whether or when they had earlier been surveyed.

In KLPS-4, questions were added on the respondent's self-reported feeling of readiness to get married, as well as comparisons of the respondent and spouse's family financial situations. In this round, birth control use related questions were also added, and the marriage partner's characteristics were asked about in more detail. Note that this section is labeled as Section 18.1 in KLPS-3 I Module.

3.3.19 Section 19: Fertility

This section collects a variety of fertility-related demographic information, including:

Recent pregnancies, including the relationship with the partner, antenatal care, and pregnancy outcomes (question 19.4-19.8); children's birth information and health condition (question 19.9-19.21); children's current residency, primary caregiver, and education (question 19.22-19.28); the respondent's participation in the KLPS-3 survey round, and information about any children born before KLPS-3 (question 19.30-19.49); current preferences on fertility (19.54-19.59); recall subsection on fertility plans and desires (19.60-19.65).

The fertility roster in KLPS-4 together with information collected in previous rounds also allows analysts to create a dataset of all the respondent's children. Note that this section is labeled as Section 18.2 in KLPS-3.

This section also included a new "recall experiment" designed to understand how different manipulations affect respondents' recall and engagement regarding their reproductive desires (see Müller 2022 and Müller et al. (2022) for more details). This started at question 19.54. The experiment consists of three main components:

- *Recall Version Experiment:* involved asking respondents to recall the number of children they desired during a previous survey approximately 10 years ago (KLPS-2). The question is presented in five randomized versions, with variations including control (no incentives), monetary incentives, and information cues.
- *Information Offer Experiment:* examined whether respondents are motivated to learn about their past reproductive desires. It offered incentives to a subset of respondents to encourage them to ask the enumerator for their past responses, with variations depending on whether they had participated in KLPS-2 or not.
- *Survey Order Experiment:* Tested for anchoring effects by randomizing the order in which respondents are asked about their current and past reproductive preferences. This was done to see if the sequence influenced their responses.

Each of these components is randomized independently. In addition to the papers noted above, please refer to the paper survey and pre-analysis plan (Müller 2019) for more details.

3.3.20 Section 20.1: Mental Health and Well-being

This section includes questions on mental health and well-being, building on previous KLPS survey rounds. (Some of these topics were part of the E+Module in KLPS-3, but were moved to the I-Module for KLPS-4.)

The section begins with Question 20.4, which collects a 10-question Center for Epidemiologic Studies Short Depression Scale (CES-D scale) on how the respondent felt or behaved during the past week, to gather symptoms of depression (Andresen et al., 1994). The second set of questions (20.5-20.7) ask the respondent whether they agree or disagree with a number of statements about how they perceive their lives and their self-efficacy.

Section 20.2: Big 5

The Big Five personality traits (acronym OCEAN: openness, conscientiousness, extraversion, agreeableness, and neuroticism) were measured with a 15-item scale with three items for each subscale. The answer format for each question was a 5-point scale. This BFI-15 has been used widely and found to have good reliability and validity so it was added for KLPS-4 (Lang et al., 2011).

This section also included additional questions about respondent's life satisfaction, fatalism, attitudes toward competition, and family relationships. Note that this section is new in KLPS-4 and was not included in the KLPS-3.

Section 20.3: MacArthur Ladder

MacArthur Ladder is a frequently used measure of subjective social status that depicts social status as a 10 rung ladder, asking individuals to rank themselves on this ladder relative to other people, either in their local neighborhood or wider society, as well as what they see themselves to achieve in their life (Adler et al., 2000). Note that this section is new in KLPS-4 and was not included in the KLPS-3 round.

Section 20.4: Perceived Stress Scale 4

Perceived Stress Scale 4 (PSS-4) is a global measure of perceived stress with a scale of 1-5 (Cohen et al., 1983). Four questions were asked about the respondent's feelings and thoughts during the last month. Note that this section is new in KLPS-4 and was not included in the KLPS-3.

Section 20.5: Generalized Self Efficacy

The General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995) was created to assess a general sense of perceived self-efficacy with the aim in mind to predict coping with daily hassles as well as adaptation after experiencing all kinds of stressful life events. It uses a scale of 1-4 and contains 10 questions. Two questions about grit were also asked. Question 11 asked whether the respondent thinks he/she is a hard worker, and question 12 asked whether the respondent often sets a goal but pursues a different one. Note that this section is new in KLPS-4 and was not included in the KLPS-3.

3.3.21 Section 21: Time Use: Activities in the Past 24 Hours

Section 21 collected information on how the focus respondent spends their time throughout their day. The focus respondent was asked about their activities during the past 24 hours starting with the previous day at 6am up until 6am the morning of the survey, in half-hour intervals. The detailed activity codes have been broadly categorized into the following groups, with respondents allowed to name specific activities within each of these: a) Personal, Family, and Social; and b) Work and Travel. To calculate the total number of hours spent on an activity, sum up the number of times the activity appears and multiply the sum by 0.5. This section was part of the E-Module (Section 2) in KLPS-3, but was moved to the I-Module for KLPS-4.

3.3.22 Section 22: Sleep Patterns: Adults

This section was added in KLPS-4 to track the respondent's sleep habits and patterns. Understanding the respondents' sleep patterns is essential because of the crucial role sleep plays in many physiological processes such as health, cognition, and mood. Questions were asked about the respondent's bed time and wake up time, quality of sleep, and whether they had napped and the time spent napping.

3.3.23 Section 23: Competition

Note that this section was only included in wave 1; the level of interaction required between the respondents and enumerators meant it was cut in Wave-2 due to Covid-19 concerns.

This survey module is designed to assess participants' competitiveness, for both themselves and their children. In particular, respondents must make decisions for themselves and their children on a task involving throwing a sandbag into a circle from a specified distance. The task is incentivized, providing participants a chance to earn money, which is paid through M-Pesa (a mobile money service) within a few days after the survey. The task involves throwing a sandbag into the circle 3 meters away; to be considered successful, the bag must stay inside the circle without touching the borders. Participants are given a practice round of 5 throws, and the number of successful throws in the practice round is recorded.

Participants are presented with two payment options: ALONE and COMPETE. In ALONE, they will receive 20 Ksh regardless of the number of successful throws. In COMPETE, they have the chance to earn 40 Ksh but only if they win against another person who previously did the task in Busia. If they lose or tie, they will receive 0 Ksh. The identity of the other person in the competition was randomly selected from a pool of 10 individuals who had already completed the task in Busia. Participants then play the game, and the number of successful throws is recorded. Payouts are then determined based on the participant's choice and performance.

The survey also includes questions directed at parents regarding their child's potential participation in a simplified version of the task, as well as their beliefs about their child's abilities and competitiveness.

More details of this module are available in the associated pre-analysis plan (Tungodden et al., 2019).

3.3.24 Section 24: Private Behavior Questionnaire

Section 24 contains sensitive information on private behavior, including information about sexual behaviors, and use of witch doctors/traditional healers. This section was part of the E-Module (Section 6) in KLPS-3, but was moved to the I-Module for KLPS-4. As the content of this section is sensitive, enumerators took extra measures to ensure respondent confidentiality. An additional consent statement was read to the respondent prior to the section, and those that did not want to participate were able to skip this section. Those who were willing to participate were then given the enumerator's tablet device and they answered the questions on their own. Any respondents who noted that they were not comfortable filling in the survey on the tablet were instead allowed to fill it in on a piece of paper that was then placed in a sealed envelope (sealed by the respondent themself). Respondents were also given the option of having the enumerator read the questions to them out loud and answering them (as in other survey sections). In practice, the vast majority of respondents (approximately 94%) filled in the questions on their own on the tablet.

3.3.25 Section 26: Storybook Intervention

There were storybook interventions in both Wave 1 and Wave 2 of KLPS-4, as described above (in section 1). In Wave 1, it was included as part of the Parent Caregiver (PC) Module. In Wave 2, it was included in the I Module, as described here.

Note that in KLPS-4 Wave 2, the storybook intervention was administered to KLPS adult respondents with at least one sampled child in the eligible age range for the storybook intervention (2.5 to 6 years old) at the time of the Wave 2 survey launch (October 2021). In cases where the KLPS adult respondent had more than one sampled child in this age range, we designate the younger child as the storybook intervention child (which is relevant for later data collection).

