

NATIONAL BUREAU OF STATISTICS

Basic Information Document

National Panel Survey (NPS 2012-2013)

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2012-2013

[UNITED REPUBLIC OF TANZANIA]

ACRONYMS

BMGF	-	Bill & Melinda Gates Foundation
DECRG	-	Development Economics Research Group
DFID	-	United Kingdom Department for International Development
EA	-	Enumeration Area
HH	-	Household
HHID	-	Household identification variable
JICA	-	Japan International Cooperation Agency
LSMS-ISA	-	Living Standards Measurement Study-Integrated Surveys on Agriculture
MCAT	-	Millennium Challenge Account Tanzania
MDG	-	Millennium Development Goal
MKUKUTA	-	National Strategy for Growth and Reduction of Poverty
NBS	-	Tanzania National Bureau of Statistics
NPS	-	Tanzania National Panel Survey
SACCO	-	Savings and Credit Cooperative Organization
THBS	-	Tanzania Household Budget Survey
UNFPA	-	The United Nations Population Fund
UNICEF	-	The United Nations Children's Fund
VEO	-	Village Executive Officer
WHO	-	The World Health Organization

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Background

The 2012/2013 Tanzania National Panel Survey (NPS) is the third round in a series of nationally representative household panel surveys that collect information on a wide range of topics including agricultural production, non-farm income generating activities, consumption expenditures, and a wealth of other socio-economic characteristics. All three rounds of the NPS have been implemented by the Tanzania National Bureau of Statistics (NBS). The first round of the survey was conducted over twelve months, from October 2008 to September 2009. The main fieldwork of the second round of the NPS started in October 2010 and finished in September 2011, with specialized tracking teams remaining in the field until November 2011. Similarly, the duration and timing of the field work for the third round of NPS was from October 2012 to November 2013.

The main objective of the NPS is to provide high-quality household-level data to the Tanzanian government and other stakeholders for monitoring poverty dynamics, tracking the progress of the MKUKUTA II poverty reduction strategy¹, and to evaluate the impact of other major, national-level government policy initiatives. As an integrated survey covering a number of different socioeconomic factors, it compliments other more narrowly focused survey efforts, such as the Demographic and Health Survey on health, the Integrated Labour Force Survey on labour markets, the Household Budget Survey on expenditure, and the National Sample Census of Agriculture. Secondly, as a panel household survey in which the same households are revisited over time, the NPS allows for the study of poverty and welfare transitions and the determinants of living standard changes.

The Tanzania NBS was advised on technical issues related to survey design and implementation by the NPS Technical Committee, which included representatives from line ministries, government agencies and development partners, such as the Ministry of Agriculture, Food Security and Cooperatives, Ministry of Finance, Millennium Challenge Account - Tanzania, World Bank, DFID, UNICEF, UNFPA, and JICA. The majority of funding for the third wave of the National Panel Survey was provided by a grant from the European Commission. Additional complementary funding for targeted activities (including data entry, supervision and tracking) and technical assistance has been provided by the World Bank through the Living Standards Measurement Study - Integrated Surveys on Agriculture [LSMS-ISA²] program.

¹ MKUKUTA II is a Kiswahili acronym for the National Strategy for Growth and Reduction of Poverty. The current phase began in 2010 and will finish in 2015, and is the government strategy to meet the MDG and other national development goals. The focus of this round of MKUKUTA II includes growth and the reduction of poverty, improved quality of life and social well-being, and governance and accountability.

² The Living Standards Measurement Study is an ongoing research initiative within the Development Research Group of the World Bank with the goal of promoting and improving the collection of household level data in developing countries around the world. Further information can be found at www.worldbank.org/lsmis. The LSMS-ISA project supports governments in seven Sub-Saharan African countries to generate nationally representative, household panel data with a strong focus on agriculture and rural development. Further information can be found at www.worldbank.org/lsmis-isa.

This document describes fundamental aspects of the NPS 2012/13, including the set of survey instruments, sample design, survey implementation, and the resulting data sets.

Survey Instruments

The third round of the NPS consists of four survey instruments: a Household Questionnaire, Agriculture Questionnaire, Livestock/Fishery Questionnaire, and a Community Questionnaire.

The Household Questionnaire is comprised of thematic sections. A detailed description of the contents of the questionnaire can be found in Table 1. This questionnaire allows for the construction of a full consumption-based welfare measure, permitting distributional and incidence analysis. Data within the household instrument is structured around a household panel survey, though the data on education, health, labour, food consumption outside of household, subjective welfare and anthropometry are collected at the individual level leading to greater specificity on the characteristics making up a household unit. To protect the confidentiality of respondents, sensitive information has been masked in or removed from the public household data files.

HOUSEHOLD QUESTIONNAIRE:

Section A:	Household Identification / Survey Staff Details
Section B:	Detailed Household Member Roster
Section C:	Education
Section D:	Health
Section E:	Labour
Section F:	Food Consumed Outside The Household
Section G:	Subjective Welfare
Section H:	Food Security
Section I:	Housing, Water and Sanitation
Section J:	Consumption of Food (One Week)
Section K:	Non-Food Expenditures (One Week/ One Month)
Section L:	Non-Food Expenditures (Twelve Months)
Section M:	Household Assets
Section N:	Family / Household Non-Farm Enterprises
Section O:	Assistance and Groups
Section P:	Credit
Section Q:	Finance
Section R:	Recent Shocks to Household
Section S:	Deaths in Household
Section U:	Household Re-contact Information / Filters
Section V:	Anthropometry

The NPS also includes a robust instrument on household agricultural activities. Given the importance of agriculture in the Tanzanian context and the commitment of the Tanzanian government to understanding and improvements household agricultural activities, the NPS offers an essential data source to understand the dynamic role of agriculture to household welfare. Agriculture information is collected at both the plot and crop level on inputs, production and sales, consistent with key phases in the agricultural value chain. Table 2 provides details of the agriculture instrument.