3.3.26 Section 25: Conclusion

This section records data quality monitoring information along several dimensions. The respondent's fluency in Swahili is potentially important for assessing the quality of the responses, although in practice nearly all respondents are fluent in Swahili. The presence of other family or community members during the interview is important, as the response to certain questions may be influenced by the presence of others; of course, all reasonable efforts were made to make sure the survey was conducted privately. There was also an opportunity for field officers to note whether they felt the respondent could be trusted, whether they felt the information was reliable, and if other survey administration issues had occurred. Finally, the enumerator was reminded to take the GPS reading.

3.3.27 I-Module Coding Sheet

The coding sheet gathers together commonly used or lengthy codes from the household module. Codes were selected based on the frequency with which they appeared in previous data collection efforts or pre-survey piloting. Note that some codes (such as those denoted administrative location) have been redacted from the public documentation for KLPS-4, in order to maintain the confidentiality of respondents. Please refer to the codebook file that has been uploaded together with other survey instruments and materials.

3.4 Primary Caregiver Module (KLPS-4-PC)

The Primary Caregiver (PC) Module was designed to collect information on the KLPS respondents' children from their primary caregivers' perspectives. This module was administered to the adult identified by the KLPS adult respondent as a primary caregiver of the child.[16] Note that for a caregiver with multiple children in the KLPS Kids sample, we attempted to fill in a separate PC Module for each child.

3.4.1 Section 1: Pre-interview Information and Consent

Given the nature of the data being collected, an additional step was taken as part of this survey. For instance, to record accurate information on the child's birthdate, weight, and/or vaccinations, the survey enumerator asked the primary caregiver (PC respondent) to bring the child's health card (and birth certificate, if available) before the survey started. Children in the KLPS Kids sample were also assigned ID numbers composed of 9 digits, where the first 7 digits are the ID number of their parent (who is a KLPS adult respondent) and the last two digits uniquely identify the child. The rest of the pre-interview process proceeds in a similar manner to the E+ and I module surveys described above.

3.4.2 Section 2: Primary Caregiver Respondent Information

This section collected basic information on the PC respondent, including their relationship to the child, their gender, age, education, occupation, religious denomination, ethnicity/tribe, and language spoken to the child. The CES-D (Center for Epidemiologic Studies Depression Scale) questions to assess depression symptoms were also collected (as described above), but were skipped in the case of PC respondents who were also KLPS adult respondents (since the CES-D questions had already been administered to them as part of the I module). Similarly, questions on religious denomination were skipped for KLPS adult respondents since this had already been gathered for them in the I module.

[16] During the I Module survey administration, KLPS adult respondents are asked to identify the primary caregiver of the child as someone who is the adult who best knows the child and cares for the child and spends a substantial amount of time with the child each week. This was described to be usually a parent, and should be someone who knows the child's routine, behavior, and health history. In cases where the KLPS respondent (the biological parent of the child) meets these requirements, we prioritize surveying the KLPS respondent as the primary caregiver. In practice, in 61% of cases, the KLPS respondent themself was also the PC Module respondent, and in many of the remaining cases the other biological parent was administered the module. In some other cases, it was not a biological parent but rather someone else who was knowledgeable about the child (i.e., a grandparent).

3.4.3 Section 3: Child Health and Development

This section aims to gather comprehensive information about the health and development of the child. It begins by confirming the caregiver's relationship to the child and inquiring about the child's birth weight and vaccination history (questions 3.1-3.3). Questions 3.3-3.7 inquired the primary caregiver about the child's bednet usage, deworming medication, recent health issues, and the overall perception of the child's health. Question 3.8-3.17 explored whether the child had experienced major health problems and any delays in learning or development. Specifically, we asked the child's sensory abilities, motor skills, cognitive development, and speech patterns. The caregiver was encouraged to provide detailed information, especially if the child has faced any health challenges or developmental delays. The section concluded by assessing the caregiver's perception of the child's cognitive and language development compared to peers (question 3.18).

3.4.4 Section 4: Sleep Patterns: Children

This section focused on gathering information about the sleep patterns of the child. The caregiver was asked about the child's bedtime, the time it took for the child to fall asleep, the number of nighttime awakenings, the total duration if the child woke up during the night (questions 4.1-4.3). The questionnaire also inquired about the child's wake-up time in the morning, any changes in the usual sleep routine, and the child's alertness level compared to normal (questions 4.4-4.5). Question 4.6 explored the child's nap habits, including the number of daytime naps, their duration, and specific start and end times. Question 4.7 and 4.8 asked the child's bedtime the night before last and the wake-up time yesterday morning.

3.4.5 Section 5: Home Environment Information

This section explored the home environment and educational context of the child, encompassing aspects like the presence of music players (like radios), musical instruments, books, reading materials, art work on the walls, art and writing supplies, homemade toys, strategy games, and the frequency of family travel (question 5.1). Questions 5.2-5.3 asked the type of toys the child plays with, and the time spent on various activities within the past 24 hours. Question 5.4-5.5 inquired about adult-child interactions and teaching methods used. Specific details are gathered about the child's enrollment in educational programs or daycare (questions 5.6-5.9), such as the child's school attendance, class or grade level, the type of school (public or private), reasons for non-enrollment in educational programs, and enrollment in daycare. In Wave-2, additional questions were added on reading with the child (questions 5.3l, 5.3li, 5.3m, & 5.3mi), child school enrollment (question 10, 10b), as well as the child's religion (question 11 & 12), reading (with child) efficacy (questions 13a-13f, questions 21i-21iv, and questions 24-27) and the perceived rating of the child's academic ability (questions 14-20).

3.4.6 Section 6: Strengths and Difficulties Questionnaire

In this section, the primary caregiver was asked to evaluate various aspects of the child's behavior over the past six months using a set of statements from the Strengths and Difficulties Questionnaire (SDQ, Goodman 1997). The questionnaire covers a range of behaviors, including considerations for others, restlessness, temper, social interactions, and concentration. It also explores specific behaviors like lying or cheating, being bullied, and showing kindness to others. The primary caregiver was asked to provide ratings for each behavior statement based on their observations of the child with options including "Not True", "Somewhat True", "Certainly True", "Not applicable", and "Don't know". The primary caregiver was also asked to leave any additional comments or concerns about the child's behavior if he/she wants.

3.4.7 Section 7: Storybook Intervention

[Note that this was only included as part of the KLPS-4 PC Module in Wave 1.]

In Wave 1, this section covered the administration of the storybook intervention to the PC respondent, as described above. The intervention for Wave 1 was designed to (a) elicit demand for storybooks and (b) estimate the impacts of reading encouragement on reading practices. In the Wave 1 PC module, this was the final section before the Conclusion section.

3.4.8 Section 8.1: Home Sleep Environment

[Note that this was only included as part of the KLPS-4 PC Module in Wave 2.]
This section explored the child's home sleep environment, and collected data prior to the child sleep promotion intervention (and can thus be thought of as baseline data). Question 8.1 collected information on the activities that the caregiver and the child had engaged in in the last hour before going to bed. Questions 8.2a-8.2e collected information on the availability of entertainment devices and energy sources for the household. Questions 8.3-8.13 asked about the Child's specific sleep environment. Questions 8.14a-8.16b sought the caregiver's knowledge on appropriate sleep practices as well as the child's specific sleep related challenges.

3.4.9 Section 8.2: Sleep Behavior Part 1

[Note that this was only included as part of the KLPS-4 PC Module in Wave 2.]
This section focused on caregiver sleep behaviors and beliefs, including the child's and caregiver's sleep time management as well as the caregiver's self-assessment of the ease of changing the sleep behavior. As with section 8.1, these were collected prior to the sleep promotion intervention.

3.4.10 Section 8.3: Sleep Promotion Intervention

[Note that this was only included as part of the KLPS-4 PC Module in Wave 2.]
This section describes and administers the sleep promotion intervention. The PC Module collected baseline data (see Sections 8.1 and 8.2) and administered the intervention; one follow-up phone survey was administered approximately 6 weeks after baseline (the KSSI Module, discussed further below). Among participants in the KLPS-4 Kids Module for Wave 2, 25% were randomly assigned to the sleep promotion intervention.

The sleep intervention included sleep supplies (specifically, a free pillow and blanket) and a variety of sleep information, including: a 5-minute video explaining the benefits and importance of sleep; a pamphlet explaining the benefits of sleep, how sleep affects learning and memory, and information on how to help one's child sleep better; a wall poster summarizing the video and pamphlet; an informational script delivered by the enumerator, which walks through the information in the video, pamphlet, and poster.

3.4.11 Section 8.4: Sleep Behavior Part 2

[Note that this was only included as part of the KLPS-4 PC Module in Wave 2.]
This section collected information on the caregivers' perception of the likely usage and efficacy of the materials and information provided as part of the sleep promotion intervention.

3.4.12 Section 9: Conclusion of Module

This section is for the enumerator to record the time of survey ending (question 9.2) and to make comments on overall survey quality and reliability (question 9.5). Question 9.1 asked if the caregiver terminated the survey module early and the reasons behind, note that if answered "Offended at question", the enumerator was asked to guess the potential corresponding questions. (Note that this Conclusion section was labeled as Section 8 in Wave-1 of KLPS-4 PC-Module.)

3.5 Kids Assessment Module (KLPS-4-KT)

This section provides an overview of questions in the KLPS-4 Kids Assessments (KT) Module. The KT Module was designed to measure cognitive and non-cognitive development outcomes for the biological children of KLPS adult participants. This was done with the goal of measuring intergenerational impacts of the earlier interventions, as well as collecting data on parental investments, practices and home environments as potential channels through which intergenerational effects work. It is unusual to have detailed longitudinal data on both parents and children, and creating such a dataset was also one of the main goals of the Kids Assessment Module activity. The module samples up to two biological children of each KLPS adult respondent from age groups between 3-5 years, and between 6-8 years; see section 2.1.2 above for details. The birth cohorts included in the Kids Assessment roughly correspond to years for which KLPS adult respondent fertility was at or near its highest level.

While eligibility is determined based on the age of the child at the start of the appropriate survey wave, the set of assessments to be administered was determined based on the age of the child on the day of the assessment, in order to ensure that the assessments were age-appropriate. In cases where the child had not yet "aged in to" or had recently "aged out of" the eligible age range, age-appropriate assessments for the closest eligible age were administered.

Before each assessment, enumerators were instructed to establish a playful and relaxed rapport with children before the assessment, so that children could perceive the assessment as a game instead of a severe situation.

This data collection activity consisted of administering age-appropriate assessments to each child to measure cognitive and non-cognitive abilities. The table below shows which tests were administered to each of the two age groups.

Assessment	3 years	4 years	5 years	6 years	7 years	8 years
PPVT	✓	✓	✓	✓	✓	✓
Mental Transformation	✓	✓	✓			
Forward Digit Span	✓	✓	✓	✓	✓	✓
DCCS Card Sort	✓	✓	✓			
MDAT Language	✓	✓	✓			
PLUS-EF				✓	✓	✓
EGRA-Swahili				✓	✓	✓
EGRA-English					✓	✓
EGMA				✓	✓	✓
TOTAL TESTS per age	5	5	5	5	6	6

The module is organized in 10 separate sections, one for each of the nine assessments listed in the table above plus a section on the Competition activity (described above in I Module Section 23 and further discussed below). These are described here.

3.5.1 Test 1: Peabody Picture Vocabulary Test (PPVT)

The Peabody Picture Vocabulary Test (PPVT) is based on the published PPVT-4 module (following Dunn and Dunn, 2007) which is designed to assess auditory comprehension among children. Children are asked to identify one among a set of four items which depict the word spoken by the enumerator. The test begins with eight training items, and is followed by 10 sets of 12 items each, presented in increasing order of difficulty. The test was stopped if a child failed 5 or more items in the training set. Children are scored correctly (score = 1) if they identify the correct item, incorrect (score = 0) otherwise, and no response (score == 77) if they do not give any response.

Children under 6 years of age were administered sets 1 through 6, while children who were 6 years or older were administered sets 3 through 10.

3.5.2 Test 2: Mental Transformation (MELQO)

The Measuring Early Learning Quality and Outcomes Direct Assessment module (MELQO DA) (UNESCO 2017) asks children to look at pieces of shapes (e.g., two halves of a circle) and identify the shape that would be made if those pieces were put together. The assessment is similar to a puzzle, but the activity is completed mentally, just by looking at pictures. This test measures the child's spatial abilities or capacity to visualize objects and their relations to each other.

Children are shown two practice items before beginning the test, which consists of five test items. During each assessment, the enumerator first shows the child two pieces of a shape. The enumerator then shows the child four options which could be made by putting the two pieces together. The child is asked to choose one item which is the shape that would be made if the two pieces are put together. During the practice rounds, the enumerator clearly explains how to examine the shapes to form a whole, regardless of whether the child's answer was correct or not. The goal is to help the child learn how to solve the problems with some concrete suggestions, for example, pointing out that two shapes have sides that are slanting inwards, or sides which are flat. After completing both practice rounds, the enumerator administers the five test items, recording the child's responses as either correct (score = 1), incorrect (score = 0), or no response (score = 77).

This test is only administered to children who are younger than 6 years of age.

3.5.3 Test 3: Forward Digit Span

The Forward Digit Span test is a test of working memory (MELQO DA subtask). The child will be asked to repeat a series of numbers spoken by the enumerator. This round consists of two practice rounds, and four test rounds. The number of digits to be repeated increases from 2 digits in the first test, to 5 digits in the fourth test (one digit is added to each subsequent test). Children's responses are scored as correct (score = 1), incorrect (score = 0), or don't know or no response (score = NR).

This test is administered to children of all ages in the sample.

3.5.4 Test 4: Dimensional Change Card Sort (DCCS)

The Dimensional Change Card Sort (DCCS) is a test of executive function, which tests how children can learn to sort cards by different characteristics (such as color and shape) when the two characteristics are embedded or crossed (based on Zelazo, 2006). Children are asked to sort cards by color (red, green), and shape (lorries, stars) with cards that have red and green lorries and stars. Each child plays two games, first sorting by color, and then by shape, sorting the green/star cards into a box with green star, and the red/truck cards into a box with red truck.

Each of the 6 trials is scored as 1 if the child sorted the card correctly, and 77 if the child refuses to respond.

This test is only administered for children who are younger than 6 years of age.

3.5.5 Test 5: Malawi Developmental Assessment Tool (MDAT) Language

The MDAT is an adapted test designed to assess the skills and capabilities of young children, and to identify children who are not developing well for their age. The test was originally developed for use in rural Malawi by Gladstone et al. (2010), and was modified for use in the KLPS KT module to be appropriate in the Kenyan context. The MDAT assessment comprises 29 questions dealing with letters, words, numbers, objects, colors, and other concepts relevant to child development at the relevant ages. Further discussion, including some approaches to scoring the MDAT, are presented in Fernald et al (2019). This test is only administered for children who are younger than 6 years of age. This was the final section of the survey for children younger than 6 years, before proceeding to the anthropometrics section and the Conclusion.

3.5.6 Test 6: Promotion Learning, Understanding Self-Regulation - Executive Function (PLUS-EF)

The PLUS-EF test was developed to measure skills that determine how children perform in and outside of the classroom (Obradovic et al., 2018). These include the capacity to remember several rules, apply them, and be flexible enough to change responses when rules are changed in a certain way. This test was only administered to children who were 6 years and older at the time of the survey. We administered three timed tasks, each administered via a tablet. (Note that these tasks were programmed independently from the SurveyCTO programmed assessments.) Since the tasks were timed, enumerators made sure that tablets were placed as close to the children as possible to not let distance to the tablet affect overall performance.