AGRICULTURE QUESTIONNAIRE:

Section A:	Household Identification / Survey Staff Details
Section 01:	Household Member Roster
Section 02:	Plot Roster
Section 03:	Plot Details
Section 04:	Crops By Plot
Section 05:	Crops – Household Totals
Section 06:	Permanent Crops By Plot
Section 07:	Permanent Crops – Household Totals
Section 08:	Input Vouchers
Section 09:	Outgrower Schemes & Contract Farming
Section 10:	Processed Agricultural Products & Bi Products
Section 11:	Farm Implements and Machinery
Section 12:	Extension

The NPS also recognizes the importance of livestock and fisheries activities to many households. As with the integrated instrument on agriculture the NPS contains a robust instrument to capture details on these activities. The Livestock / Fisheries Questionnaire is administered to all households participating in these activities and asks about the inputs, outputs, labour, and sales related to these activities. Table 3 provides a more comprehensive list of the sections found within the Livestock / Fisheries Questionnaire.

LIVESTOCK / FISHERY QUESTIONNAIRE:

- Section A: Household Identification / Survey Staff Details
- Section 01: Household Member Roster
- Section 02: Livestock Stock
- Section 03: Animal Health
- Section 04: Feed, Water, housing, Breeding
- Section 05: Livestock-Labour
- Section 06: Milk
- Section 07: Animal Power & Dung
- Section 08: Other Livestock Products
- Section 09: Fishery – Household Labour
- Section 10: Fishery – Hired Labour
- Section 11: Fishing Inputs
- Section 12: Fisheries Output
- Section 13: Fish Trading

The Community Questionnaire collects information on physical and economic infrastructure and events in surveyed communities³. Responses to the community questionnaire are provided through a group discussion among key informants within the community.

COMMUNITY QUESTIONNAIRE:

- Section A: Community Identification / Survey Staff Details
- Section CB: Access to Basic Services
- Section CC: Investment Projects
- Section CD: Land Use
- Section CE: Demographics, Land & Livestock
- Section CF: Market Prices
- Section CG: Local Units

Each of the NPS questionnaires were developed in collaboration with line ministries and donor partners, including the Technical Committee, over a period of several months. The NBS solicited feedback from various stakeholders in regards to survey content and design paying due consideration to comparability with previous panel rounds.

Piloting of the NPS 2012/2013 instruments took place in the Tanga region in July 2012 in conjunction with supervisor training. After piloting, the questionnaires were further revised and finalized in September 2012. Interviewer manuals were developed with detailed instructions for field staff during training and as the main reference guide for the survey over the course of the fieldwork.

³ Note that this is not a “community” in the sociological sense, but rather a mechanism to collect information about the areas where the households selected for the survey are located. In most rural areas, EAs are defined by village boundaries and therefore community refers to the village. In urban areas the distinction is less clear, and occasionally single community questionnaires were administered to adjoining EAs. Therefore, the number of EAs and community questionnaires will not be identical.

Sample Design

The original sample size of 3,265 households for the 2008/2009 survey was designed to be representative at the national, urban/rural, and major agro-ecological zones. The total sample size of 3,265 households is clustered in 409 Enumeration Areas (2,063 households in rural areas and 1,202 urban areas) across Tanzania and Zanzibar. The NPS sample allows analysis at 4 primary domains of inference, namely: Dar es Salaam, other urban areas on mainland Tanzania, rural mainland Tanzania, and Zanzibar.⁴

The NPS 2012/2013 revisits all households interviewed during the first two waves; NPS 2008/2009 and NPS 2010/2011. This includes the originally sampled 3,265 households plus split-off households added into the sample in the second round of the NPS.⁵ Thus the total sample at the onset of the NPS 2012/2013 consisted of 3,924 target households.

The eligibility requirement for the NPS is defined as any household member aged 15 years and above, excluding live-in servants. Households with at least one eligible member were completely interviewed, including any subsequent non-eligible members present in the household. Any household or eligible members that had either moved or split away from a primary household were tracked and interviewed in their new location.

It is important to note that the NPS 2012/2013 sample includes individuals meeting the eligibility requirement that were interviewed as part of the NPS 2008/2009 wave but were not located and interviewed during the NPS 2010/2011. This constituted an additional 703 individuals assigned to their last known associated household. To identify these individuals in the NPS 2012/2013 sample household rosters they received an ID code in the range of 101-130; the ID code was formed by the addition of 100 to their NPS 2008/2009 roster ID.

The resulting sample size for the third round of NPS, including NPS 2008/2009 and NPS 2010/2011 households plus new, or split-off, households in NPS 2012/2013, is 5,015 households.

Implementation

Preparations:

The field staff was trained in Morogoro in September 2012 over a period of four weeks with enumerator and data entry training done concurrently. During a standard training week, four days were spent in classroom, and one day in field training. On each Saturday of the training month, the field staff was debriefed on the previous day's field exercise and what they had learned over the previous week. Over the four week training period, the field staff spent one week on the Household questionnaire, Agricultural questionnaire, Livestock/Fishery questionnaire and tracking, and field practice respectively. Over the training period, three tests

⁴ For a more detailed description of the original sample design, please reference the NPS 2008/2009 Basic Information Document.