The PLUS-EF assessment consisted of 4 different assessments designed as games, which are described below:

1. **Game 1 - MSIT:** In this game, children are shown a set of [3] numbers on their tablets and are asked to press the number that is different from the others.
2. **Game 2 - Hearts and Flowers:** This game is divided into three games, the heart game, the flower game, and the heart and flower game.
    a. **Heart (H) game:** In the heart game, children are shown a heart displayed on either the right or left side of the screen. They are asked to select the button which is on the same side as the heart - that is, if the heart is on the right side of the screen, they select the right button.
    b. **Flower (F) game:** In the flower game, children are shown a flower displayed on either the right or left side of the screen. They are asked to select the button which is on the *opposite* side as the flower - that is, if the flower is on the right side of the screen, they select the *left* button.
    c. **Heart and Flower (H & F) game:** In this round, children will play both games at one - they will be shown both flowers and hearts one after the other. As before, for hearts, they are asked to select the button on the same side, and for flowers, they are asked to select the button on the opposite side.
3. **Game 3 - Flanker**: In this game, children are shown a row of blue or pink fishes, and asked to identify either the middle fish, or the outside fish based on the color of the fish - these are identified as the "hungry" fish. Each fish in the row has an arrow pointing either to the right or left based on the direction the fish is facing. After identifying the hungry fish, children are asked to select the direction in which the hungry fish is facing in order to feed them. As in the Hearts and Flowers game, this game has three rounds:

a. **Blue Game:** Children are only shown blue fish, which means that the middle fish is the hungry fish. They are asked to select the direction displayed on the hungry fish in order to feed it.
b. **Pink Game:** Children are only shown pink fish, which means that the outside fish are the hungry fish. They are asked to select the direction displayed on the hungry fish in order to feed them
c. **Blue and Pink Game:** Children are shown both blue and pink fish, and are asked to identify the hungry fish (middle for blue, outside for pink), and click the direction in which they are facing to feed them.

Each game is preceded by a practice round before the actual assessment/game begins.

In Wave 1, there were some issues with the timing of the PLUS-EF assessments for Game 2 (Hearts and Flowers) and Game 3 (Flanker), in which the tablet at times reverted to a default timing that was too short for many children, leading to lower rates of recorded correct answers (as children ran out of time to provide an answer). (Note that the timing for Game 1 (MSIT) was correct throughout for both Wave 1 and Wave 2.) The timing issues with Game 2 and Game 3 may make the Wave 1 PLUS-EF data more difficult to interpret for those games. These timing issues were resolved in Wave 2 of data collection, in which children were provided more time to respond.

The public data includes accuracy scores for the MSIT, Hearts and Flowers, and Flanker games, as well as overall accuracy scores for congruent, incongruent and mixed scores across all three games, and congruent and incongruent scores for the MSIT game by itself (given the timing issues noted above). More details are also available in Duhon et al. (2024).

3.5.7 Test 7: Early Grade Reading Assessment (EGRA) - Swahili

The EGRA test was initiated and developed by USAID researchers to measure the literacy of children attending primary school in classes 1-3 (Gove & Wetterberg, 2011; Dubeck & Gove, 2015), and these are relevant grades for the KLPS-Kids sample. The measures were adapted by Kenyan education experts to reflect the standards of Kenya's education policy. Children were tested on their literacy in Swahili since Swahili is an official national language in Kenya and is taught in school starting from early grades. The test comprised 6 sections, listed below:

1. **Section 1 - Letter Sound Knowledge:** The first section includes 100 letters (10 per row), with 3 practice letters. This was a timed test, lasting for 60 seconds. Children were shown 10 letters at a time and asked to point to and say the *sound* of each letter. Children were allowed to self-correct themselves, and if they hesitated on a letter for 3 seconds, they were prompted to proceed. If children answered using the letter name instead of the sound, they were prompted to give the sound of the letter. Children were scored on each letter-sound as either correct (score = 1) or incorrect (score = 0). The task was stopped early if a child failed to correctly name any letter-sound in the first row.
2. **Section 2 - Syllable Sound Knowledge:** The second section includes 100 syllables (10 per row), with 3 practice syllables. This was a timed test, lasting for 60 seconds. Children were shown 10 syllables per row and asked to point to and say the sound of each syllable. Children were allowed to self-correct themselves, and if they hesitated on a letter for 3 seconds, they were prompted to proceed. Children were scored on each syllable as either correct (score = 1) or incorrect (score = 0). The task was stopped early if a child failed to correctly name any syllable in the first row.
3. **Section 3 - Invented Word Reading:** This section included 50 invented words (5 per row), with 3 practice rounds. This was a timed test, lasting 60 seconds. Children were asked to point to and read each invented word, following the pronunciation rules for Swahili, and were scored based on their pronunciation. Children were allowed to self-correct themselves, and if they hesitated on a word for 3 seconds, they were prompted to

proceed. Children were scored on each syllable as either correct (score = 1) or incorrect (score = 0). The task was stopped early if a child failed to correctly read any word in the first row.

4. **Section 4 - Identifying Real versus Invented Words:** This section included 20 words (4 per row), with 3 practice words. This was *not* a timed test. Some words were real Swahili words, while others were invented or meaningless words. Children were asked to point to and read each word, and tell the enumerator if the word had meaning or not, and were scored based on whether they could correctly identify words with or without meaning. Children were allowed to self-correct themselves, and if they hesitated on a word for 5 seconds, they were prompted to proceed. The task was stopped early if a child failed to correctly identify any word in the first row.
5. **Section 5**
    a. **Section 5a - Oral Reading:** In this section, children are asked to read a short story (with 60 words) out loud. This was a timed test, lasting for 60 seconds. Children were shown a screen displaying the short story, which was put away after they had finished reading the story. They were scored for correctly pronouncing each word (score = 1 if a word was correctly read, and score = 0 if a word was not correctly read). Children were allowed to self-correct their responses. This test did not include any practice rounds.
    b. **Section 5b - Reading Comprehension:** In this section, children were asked to answer 5 questions based on the short story that he/she read in section 5a. Children had 15 seconds to answer each question. Scoring was based on whether the answer was correct (score = 1), or not (score = 0). This section followed immediately after section 5a, and did not include any practice rounds.
6. **Section 6 - Listening Comprehension:** In this section, enumerators read a short story to children, asking them 5 questions about the story. As before, children were restricted to 15 seconds per question. Scoring was based on whether the answer was correct (score = 1) or not (score = 0). This test did not have any practice rounds.

This test is only administered to children who are 6 years and older, as they are most likely to be enrolled in primary school and to have received formal instruction in Swahili.

3.5.8 Test 8: Early Grade Reading Assessment (EGRA) - English

The EGRA - English test was designed to test children's ability to read and understand English, which is the other official national language in Kenya (in addition to Swahili). At the time of KLPS-4, English was often taught starting in grade 2. The test comprised two sections: Section 5a - Oral Reading, and Section 5b - Reading Comprehension, which were designed and implemented in a manner analogous to the EGRA - Swahili test.

This test is only administered to children who are 7 years and older, as they are most likely to have reached grade 2 and received some formal instruction in English.

3.5.9 Test 9: Early Grade Math Assessment (EGMA)

Similar to the EGRA, the EGMA was developed by USAID researchers (Platas et al., 2014) to measure the early math skills of children attending primary school in classes 1-3. Measures were adapted by Kenyan education experts to reflect the standards of Kenyan education policy. Children were tested on their knowledge of numbers, addition and subtraction through a set of 6 tasks, listed below.

1. **Task 1 - Number Identification:** In this task, children were asked to point to and name 20 numbers. This test was timed, lasting at most 60 seconds. Scoring was determined by

whether the child correctly identified a number. If a child stopped at a number for 5 seconds, the enumerator prompted him/her to proceed to the next number.