⁵ A split-off household is a household where an individual, or group of individuals, from the original selected household have left the household and resides either in another household or has started his/her own household.

were administered to the field teams. The goal was to gain feedback from the training sessions and to select the enumerators. Overall, there were 55 enumerator candidates, with 48 being selected. At the end of the training the enumerators were provided Kiswahili field manuals.

Prior to the training period, two pilot tests were conducted. In mid-July 2012, the new questionnaire instruments were piloted in Tanga. In early August 2012, the tracking pilot was conducted in Morogoro to test revisions to the tracking forms. Select households from an MCAT survey conducted in 2010 were revisited to provide the team supervisors practice with conducting tracking during fieldwork. After the pilots, extensive discussion and revisions were conducted with the participation of all team supervisors.

Field Work:

The main data collection began in October 2012 and finished in October 2013, with tracking fieldwork continuing until the end of November 2013. The survey was primarily implemented by seven mobile field teams, each composed of: one supervisor, five or six enumerators, one data entry technician, and one driver. In addition, there were also two dedicated mobile tracking teams that were each composed of: one supervisor, two enumerators, one data entry technician and one driver.

In NPS 2008/2009, enumeration areas (EAs) were selected and then households within those EAs were selected for the sample. For the third round, households from the second round were grouped into clusters. These third round clusters are very similar to the EAs from the second round in that they both consist of primarily the same households. However, each cluster also included both distance and local tracking cases from the second round that reside nearby but not in the same exact EA as the other households in that cluster. Efforts were made in the design of the clusters to be able to maintain the timing of the previous rounds survey.

Field teams visited each cluster for between 4-5 days. The questionnaires were administered to the selected households over the course of that time. This allowed the field team to make return visits to the household to complete the entire Household questionnaire, Agriculture questionnaire for farming households, and Livestock/Fisheries questionnaire for households engaged in livestock or fisheries activities. To ensure the depth and quality of each section of the survey, the questionnaire was administered across multiple respondents to the most knowledgeable about each topic. For all of the sampled households, areas of all owned and/or cultivated agricultural plots were measured via GPS unless the household refused, the terrain was too difficult, or if the plot was more than 1 hour from the location of the household. Anthropometric measurements were taken for all individuals that were at home, not too ill, and willing to participate.

Tracking:

Tracking consists of three stages: (1) determine the current status of the households and members of the households from the previous survey; (2) determine the location of any households that have moved together with all its members to a new location; and (3) determine the location of any eligible members who have moved from their household from either NPS 2008/2009 or NPS 2010/2011 to a new location. Eligibility for tracking of households and members was determined

prior to the implementation of the survey. Members eligible for tracking were those who are over the age of 15 and not a live-in house servant. Any panel members not meeting this criteria were not tracked and were only included in the data when located and interviewed with an eligible member. Households eligible for tracking were those that moved to a new location within Tanzania. If a household moved to a different country, it was not tracked.

If an entire household had moved from the original residence, teams were required to complete a “T-1” form designed to capture relevant information from key informants on the whereabouts of the household. The T-1 form contains information that would enable tracking of household to its new location. If a member or members of the household have moved from the original household, a “T-2” form was completed by the teams. Similar to the T-1, a T-2 form contains information on the location of the member(s) who have moved from the household. Once the tracking targets had been located, teams were required to interview the household as consistent with the eligibility requirements.

Within the tracking protocol, there are local and distance tracking cases. Local and distance tracking applies to both households and individuals. Local tracking is defined as cases where the tracking target is within one hour driving distance from the original cluster and at least one tracking member from the household is eligible for tracking. For local tracking cases, the teams are required to interview the tracking target before leaving the original cluster. Distance tracking occurs when the tracking target resides in a location that is more than one hour driving distance from the original cluster. In this case, the teams fill out the appropriate tracking form and send the information to NBS headquarters. Once at NBS headquarters, the distance tracking case is given to one of the two dedicated tracking teams, who are then responsible for locating that household and conducting the interview.

Often households and members which have moved from their previous dwelling or household have relocated a great distance from their previous interview location. Given the inefficiency in searching for these members on a case by case basis across the country as they occur, field teams were not required to track households and members deemed to be too far away from the original location. Information on these cases was key entered and sent electronically to the NBS headquarters, compiled, and reviewed. After review an optimal tracking route was generated to guide the specialized tracking teams.

Distance tracking was divided into rounds with each round lasting approximately two months. The first round began interviews three months after the beginning of fieldwork to allow enough time to accumulate a sufficient number of distance tracking targets. At the start of each round, the new distance tracking cases would be compiled and grouped into geographic regions. The schedules for the two dedicated tracking teams for each round was determined by which geographic regions had the most distance tracking targets. Any tracking target not located after each round would remain in the pool to be visited during the subsequent rounds, in addition to any new tracking cases that had accumulated in the intervening months. In addition, the regular field teams also sporadically would perform tracking within their interview regions if the distance tracking target resided in or very close to a cluster on their fieldwork schedule. Finally, following the completion of the main fieldwork activities, four dedicated tracking teams were dispatched to interview the remaining cases.

Data Processing & Management:

The NPS 2012/2013 contains a robust multi-level quality assurance and data management system. Great effort was placed on the development and utilization of this system by the NBS with technical assistance from the World Bank prior to the implementation of the NPS 2012/2013 to assist in the management of the complex household panel survey and address the growing need for high quality timely data.

The NPS utilizes a concurrent field entry system known as CAFE; Computer Assisted Field Entry. This system was selected to increase the availability of data for review by managing staff as well as to provide regular and consistent quality assessment of data directly to the field staff. As with the earlier rounds, CSPro was used for data entry and initial quality reporting while STATA was utilized to perform complex aggregated checks. Building off the work conducted for the NPS 2010/2011, the NPS 2012/2013 data entry application further develops the quantity and complexity of data quality checking routines while simplifying reporting. Furthermore, due to the panel nature of the survey, where applicable and appropriate, data was checked against previous round data.

As data entry took place while in the interview area, when data issues were identified and reported, field teams would return to households and clarify and correct inconsistent information prior to the transmission of the data to headquarters. Data files from completed clusters were transmitted to NBS headquarters using 3G USB modems. Received data files were concatenated at the headquarters, and regular checks were performed to ensure the fieldwork was proceeding according to the schedule and that quality standards were met. During the course of field work data was routinely checked at the aggregate level to identify any potential issues and where identified additional checks were integrated into the CAFE system.

Throughout the course of field work, the field teams regularly sent the paper questionnaires back to the NBS headquarters for further processing. Once the paper questionnaires and data files for completed EAs were received at NBS headquarters, a double entry procedure was implemented. Six data entry operators were hired by NBS to perform the second data entry for the paper questionnaires into the CSPro-based data entry system for all questionnaires administered. A comparison between the entered values in the field based data entry and headquarters based data entry was conducted and any discrepancies in values between the two were flagged for manual inspection of the physical questionnaire and corrected. The application of the third level of data consistency validation further allowed for the assessment of the quality of the entry work performed by both the field entry staff and the headquarters based entry staff. Regular feedback was supplied to data entry staff resulting in improved quality where needed and overall efficiency.

Additional data cleaning was conducted as the final stage of the data processing. Further adjustment of the data post-entry was conducted under the principle of absolute certainty where adjustments must be evidence based and correction values true beyond a reasonable doubt. As such, the resulting final datasets may still contain some inconsistencies and outliers. Handling of these values is thus left entirely to the data user.

Throughout the data processing system versions of the data are archived at all key steps and all checking and cleaning syntax documented and archived.⁶

Panel Attrition

As with most panel surveys a certain portion of panel respondents are not able to be re-interviewed over time. This attrition of panel respondents can lead to attrition bias where respondents drop out of the survey non-randomly and where the attrition is correlated with variables of interest. The TZNPS has fortunately maintained low attrition over the waves, thus minimizing the potential for attrition bias within the datasets.

The target sample of eligible households for the NPS 2012/2013 was 3,924, representing original NPS 2008/2009 households plus new or split-off households added to the NPS in the second round. Of these households 3,786 households were re-located and re-interviewed. This translates to a household attrition rate of roughly 3.50 percent between the NPS 2010/2011 and NPS 2012/2013. At the individual level, 12,280 of the 13,278 eligible household members were re-interviewed during the NPS 2012/2013, equating to an individual attrition rate of roughly 7.52 percent between the NPS 2010/2011 and the NPS 2012/2013.

Total household attrition for the NPS, up to round three, is 4.84 percent.

Weighting / Expansion Factors

In order to produce nationally representative statistics with the NPS data, it is necessary to apply weighting or expansion factors. The panel survey weights adjust for differences in the probability of selection into the NPS 2008/2009 sample for observations in various strata, 2008/2009 households splitting into multiple households in 2010/2011 and splitting even further in 2012/2013, and attrition between rounds of the survey.⁷

The first round of the NPS sample was a multi-stage clustered sample design. First stage sampling involved the selection of survey clusters with the probability of selection proportional to cluster size within a stratum. The sampling of these clusters was stratified along two dimensions: (i) eight administrative zones (seven on Mainland Tanzania plus Zanzibar as an eighth zone), and (ii) rural versus urban clusters within each administrative zone. The combination of these two dimensions yields 16 strata. In rural areas a cluster is defined as an entire village. In urban areas a cluster is defined as a census enumeration area. As a general rule, the probability of selection was higher for clusters within strata where existing data sources

⁶ Due to the presence of confidential information within the datasets and the syntax used to process that data, this data and information will not be made available to the public.

⁷ The details of the sample design – including the sampling strata and the use of multiple sampling frames – are discussed in a separate document, *Sample Design for the National Panel Survey*, April 2009, available from NBS upon request.

showed that the variance of key variables of interest for the NPS (e.g., household consumption and maize production) were likely to be very high – implying the need for more observations to produce reliable estimates.

The expansion factors for the NPS 2012/2013, variable “y3_weight”, have been integrated into Section A, “HH_SEC_A” of the household dataset. Additionally, unique identifiers for the first-stage sampling units, “clusterid”, and for the sampling strata, “strataid” can also be located in Section A of the household dataset.

The methodology used to calculate the panel weights for the NPS 2012/2013 was developed as part of the LSMS-ISA work program. Details on the methodology can be found in the paper: Himelein, Kristen. 2013. “Weight Calculations for Panel Surveys with Subsampling and Split-off Tracking.” *Statistics and Public Policy*, vol (1), pp40-45.