2. **Task 2 - Number Discrimination:** In this task, children were asked to look at 2 written numbers pointed to by the enumerator, and asked which number is larger. This was done for 10 items in total, and the test was not timed. Scoring was determined based on whether the child was able to correctly identify the larger number among the two numbers shown to him/her. The test was preceded by two practice items. Children were required to say the number which was larger to be scored correctly on this test. For three digit numbers, children were given credit even if they only read out the digits of the number, or do not say the word "hundreds" - for example, in case of item "146 153", they can say "1-5-3", or "one fifty-three" to get credit for this item. However in the case of two digit numbers, children were required to say the number correctly (e.g., twenty-two, and not two-two). The test was stopped early if the child got 4 successive items wrong.
3. **Task 3 - Number Pattern Completion:** In this task, children were shown 10 sets of a four number series, with one missing (e.g., 1, 2, __, 4). Children were asked to look at each series and answer with the number that would complete the series. This test was preceded by two practice items, whether the enumerator read the sequence of numbers for the children. However, in the actual test rounds, the enumerator showed the child the set of numbers and pointed at the empty space, and then asked the child which number should go in the empty space. This task was not timed. Children were scored based on whether their answer was correct (score = 1), or incorrect (score = 0). Children were prompted to skip to the next item if they took more than 5 seconds at one item without responding - these items were marked as no response. The test was stopped early if the child got 4 successive items wrong.
4. **Task 4 - Level 1, Addition:** In this task, children were asked to solve 20 simple addition problems without using paper or pencil. This task was timed, lasting at most 60 seconds. For each item, the child was scored based on whether his/her answer was correct (score = 1) or incorrect (score = 0). There were no practice items for this task. If a child paused for more than 5 seconds at an item, they were prompted to skip to the next item, and that item was scored as "No Response". Enumerators also recorded the methods the child used to solve the problems (checking all they applied).
5. **Task 4 - Level 2, Addition:** In this task, children were asked to solve 5 advanced addition problems. Children were allowed to use paper and pencil to solve the problems, or could solve them in their head if they wished to. This task was not timed. For each item, children were scored based on whether their answer was correct (score = 1) or incorrect (score = 0). This test was NOT administered if the child failed every item in Task 4 Level 1, and this task did not include any practice items. The task was stopped early if the child got 4 successive items wrong.
6. **Task 5 - Level 1, Subtraction:** In this task, children were asked to solve 20 simple subtraction problems without using paper or pencil. The procedure followed for this test is analogous to Task 4 Level 1 above.
7. **Task 5 - Level 2, Subtraction:** In this task, children were asked to solve 5 advanced addition problems. Children were allowed to use paper and pencil to solve the problems, or could solve them in their head if they wished to. The procedure followed for this test is analogous to Task 4 Level 2 above. This task was NOT administered if the child failed every item in Task 5 Level 1, and was stopped early if the child got 4 successive items wrong.
8. **Task 6 - Word Problems:** In this task, children were asked to solve a math word problem that was read to them by the enumerator, using counters or small objects. They were allowed to use pencil and paper if they wished to, and the task was not timed. If a child failed to respond in 30 seconds, they were moved to the next question. Children were scored based on whether their answer was correct (score = 1) or incorrect (score = 0) or

no response (score = 77). This test included one practice item, and 5 test items. The test was stopped early if a child got 4 successive items wrong. Enumerators also recorded the methods the child used to solve the problems (checking all they applied).

This test is only administered to children who are 6 years and older.

3.5.10 Test 10: Competition - Beadbag Toss

Note that this section was only included in Wave 1; the level of interaction required between the respondents and enumerators meant it was cut in Wave 2 due to lingering Covid-19 related concerns.

This section relates to the Competition section of the KLPS-4 I Module (Section 23), and (a) measures the child's willingness to compete and (b) implements the KLPS respondent's (i.e. the parent's) choice for their child.

In this task, children are asked to throw a beadbag (or beanbag) into a circle two meters away. They are given a total of 5 throws, and the bag needs to be strictly inside the circle (and not touch the borders) to be counted as a successful hit. There is a practice round with 5 throws before beginning the actual test. In the actual test, children can *earn* stars for each throw, which they are informed that they can exchange for crayons, pencils or erasers at the end of the game. Before beginning the game, children are asked to choose whether they would like to play the game alone, or compete. If they choose to play alone, they will get 1 star regardless of the number of successful hits. If they choose to compete, they will get 2 stars if they win over another child of the same age (who had already done the task), or if they get the same as the other child. If they lose to the other child, they get 0 stars. After completing the task, children are asked about their beliefs regarding whether they were better or worse at the task, and whether they enjoy doing activities in which there is a chance that things may or may not go well.

Following this task, children are asked to repeat the task under their parent's choice for them (i.e., play alone versus compete), which had been made during the I Module (Section 23). The same protocols for the game and scoring are followed as above.

This test is only administered to children who are 6 years and older.

More details are available in the associated pre-analysis plan (Tungodden et al., 2019).

3.5.11 Child Height and Conclusion

Before concluding the survey, child height was also measured using the SECA 213 Height Scale. Three separate measures were recorded.

At that point, the enumerator recorded some survey administration details, including whether there had been any interruptions, as well as the time at which the survey ended, and distributed any respondent gifts (such as exercise books and pens for the child respondent).

3.6 Kids Storybook Intervention Follow-Up (KSI) and Sleep and KSI Follow-Up (KSSI)

KLPS-4-KSI/KSSI was the follow-up phone survey designed to collect information on the storybook intervention and sleep intervention. In Wave 1, the Kenya Storybook Intervention

(KSI) phone survey was used, while in Wave 2, the Kenya Storybook and Sleep Intervention (KSSI) phone survey was used. Both of these were designed to be short phone surveys, and typically lasted roughly 10 minutes. Both the Storybook Intervention and the Sleep Promotion Intervention are described above.

3.6.1 KSI - Wave 1

KSI was conducted around 3 weeks after the PC Module was collected for each respondent. It targeted the Primary Caregiver surveyed as part of the PC Module, as (a) this individual was well-informed about the child's activities and (b) this was the individual present during the administration of the intervention. (Recall that in most cases the PC Module respondent was the KLPS adult respondent.) If the PC Module respondent was not available, we attempted to survey another knowledgeable adult caregiver to the child, who in many cases was another parent (or the KLPS adult respondent, if they had not been the PC Module respondent).

3.6.1.1 Section 1: Pre-interview Information and Consent

Q1-Q7 asks the enumerator to record the respondent's information (ID, name, gender, baseline program) from the identity section of the tracking sheet. Q8-Q10a records the interview date and time, as well as the interviewer information. Then the enumerator reads the consent and proceeds to the interview questions.

3.6.1.2 Section 2: Interview

Q1 asks the PC to recall whether any household member bought or received the storybook from IPA, as well as who is the main character if Yes. Q2 and Q3 ask whether the PC bought any storybook since the storybook intervention and the number of storybooks being purchased since then. Q4 and Q5 ask how many days (in the past 7 days) and minutes (in yesterday) did the PC read with the kid, as well as the kid read by himself/herself. Q6 asks if the kid was currently enrolled in school and if so, how many days the kid attended in the past 5 school days. Q7 asks the reason for the kid who was not enrolled in school. Q8 asks if the PC remembers receiving a reminder of reading from IPA. Q9-Q11 ask for the PC's knowledge on reading, such as how to make reading more interactive, the minimum amount of time recommended to spend reading, and resources for additional storybooks.

3.6.2 KSSI - Wave 2

The KSSI phone survey was conducted around 6 weeks after the PC Module was collected for each respondent. We attempted to survey the PC Module respondent, following the same protocol as in Wave 1.

3.6.2.1 Section 1: Pre-interview Information and Consent

This section follows section 1 in KSI.

3.6.2.2 Section 2: Sleep Pattern Follow Up Questions

This section follows up on the sleep intervention. Q1 and Q2 ask the kid's bedtime last night and wake up time this morning as well as if it was earlier/later than his/her usual time (and if yes, what is the usual time). Q3 asks if the kid napped yesterday and if so, how many daytime naps and how long it was in total. Q4 and Q5 ask the kid's bedtime and wake up time the night before last night.

3.6.2.3 Section 3: Sleep Home Environment

Q1 asks the PC's and the kid's activities one hour before going to bed last night. Q2 asks whether the kid shares a room for sleeping; Q3 asks whether the TV/radio is on when the kid goes to bed. Q5 asks what the kid typically sleeps on (e.g., a mattress on a bed, a mattress on the floor, a mat on floor, etc.).

3.6.2.4 Section 4: Kids Storybook follow-up

This section follows up the storybook intervention. Q1 and Q2 ask the number of books and the number of storybooks/picture books at home. Q3 and Q4 ask how many days (in the past 7 days) and minutes (in yesterday) did the PC read with the kid, as well as that the kid read by himself/herself. Q5 asks if the kid was currently enrolled in school and if so, how many days the kid attended in the past 5 school days, as well as the reason for those who did not enroll in school.

4. KLPS-4 Data Collection

This section outlines data collection standards and activities for the KLPS-4, including field staff, focus respondent tracking and data collection techniques, and final tracking rates.

4.1 Field Staff

This section describes the characteristics, roles and responsibilities of field staff in the KLPS-4.

4.1.1 Field Officers

Innovations for Poverty Action (IPA)-Kenya employs a full-time staff of professional enumerators and project staff known as "field officers" (FOs). The principal role of the field officer is to track focus respondents and administer questionnaires to found individuals. Over 20 field officers conducted KLPS-4 interviews, including both male and female individuals primarily aged in their 20s or 30s. All enumerators are fluent in at least one of the languages native to the study area—typically a Luhya dialect but sometimes Teso or Luo – in addition to being fluent in English and Swahili. Furthermore, all FOs had received some form of post-secondary education, with most having a higher degree (at the college or university level), and many had worked on a survey data collection project prior to joining the KLPS.

Each FO received approximately 3 weeks of full-time training on each of the KLPS-4 questionnaires, interview techniques, and tracking protocols at the start of their employment. Most training activities were conducted in tandem with pre-testing of the survey instruments and the tracking protocols, and FOs were highly involved in the design and development of both. In addition, FOs that were hired while survey activities were ongoing were able to shadow an experienced partner, thereby ensuring that survey protocols and procedures developed at the beginning of the survey round were uniformly adopted by all enumerators.

4.1.2 Field Manager

One Field Manager (FM) and up to three Assistant Field Managers (AFM) were responsible for overseeing and managing the entire survey effort on a full-time basis. Field Managers are selected by IPA from the most talented and experienced of field officers, and occupy various team management positions before reaching the post of Field Manager. They are principally in charge of running the day-to-day activities of the survey effort with specific duties as follows:

- Translating and pretesting questionnaires;
- Maintaining and controlling equipment, especially anthropometric equipment;
- Organizing and managing blank and completed questionnaires;
- Supervising and maintaining time schedules;
- Training FOs in interview techniques;
- Supervising FO interviews with respondents for quality and consistency;
- Reviewing and error-checking completed questionnaires;
- Conducting "re-surveys" of random respondents to check accuracy, completeness and consistency of questionnaires;
- Covering interviews for other FOs in cases of emergency;
- Acting as a liaison with the community, especially with village chiefs and elders (*ligurus*);
- Acting as the point of contact between the principal investigators and enumerators; and
- Monitoring and reporting on the progress of and problems with the survey effort to the principal investigators.

4.1.3 Research Associates

Several research associates were employed during the KLPS-4 design and data collection, typically aspiring Economics graduate students, to oversee field research full-time. RAs were responsible for the following:

- Training of FOs;
- Managing the pre-testing and redesign of the survey instruments;
- Design of the tracking protocols and procedures;
- Sampling;
- Documentation of research and field activities;
- Coordination of field activities;
- Coordination of data entry; and
- Data entry error-checking.

4.2 Design and Preparation of the Questionnaire

All questionnaires were designed in English and then carefully translated and extensively pre-tested in Swahili on a variety of respondents over a period of several months. All pre-test survey respondents were given a gift in return for their time. Translation from English to Kiswahili was conducted by experienced senior IPA field staff and subjected to detailed examination by the full group of field officers at numerous meetings.

4.3 Tracking and Interview Techniques

The KLPS-4 tracking and interview techniques followed standard approaches in development economics and from previous KLPS rounds; issues around sensitizing the community, tracking KLPS adult respondents (including success factors and challenges), and general interview strategies are discussed in the Data User Guides for KLPS Rounds 1, 2 and 3 (Miguel and Hamory 2020; Miguel and Hamory 2021; Miguel and Hamory 2022). Aspects of data collection that are new in KLPS-4 are discussed below.

4.3.1 Primary Caregiver and Kids Modules Tracking

First, during the I-Module, we sought consent from the KLPS adult participants for their participation in a survey about themselves and their household. The KLPS adult participant was informed of the nature of the interview, informed of his/her right not to participate in the interview and to refuse to answer any question, and was also informed whom to contact if he/she had any questions about the interview or the project in general. The KLPS adult consenting process also mentioned that we were additionally interested in including in the study up to two biological children aged 3-9 of the KLPS adult participant, but that we would later provide more details on that in a separate discussion and consent later in the survey.

If the KLPS adult (the "parent") provides permission to participate in the KLPS-Kids study component, we would then either seek to interview the primary caregiver and children immediately (with consent from the caregiver and assent where appropriate from the child, as detailed above), or schedule a separate visit to interview them. If the KLPS adult parent is not the primary caregiver for any of the selected child(ren), we sought the contact details of the primary caregiver(s), which were recorded for use in tracking the caregiver and the selected child irrespective of whether the selected child lived with the KLPS adult participant in the same

household or not. We would then later make appointments with the primary caregiver(s) of the selected child and conduct the PC-Module and Kids-Module accordingly.

4.3.2 KLPS-4 Quality Control

In order to monitor and evaluate FOs' performance, as well as to correct errors and incorrect behaviors, a number of quality control measures were incorporated into the data gathering process.

Observation of Interviews

Throughout the duration of data collection activities, a member of project management frequently accompanied FO's during tracking and questionnaire administration. These accompaniments served to provide regular feedback on data collection practices, and to observe and remedy or improve data collection processes.

Verifying Completed Questionnaires

High-frequency checks of completed questionnaires were regularly conducted to investigate numerous aspects of survey data quality, including survey and section completion times, don't know's/missing responses, and responses to several key questions that vary by survey module.

Back-check interviews

A random subsample of questionnaires were chosen for back-checks, consisting of approximately 15% each of the I-Modules and E+ modules completed in each of the Waves. In these instances, the FMs/AFMs/Senior Field Officers (SFOs) would reinterview the respondent over the phone, asking a subset of questions from the survey, in order to undertake checks of data quality. Back-checks were randomly selected per enumerator and were conducted a couple of days after the actual surveys. The responses from the back-check surveys were matched with the responses from the main survey to ensure first of all that all parts of the survey was actually conducted (and not filled in fraudulently by the FO). It also allowed us to assess the rate of errors in the survey; in cases where we found discrepancies, these were followed up with both participant and the enumerator who did the actual survey to ascertain the origin of the differences, as these could also inform any needed FO re-training.

4.4 KLPS-4 Tracking Results

Sample sizes and selection procedures are described in Section 2.1. Table 1 provides a breakdown of selected sample sizes and actual number of surveys completed by KLPS-4 survey module.

Table 1: Summary of KLPS-4 Adult Sample Sizes and Tracking

	Sample Size	Number Found	Number Surveyed	Effective Tracking Rate	Effective Survey Rate
Expenditure+ (E+) Module	8,187	6,152	5,528	90.2%	85.2%
PSDP sub-sample	*7,527*	*5,587*	*5,003*	*89.9%*	*84.9%*
GSP sub-sample	*660*	*565*	*525*	*97.8%*	*92.2%*
E+ Module, Wave 1	4,076	2,997	2,660	90.7%	85.0%
E+ Module, Wave 2	4,111	3,155	2,868	89.7%	85.4%
Integrated (I) Module	8,187	6,512	5,744	93.3%	86.3%
PSDP sub-sample	*7,527*	*5,905*	*5,183*	*93.2%*	*86.1%*
GSP sub-sample	*660*	*607*	*561*	*98.2%*	*92.5%*
I-Module, Wave 1	4,076	3,288	2,868	95.6%	87.7%
I-Module, Wave 2	4,111	3,224	2,876	91.0%	84.9%

Note: Due to the two-stage tracking design used in the KLPS-4, tracking rates should not be calculated simply as "number surveyed divided by total sample size." See Section 2.2 for more details on how to calculate effective tracking and survey rates that take into account the two-stage tracking design. The tracking rates use KLPS population weights that have been reweighted for intensive tracking. The number found includes those who have been recorded as previously deceased or other individuals that are no longer being tracked (i.e., permanent refusals or individuals who are unable to be surveyed for other reasons). The effective survey rate shown above is calculated among non-deceased respondents. We have two special cases where the KLPS adult respondents were reported by the relatives to be deceased in KLPS-4 E+ but were later found and surveyed in KLPS-4 I-Module.