Data Set

The NPS consists of several data files. Each data file pertains to a section of the questionnaire or a set of sections that are for the same level of observation. The complete lists of data files as well as the unique identification variables are listed in Tables 1-4.

Unique Household Identifiers:

Households are identified by a seven digit number in the NPS 2012/2013. For simplicity and to prevent errors from copying long household identifiers during fieldwork, the households from round two were assigned a four digit unique household identification number. The first four digits of the seven-digit NPS 2012/2013 household identifier is the four digit household identification number of the original household from NPS 2010/2011. The last three digits of the household identifier is the lowest individual ID number from the NPS 2010/2011 out of all the members of that household. For example, a NPS 2010/2011 household has the household identification number of “4218” and consisted of 6 members with individual ID numbers from 1-6 in the NPS 2010/2011. If in the NPS 2012/2013 members 1, 2 and 6 remained in the original household while members 3, 4, and 5 have split into a different household together, both households receives the four digit base, or NPS 2010/2011, household number, “4218” but the first household received the extension “001” while the second receives the extension, “003”. Thus the unique identifier for the original household becomes, “4218-001” and the split off household, “4218-003”⁸.

Merging between Round 3 data sets:

The household identification variable is “y3_hhid” in the data files. When merging or linking individual data files, it is necessary to use at minimum the household identification variable (“y3_hhid”) as well as the other unique identification variables pertinent to the data files being merged. All household level sections have been harmonized, regardless of a household’s or

⁸ The identification extension does not indicate the characteristic of an “original” household verse a “split-off” household.

member's qualification for the section to provide a consistent number of observations in each module across like units of observation.

Additional variables required to merge data across sections depend on which two sections are being merged. For example, merging sections A and section I (basic identification and household characteristics respectively) require only the "y3_hhid" variable as it is the single unique identifier in both datasets. Merging sections B and C (roster information with education levels respectively) requires merging on both the y3_hhid and the individual's ID, "indidy3", from round three⁹. This combination of variables will be unique in the roster data file, as only one person can have a particular roster number. Similar patterns will be found in other combinations of data files, such as the plot number "plotnum" and crop id "zaocode" variables in the agricultural datasets.

Merging between the three rounds:

It is possible to link the data from the NPS 2012/2013 with those of the previous two rounds. To merge household level datasets between the NPS 2010/2011 and NPS 2012/2013, it is necessary to use the "y2_hhid" id variable found in the data for both rounds. For a merge at the household level between NPS 2008/2009 and NPS 2010/2011, the "hhid_2008" from Section A of the NPS 2010/2011 may be merged with the "hhid" variable in the NPS 2008/2009 data.

Merging of individuals across the NPS rounds is also possible. It is important to note that due to the movement of household members, and particularly the joining of household members from one panel households to another, the Section A household identifier from the previous round does not always reflect the previous household of each member. To define each member's previous year's household, the y2_hhid variable reflecting each member's previous round household has been added to the Section B household roster. To facilitate ease in the joining of panel members, a supplementary data set, "NPS 2012/2013.Panel.Key", has been provided. This supplementary dataset contains the individual identification information, where applicable, for each member across the NPS panel rounds.

Obtaining Data

Data and background documentation for the NPS 2012/2013 is available on the Tanzania National Bureau of Statistics website (www.nbs.go.tz), as well as the World Bank Living Standards Measurement Study – Integrated Surveys on Agriculture website (www.worldbank.org/lsms-isa), and may be downloaded free of charge. Inquiries pertaining to the data may be sent to the LSMS team at lsms@worldbank.org.

⁹ It is important to note that while the y3_hhid variable is constructed using the year 2 individual ids, a separate individual identification number for each individual (old and new) is provided in round three.

Table 1: Household Questionnaire

SECTION A: HOUSEHOLD IDENTIFICATION / SURVEY STAFF DETAILS			
Level of Observation:	Household	Date File:	HH_SEC_A
Unique Identifier:	y3_hhid	Additional Info:	
Description:			
Household location variables, unique within panel round household identification variables, date and time of interview, analytic weights, cluster identification, sampling strata identification, enumerator identification, supervisor identification, and data entry clerk identification.			
Key Notes:			
All sensitive identifying variables, such as name of the of the village, the name of the household head, the name of the tracking target, the description of the household location, and the names of the interviewer, supervisor, and data entry operators have been removed from the dissemination version of this dataset to preserve the confidentiality of the respondent.			
SECTION B: HOUSEHOLD MEMBER ROSTER			
Level of Observation:	Individual	Date File:	HH_SEC_B
Unique Identifier:	y3_hhid, indidy3	Additional Info:	
Description:			
Roster of household members, individual characteristics including: sex, age, relationship to the household head, panel member identification, presence in household, general occupation, parental status, place of birth, marital status, and spouse identification.			
Key Notes:			
Two sets of unique individual identifiers are present in the household roster; the within round unique identifier and the across round (NPSY2/NPSY3) individual unique identifier. The within round individual unique identifier is composed of the unique NPSY3 7 digit household identification, y3_hhid , and the roster row individual identification number, indidy3 .			
The across round unique identifier is comprised of the sixteen digit NPSY2 unique household identifier, y2_hhid , and the previous round’s roster row number, hh_b06 . Both individual identifiers are present due to the rare instance where members from different panel households have merged into one household.			
New members, previously absent in any panel household, are indicated by “99” in the hh_b06. Where eligible NPSY1 household members were not located in the second round and subsequently interviewed in the NPSY3, their y2_hhid will be missing and their hh_b06 will indicate their NPSY1 row number plus 100.			
A supplemental data set, “NPSY3.PANEL.KEY”, consisting of member identification links across panel rounds is available for those interested in panel analysis.			
The respondent’s name, variable, hh_b01, has been masked to protect respondent confidentiality.			