Table 2: Summary of KLPS-4 Kids and PC Sample Sizes and Tracking

	Sample Size	Number Found	Number Surveyed	Survey Rate
Kids (KT) Module	5,434	5,270	4,919	90.5%
PSDP sub-sample	4,853	4,700	4,373	90.1%
GSP sub-sample	581	570	546	94.0%
KT Module, Wave 1	2,781	2,681	2,508	90.2%
KT Module, Wave 2	2,653	2,589	2,411	90.9%
Primary Caregiver (PC) Module	5,434	5,270	4,933	90.8%
PSDP sub-sample	4,853	4,700	4,388	90.4%
GSP sub-sample	581	570	545	93.8%
PC Module, Wave 1	2,781	2,681	2,522	90.7%
PC Module, Wave 2	2,653	2,589	2,411	90.9%

Note: The survey rate shown above is the number surveyed divided by the sample size. The number surveyed in the KT module includes children both with and without a matched PC module. Only seven children were surveyed without a corresponding PC module.

5. KLPS-4 Data Processing

This section describes the methods employed in collecting and cleaning data, as well as a description of the final structure of the data.

5.1 Data Entry & Cleaning Procedures

Data was collected electronically on tablets in KLPS-4, eliminating the need for the more complex paper survey data entry and cleaning procedures that were employed in the first and second data collection rounds. Surveys were coded into the SurveyCTO computer-assisted interview software by a knowledgeable programmer who worked directly in the field during survey testing, and numerous checks and flags were built into the survey code in order to limit survey enumerator entry mistakes, including skip pattern violations, impossible values, and logical inconsistencies.

5.2 Data File Description

5.2.1 Data Files

Files

The final publicly available KLPS-4 data files include the following:

Sample Master (KLPS4_SampleMaster_PUBLIC_2025-12): This data set describes basic baseline summary statistics for the KLPS-4 sample of 8,187 adult respondents, including their KLPS ID number (pupid), population weight, gender, year of birth, baseline PSDP/GSP school ID number, baseline PSDP/GSP standard (grade), and PSDP treatment group.

Status List (KLPS4_Status_PUBLIC_2025-12): This data set describes the final KLPS-4 status for each of the 8,187 KLPS adult respondents, their final tracking status for the E-Plus and I modules (surveyed, deceased, refused participation, otherwise unable to be surveyed), whether the individual was randomly chosen to be part of the "intensive tracking" subsample for the E Plus and I Module, and survey weights that can be used for analysis (for both modules). See the discussion above in section 2.3 for a detailed discussion of the weights included in the dataset.

Expenditure Module (KLPS4_E-Module_PUBLIC_2025-12): This data set includes the publicly available data that was collected for the respondents of the KLPS-4 Expenditure Plus Module. A description of variable naming conventions is provided below, and a codebook for this data set is provided separately.

Integrated Module (KLPS4_I-Module_PUBLIC_2025-12): This data set includes the publicly available data that was collected for the respondents of the KLPS-4 I Module. A description of variable naming conventions is provided below, and a codebook for this data set is provided separately.

Primary Caregiver Module (KLPS4_PC-Module_PUBLIC_2025-12): This data set includes the publicly available data that was collected for the respondents of the KLPS-4 Primary Caregiver Module. A description of variable naming conventions is provided below, and a codebook for this data set is provided separately.

Kids Sample Master (KLPS4_Kids_SampleMaster_PUBLIC_2025-12): This data set describes basic baseline summary statistics (i.e. at the time of KLPS-4) for the KLPS-4 KT sample of 9,345 children identified as eligible for the KT sample in KLPS-4. Variables include the adult KLPS respondent ID (pupid), the child ID (pupid_child, which needs to be combined with pupid to create a unique identifier), age / year birth, gender, and kids-related intervention assignment status.

Kids KLPS-4 Status (KLPS4_Kids_Status_PUBLIC_2025-12) : This dataset includes survey status information for the children in the KLPS-4 KT Sample, including whether KT and PC Modules were administered for each child. This also includes information on the number of children that can be used to construct weights (see section 2.3.2 for more details).

Kids KT Module (KLPS4_KT-Module_PUBLIC_2025-12): This data set includes the publicly available data that was collected for the respondents of the KLPS-4 Kids Module. A description of variable naming conventions is provided below, and a codebook for this data set is provided separately.

File formats

All data files are currently available in STATA 12 format and in .CSV format.

Data structure

The level of observation of all data sets is the individual. All data sets are in wide format. The KLPS adult respondent ID number (pupid) can be used to merge these data sets together into a single data set, and to merge them together with data from earlier KLPS rounds, as well as from the original PSDP and GSP study data. For kids data, the child respondent ID number (pupid_child) plus the adult respondent ID number (pupid) can be used to merge across datasets.

Data Management Procedures

Publicly available data and documentation for the KLPS project as a whole is provided on Harvard's Dataverse, at https://dataverse.harvard.edu/dataverse/KLPS. Additional project information, including analysis plans, are available at the AEA RCT Trial Registry as part of AEARCTR-0001191 (focused on the KLPS adult respondents) and AEARCTR-0003995 (focused on the kids sample).

5.2.2 Variable Naming Procedures

Most KLPS variable names closely correspond to survey question numbers. For example, in the Integrated Module each variable name takes the following form '*s*#_?*name*' where '*s*' stands for section, # is the number of the section, ? is the number of the question within each section, and *name* is a short word that attempts to describe the variable. For example, the variable s1_2familyname is from section 1, question 2 and describes the respondent's family name. For the KT-Module, variables are first named by the assessment (e.g., ppvt_). For all publicly available data sets, each variable is labeled in STATA.

5.2.3 Coding Conventions

Codes were used to classify many responses, including jobs, agricultural crops, schools, ethnic groups / tribes, and religions. Codes used in each module are defined within the survey instrument or as part of the module codesheet (which is also posted with the surveys, often at the end). Some codes have been redacted or condensed in order to preserve the anonymity of the respondents.

5.2.4 Missing, Unknown, and Inapplicable Data

Missing data are usually indicated by special codes. For numeric variables, a period signifies missing data. For character values, a blank signifies missing data.

"Don't know" or "Refuse to answer" responses are usually indicated by a string of '9's, between one and four digits depending on the length of the variable in question. Field officers were trained to probe for an answer when the respondent said that they "did not know" to answer to help minimize such responses. Data users are encouraged to carefully review the survey instruments for the codes used to indicate "not applicable" or other responses for particular questions.

5.3 Confidentiality

All publicly available datasets have been de-identified, i.e., we have attempted to remove all personally identifiable information (PII).

To further ensure the anonymity of respondents, quasi-identifiers such as past and current residences, religion, ethnicity, and occupation were sometimes re-coded to address small cell sizes that could potentially lead to identification. The publicly available versions of the data have been de-identified in such a way as to protect respondent confidentiality by aggregating responses in these instances, while still providing as much detail as possible (while reducing the risk of identification).

6. Special Data Collection and Usage Issues

This section outlines changes across survey waves and issues encountered during the KLPS-4 data collection process. Users of the data are advised to pay particular attention to this section, as this information may affect the way in which particular variables can be analyzed.

6.1 The Expenditure Plus Module

6.1.1 Survey Versions

The E+Module was updated slightly between KLPS-4 tracking waves 1 and 2, and each wave's version of the survey has been made publicly available.

6.1.2 Section 10: Food Consumptions

6.1.2.1 Section 10A

For Wave 2: Question 6 was changed from "During the last 12 months, how many months did your household purchase [FOOD]?" to "During the last 12 months, how many months did your household consume [FOOD] that your household purchased?"

For Wave 2: Question 7 was changed from "During these months that your household purchased [FOOD], how much did your household usually spend on [FOOD] in a typical week?" to "During these months that your household consumed [FOOD] that your household purchased, what was the value of purchased [FOOD] consumed in a typical week?"