SECTION C: EDUCATION

Level of Observation:	Individual	Date File:	HH_SEC_C
Unique Identifier:	y3_hhid, indidy3	Additional Info:	(>= 5 years); Appendix C

Description:

Educational enrollment and attainment; literacy, education history/ level attainment, current enrollment, school characteristics, temporary absence, education examination (participation and score) and education expenditures.

Key Notes:

Section is administered to members 5 years of age or older.

See Appendix C for additional terminology and information on changes to the Tanzanian educational system potentially affecting comparability of educational attainment of household members born before or around 1970.

SECTION D: HEALTH

Level of Observation:	Individual	Date File:	HH_SEC_D
Unique Identifier:	y3_hhid, indidy3	Additional Info:	

Description:

General health status and utilization of health services; source and financing of health treatments / hospitalization, disaggregated health expenditures, bednet use, pregnancy, prenatal care and births, child health and ailments / diarrhea.

Key Notes:

Respondents less than 12 years of age answer for themselves; else an informed respondent provides information.

Questions on pregnancy are asked only to women 14 through 49 years of age.

Question on child instance of diarrhea are asked for members less than 5 years of age.

SECTION E: LABOUR

Level of Observation:	Individual	Date File:	HH_SEC_E
Unique Identifier:	y3_hhid, indidy3	Additional Info:	(>= 5 years); Appendix D; E

Description:

Labor market participation; activities including unpaid apprenticeship, wage work, non-farm enterprise, and agricultural activity (including livestock and fishery activities) in the last seven days and in the last twelve months. Also includes unemployment and steps taken to find work, secondary activities, industry (TASCO) and occupation (ISIC) codes, wages earned, contract type, employer provide safety nets, and general domestic activities .

Key Notes:

Section is administered to household members 5 years of age or older.

Recorded written descriptions of industry and occupation have been masked to protect respondent confidentiality.

These text fields are removed for confidentiality purposes, as well as the text names of the employing companies.

SECTION F: FOOD CONSUMED OUTSIDE THE HOUSEHOLD

Level of Observation:	Individual	Date File:	HH_SEC_F
Unique Identifier:	y3_hhid, indidy3	Additional Info:	Last 7 Days

Description:

Value of food consumed outside the home during the last seven days.

Key Notes: None

SECTION G: SUBJECTIVE WELFARE

Level of Observation:	Individual	Date File:	HH_SEC_G
Unique Identifier:	y3_hhid, indidy3	Additional Info:	(>=15 years)

Description:

Self-reported level of satisfaction with health, financial status, housing, job, services, and safety. Also includes perceived status at present, and as of 1 and 10 years ago.

Key Notes: None

SECTION H: FOOD SECURITY

Level of Observation:	Household	Date File:	HH_SEC_H
Unique Identifier:	y3_hhid	Additional Info:	

Description:

Information on the household's diet and food intake patterns, months of food insecurity, and distribution of food within the household.

Key Notes: None

SECTION I: HOUSING, WATER AND SANITATION

Level of Observation:	Household	Date File:	HH_SEC_I
Unique Identifier:	y3_hhid	Additional Info:	

Description:

Tenure status, rental expenditure, estimated rental value, dwelling maintenance and improvement expenditures, dwelling characteristics, including size, construction materials, toilet facilities and means of garbage disposal. Also includes, main type of cooking and lighting fuel, access to water /drinking water and time spent collecting water.

Key Notes:

Major source for the questions on water and sanitation was the set of harmonized questions on drinking-water and sanitation for household surveys developed by the WHO/UNICEF Joint Monitoring Programmed for Supply and Sanitation.

A notable portion of households reported using a battery-operated torch to light their household. The response was recorded by the enumerator as "other specify" and a code for torch was added during data cleaning.

SECTION J1: CONSUMPTION OF FOOD OVER THE PAST ONE WEEK

Level of Observation:	Household	Date File:	HH_SEC_J1
Unique Identifier:	y3_hhid, Itemcode	Additional Info:	Last 7 days

Description:

Consumption of 59 key items/ item groups over the last 7 days. These 59 items/item groups are divided into twelve broader categories; “Cereals and Cereal Products”, “Starches, Sugars and Sweets”, “Pulses, Dry”, “Nuts and Seeds”, “Vegetables”, “Fruits”, “Meat, Meat Products, Fish”, “Milk and Milk Products”, Oils and Fats”, “Spices and Other Foods”, and “Beverages”. Quantity and value of consumed items from purchases, own-production and gifts are recorded. Additionally, an iodine test is also performed to detect its presence in salt and corresponding parts per million is recorded.

Key Notes:

Household data for the iodine may be found in the “FILTERS” data file.

SECTION J2: FOOD FORTIFICATION

Level of Observation:	Household	Date File:	HH_SEC_J2
Unique Identifier:	y3_hhid, itemcode	Additional Info:	

Description:

Information on household’s consumption of fortified food items

Key Notes:

The second part, in data file J2, inquires about the consumption of fortified food items by the household. In 2011, the Tanzanian Government initiated a program that would require producers to fortify maize flour, wheat flour, salt and cooking oil, and to place a logo on their product indicating that the item is fortified. The program was officially launched May 2013. Section J2 gathers information on if the household believes that their food items are fortified. Additionally, households were asked to display the packaging for the food item and the presence of the fortification logo recorded by the enumerator.

SECTION J3: FREQUENCY OF CONSUMED ITEMS

Level of Observation:	Household	Date File:	HH_SEC_J3
Unique Identifier:	y3_hhid, itemcode	Additional Info:	

Description:

Number of days general food categories where consumed by the household in the last 7 days, includes: “Cereals, Grains and Cereel Products”, “Roots, Tubers, and Plantains”, Nuts and Pulses”, Vegetables”, Meat, Fish and Animal Products”, “Fruits” “Milk/Milk Products”, “Fats/Oils”, Sugar/Sugar Products/Honey”, and “Spices/Condiments”.

Key Notes:

The categories/items composing the food categories in this section may differ from those in Section J1.

SECTION J4:

Level of Observation:	Household	Date File:	HH_SEC_J4
Unique Identifier:	y3_hhid, agecode	Additional Info:	Last 7 Days

Description:

Number of people living outside of the household that shared meals within the household and then total number of meals shared over the last 7 days.

Key Notes: None

SECTION K: NON-FOOD EXPENDITURES – PAST ONE WEEK & ONE MONTH

Level of Observation:	Household	Date File:	HH_SEC_K
Unique Identifier:	y3_hhid, itemcode	Additional Info:	Last 7 Days / Last 1 Month

Description:

Total expenditure on non-food items during the last week or last month, including; public transportation, fuels, cellular phone credits, personal hygiene items, etc.

Key Notes: None

SECTION L: NON-FOOD EXPENDITURES – PAST TWELVE MONTHS

Level of Observation:	Household	Date File:	HH_SEC_L
Unique Identifier:	y3_hhid, itemcode	Additional Info:	Last 12 months

Description:

Total expenditure on non-food items during the past 12 months, including; household items, community contributions, fees and fines, marriage costs, clothing, etc.

Key Notes:

“Wood poles, bamboo” and “Grass for thatching roof or other use” are commonly consumed by households but not purchased. For these items, estimated total value is also recorded.

SECTION M: HOUSEHOLD ASSETS

Level of Observation:	Household	Date File:	HH_SEC_M
Unique Identifier:	y3_hhid, itemcode	Additional Info:	

Description:

Quantity of key items owned by the household, age of item, purchase price, and current estimated value for items including, radio, telephones, appliances, furniture, cookware, vehicles, land, and agricultural tools.

Key Notes:

Age of item, purchase price, and estimated value are new additions to the NPS assets section.

Age of item, purchase price and estimated value of item were not solicited for all items. Refer to Household Questionnaire Section M for list of items with this restriction.

SECTION N: FAMILY / HOUSEHOLD NON-FARM ENTERPRISES

Level of Observation:	Household	Date File:	HH_SEC_N
Unique Identifier:	y3_hhid, entid	Additional Info:	

Description:

Details on non-farm businesses operated by the household during the last 12 months, including type of product or service provided, household members involved with the enterprise, value of current stock, operation location, length of time the enterprise has been operating, income earned, profits, business operating costs etc.

Key Notes:

Only households operating non-farm enterprises completed this module. Filter questions may be found in the “FILTERS” data file.

SECTION 01: ASSISTANCE AND GROUPS

Level of Observation:	Household	Date File:	HH_SEC_O1
Unique Identifier:	y3_hhid, itemcode	Additional Info:	

Description:

Financial and in-kind assistance provided by both government and non-government institutions, including free food/maize distribution, food for work or cash for work programmes, inputs for work programmes, and school scholarships.

Key Notes:

The names of the organizations have been masked to protect respondent confidentiality.

SECTION 02: ASSISTANCE AND GROUPS

Level of Observation:	Household	Date File:	HH_SEC_O2
Unique Identifier:	y3_hhid, personid	Additional Info:	

Description:

Involvement in cooperative microfinance activities and financial details of membership, including contributions, withdrawal history, and repayment plans.

Key Notes:

Names of household members have been masked for purposes of confidentiality.

The ‘personid’ identifier distinguishes each occurrence of group membership, but is not a link to other sections. Participating members in assistance groups can be linked to other sections using reported individual IDs (Q6 in HH_SEC_O1 and Q9 in HH_SEC_O2), which correspond to the “indidy3” variable in individual-level data files.

SECTION P: CREDIT

Level of Observation:	Household	Date File:	HH_SEC_P
Unique Identifier:	y3_hhid, loancode	Additional Info:	

Description:

Utilization of credit and loan institutions, including sources, amounts borrowed, and repayment plans.

Key Notes:

The name of the lending institution is masked due to confidentiality purposes.

Only households that borrowed cash, goods, or services in the last 12 months completed this module. The filter question for this section is included in the "FILTERS" data file.

Individual characteristics can be linked with household members who utilized loan/credit sources using the reported individual ID in Q4.

SECTION Q1: FINANCE

Level of Observation:	Household	Date File:	HH_SEC_Q1
Unique Identifier:	y3_hhid	Additional Info:	

Description:

Use of financial institutions and mobile-phone based money transfer services, income from rent or pensions, supplemental income sources, and banking history.

Key Notes:

Names of banking institutions where households maintained accounts have been masked to protect respondent confidentiality.