6.1.2.2 Section 10B

For Wave 2: Added "16: Spinach" and "17: Arrowroot". This change makes the "other" category change from number 16 (as in wave 1) to number 18 (as in wave 2).

6.1.2.2 Section 10D

For Wave 2: Added "11: Apples". This change makes the "other" category change from number 11 (as in wave 1) to number 12 (as in wave 2).

6.1.3 Section 15: Economic activities

6.1.3.1 Section 15.2

For Wave 2: Question 37 added "MONTH".

6.1.3.1 Section 15.3

For Wave 2: Question 13a was added: "How did you come to learn about this job opportunity?"

For Wave 2: Question 13b was added: "Was this person ever a primary schoolmate of yours?"

For Wave 2: Question 20a was added: "Has a classmate from your primary school ever informed you of a job opening, helped you search for a job, or helped you find a job? For example, told you of an opportunity, helped you secure an interview, put in a good word for you, etc.?"

6.1.4 Code Sheet

For Wave 2: F1 Codes: Added "34= dodo", "31= jackfruit", "32= mrenda", and "33= saka".

For Wave 2: F3 Codes: Added "20= Own health problems", "21= Got married or had a child", "22= Moved location", and "23= Customers owe money/debt".

For Wave 2: F2 Codes (Industry): Added "7115= Fishing". Note that Education is classified as "9399= Social & related community services n.e.c".

For Wave 2: F8 Codes: Added "15= lack of qualifications" and "16= prefers to start/expand/focus on own business." Changed "05= Ill" to "05= Sickness"

For Wave 2: F4 Codes: Added "13= Internet".

For Wave 2: F5 Codes: Added "13= problems with the employer/not treated well by employer," "14= Place of employment closed," "15= contract ended or it was a temporary job", and "16= Poor job conditions".

6.2 The Integrated Module

6.2.1 Survey Versions

The I-Module was updated slightly between KLPS-4 tracking waves 1 and 2, and the survey instrument used in each wave has been made publicly available. These changes were mostly driven by the fact that Wave 1 was conducted during the pre-Covid period while Wave 2 was conducted immediately after the COVID-19 lockdowns, leading to some adjustments to data collection protocols to comply with local social distancing guidelines.

6.2.2 Section 2: Confirmation of Identity

For Wave 2: Question 1b added the option "Used a different name when taking national ID".

For Wave 2: Question 4b and 5b added the option "Previously used the name of a relative" in the context of a question about parents' names.

6.2.3 Section 3: Contact Information

For Wave 2: Question 0c, 0d, 0e were dropped.

6.2.4 Section 4: Household Roster

For Wave 2: Added questions regarding deceased adult respondents. An instruction added for FOs to check the children's date of birth on the birth certificate or health card (if available).

6.2.5 Section 5: Family

For Wave 2: Question 1c was added: "Does your father live with you in the same compound/place?" and Question 1d was added: "Where does your father currently live?" Similarly, Question 6c and 6d were added for the respondent's mother.

For Wave 2: Question 12-15 were refined: the ages of the respondent's paternal/maternal grandparents were dropped.

For Wave 2: Question 20b was dropped.

6.2.6 Section 6.2: Risk Preference

For Wave 2: Question 4gg was added: "What is the reason you selected 0 as a sure payment instead of a draw, where you would have an equal chance of getting 900 shillings or getting nothing?" if "sure payment" is selected throughout the section.

6.2.7 Section 6.3: Social Preferences 2

For Wave 2: Question 0 was added: "What is your ancestral home? (Here we mean your ancestral 2010 Districts.)"
For Wave 2: Questions 7b and 7c were dropped.

6.2.8 Section 6.4: Time Preferences

For Wave 2: Question 8gg was added: "What is the reason you selected 10 KSh today instead of 644 KSh in 1 month?"

6.2.9 Section 8: Community Groups, Social Capital and Political Attitudes

For Wave 2: Question 12a was added: " In the past 7 days, how many days did you use a smartphone? (0 to 7)"
For Wave 2: Questions 32a, 32b, 40.1 and 45b were added.

6.2.10 Section 14: School Attitudes

For Wave 2: Question 4 and 5 were dropped.

6.2.11 Section 15: Migration

For Wave 2: Question 10, 11, 12 were dropped.

6.2.12 Section 16: Health and Nutrition

For Wave 2: Question 3 added three options: (Y) COVID-19, (Z) Loss of Taste, (ZA) Difficulty in Breathing.
For Wave 2: Question 25a-25e were added to gather information regarding COVID-19.

6.2.13 Section 16.2: Income/Expenditure (COVID-19)

For Wave 2: This entire section is new.

6.2.14 Section 16.3: Food Security

For Wave 2: This entire section was new.

6.2.15 Section 18: Marriage

For Wave 2: Rather than just collecting information on recent marriages (since the previous survey round), we collected data on the full individual marriage history. Question 3 was dropped.

6.2.16 Section 19: Fertility

For Wave 2: Questions 55, 57, 58, 59 on current fertility preferences were dropped. Questions 60, 63, 64, 65, 69, 71, 72a, and 72b were dropped.

6.2.17 Section 20.2: Big 5

For Wave 2: Question 19 was added: "Over the past 14 days, has there been a higher than usual amount of fights with adults or children you live with?"

6.2.18 Section 21: Time Use: Activities in the past 24 Hours

For Wave 2: Option 6b = On phone/tablet is added.

6.2.19 Section 22: Sleep Patterns: Adults

For Wave 2: Question 10 was added: "Now think about your sleep in the last 7 days: How many days in the last 7 days do you think you had insufficient sleep?"

6.2.20 Section 23: Competition

For Wave 2: This entire section was dropped.

6.2.21 Section 26: Storybook Intervention

For Wave 2: This entire section was added in this wave, including Storybook Home Environment and Storybook Intervention questions.

6.3 The Primary Caregiver Module

6.3.1 Survey Versions

The PC-Module was updated slightly between KLPS-4 tracking waves 1 and 2, and both versions of the survey are publicly available.

6.3.2 Section 1: Pre-Interview Information and Consent

For Wave 2: Question 0 and 0a were added to ask: 1. if the PC is currently in boarding school, and 2. the occupation of the PC (if he/she is a guard or house help) to confirm the current address information.

6.3.3 Section 2: Caregiver Information

For Wave 2: Question 0a to 0k (questions in the box) were added to collect information on the place that the PC and the selected child usually sleeps.
For Wave 2: The entire sub-section 2.1 on Religious Denomination was new.

6.3.4 Section 3: Child Health and Development

For Wave 2: Question 19 on "During the last 14 days, did you or any adult member of your household ever beat any of the children living in this household?" was added.

6.3.5 Section 5: Home Environment Information

For Wave 2: Question 1dv was added: "Did you purchase any children's storybooks since [INSERT MONTH], when [KLPS adult Focus respondent (FR)] was interviewed by Innovations for Poverty Action (IPA)?"
For Wave 2: Question 3l and 3m were added.
For Wave 2: Questions 10 to 28 were added.

6.3.6 Sections 8.1-8.4: Sleep Intervention and Home Environment

For Wave 2: These sections were newly added as part of the sleep promotion intervention.

7. Combining KLPS-4 Data with Previous Rounds

KLPS-4 data can be combined with previous rounds to create a panel dataset of respondents. As noted above, the *pupid* variable is the KLPS individual identification number that remains consistent across KLPS data collection rounds (as well as earlier PSDP and GSP data collection rounds) in order to match respondents in different databases over time.

Table 2 indicates the number of respondents who participated in the various KLPS data collection rounds, among individuals from the PSDP sample only (as KLPS-1 and KLPS-2 did not gather information on GSP individuals). Respondents are counted as "Found" or "Surveyed" if encountered in any module as part of that data collection round. Please note that "Number Found" includes deceased respondents.

	Number Found	Number Surveyed
KLPS-1 data collection, total	5,312	5,215
KLPS-2 data collection, total	5,705	5,083
KLPS-3 data collection, total	5,523	5,259
KLPS-4 data collection, total	6,449	5,817
All KLPS data collection rounds	3,586	3,101
Any KLPS data collection round	7,088	6,864

Note: The full PSDP-portion of the KLPS sample contains 7,527 individuals.

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