SECTION Q2: FINANCE

Level of Observation:	Household	Date File:	HH_SEC_Q2
Unique Identifier:	y3_hhid, sourceid	Additional Info:	

Description:

Remittances or financial assistance received in the last 12 months from sources residing in Tanzania or abroad, including socio-demographic characteristics of source, remittance channels, and use of cash/in-kind items.

Key Notes:

The names of the sources have been masked to protect respondent confidentiality.

SECTION R: RECENT SHOCKS TO HOUSEHOLD WELFARE

Level of Observation:	Household	Date File:	HH_SEC_R
Unique Identifier:	y3_hhid, shockid	Additional Info:	

Description:

Severity ranking of 19 common shocks, such as “drought or floods”, “severe water shortage”, and “death of member of household”. More detailed information and coping strategies are asked of the three most severe shocks.

Key Notes: None

SECTION S: DEATHS IN HOUSEHOLD

Level of Observation:	Household	Date File:	HH_SEC_S
Unique Identifier:	y3_hhid, personid	Additional Info:	

Description:

Deaths within the household, cause of death, duration of illness if applicable, and associated land or asset losses due to inheritance traditions.

Key Notes:

The name of the deceased household member is excluded for confidentiality purposes.

The across survey unique identifier is comprised of the sixteen digit NPSY2 unique household identifier, **y2_hhid**, and the previous round’s roster row number, **hh_s04**. This variable can be linked in the same way that **hh_b06** in Section B is used to link living members. Note that not all deceased household members will have been present in the second round as some may have joined the household in the interim between survey rounds.

SECTION U1: HOUSEHOLD RECONTACT INFORMATION

Level of Observation:	Household	Date File:	HH_SEC_U1
Unique Identifier:	y3_hhid	Additional Info:	

Description:

Contact information for household, including GPS coordinates, phone numbers for household members, and two reference persons within and outside the community.

Key Notes:

This information is not publicly available so as to ensure respondent confidentiality.

SECTION U2: MODULE FILTER QUESTIONS

Level of Observation:	Household	Date File:	HH_SEC_U2
Unique Identifier:	y3_hhid, itemcode	Additional Info:	

Description:

Screening questions for the agriculture and livestock/fisheries questionnaires.

Key Notes: None

SECTION V: ANTHROPOMETRY			
Level of Observation:	Household	Date File:	HH_SEC_V
Unique Identifier:	y3_hhid, indidy3	Additional Info:	
Description: Anthropometric information of all household members able and willing to participate, including height, weight, and upper arm circumference measurements.			
Key Notes: This section is administered to all members; however, upper arm circumference measurements are only obtained for children less than 5 years of age.			

SECTION FILTERS: FILTER QUESTIONS			
Level of Observation:	Household	Date File:	FILTERS
Unique Identifier:	y3_hhid	Additional Info:	
Description: Screening questions for household, agriculture, livestock and fishery modules.			
Key Notes: Includes: hh_j07, hh_j10, hh_n01a, hh_n01b, hh_o08, hh_p01, hh_s01, ag2a_01, ag2a_11, ag2a_12, ag08_01, ag08_02, ag09_01, ag09_8b, ag10_01, lf08_09, lf09_01, lf12_01, lf13_01, lf12_15			

Table 2: Agriculture Questionnaire

All households that answered question 5 in Section U2 as “YES” should appear in this module. This means that a household cultivated plots, or owned farms that they did not cultivate in the last 12 months.

SECTION A: HOUSEHOLD IDENTIFICATION / SURVEY STAFF DETAILS			
Level of Observation:	Household	Date File:	AG_SEC_A
Unique Identifier:	y3_hhid	Additional Info:	
Description: Household location variables, unique within panel round household identification variables, date and time of interview, analytic weights, cluster identification, sampling strata identification, enumerator identification, supervisor identification, and data entry clerk identification.			
Key Notes: All sensitive identifying variables, such as name of the of the village, the name of the household head, the name of the tracking target, the description of the household location, and the names of the interviewer, supervisor, and data entry operators have been removed from the dissemination version of this dataset to preserve the confidentiality of the respondent.			

SECTION 01: HOUSEHOLD ROSTER

Level of Observation:	Individual	Date File:	AG_SEC_01
Unique Identifier:	y3_hhid,indidy3	Additional Info:	

Description:

Key roster information only, including name, age, sex of household members as well as which member is the key respondent for the agricultural questionnaire.

Key Notes:

The name of the respondent has been masked to protect respondent confidentiality.

SECTION 2A/2B: PLOT ROSTER

Level of Observation:	Plot	Date File:	AG_SEC_2A/2B
Unique Identifier:	y3_hhid,plotnum	Additional Info:	

Description:

Roster of all plots owned or cultivated by the household, including measurement information as calculated by GPS and farmer's estimate, GPS coordinates, weather conditions at measurement, and reason for missing GPS.

Key Notes:

Identical questions are asked in sections "AG_SEC_2A" and "AG_SEC_2B"; however, 2A refers to plots owned or cultivated during the 2012 long rainy season, and 2B refers to the short rainy season (either 2011 or 2012, depending on date of questionnaire). There is a screening question on the bottom of page 4 (and included in the Filters data file) that indicates to which short rainy season the household is referring.

If applicable, the Round 2 plot ID of a Round 3 plot is recorded in question 5, in a similar fashion to the Question 6 in Household Module B which links a Round 3 member to Round 2. However, households have increasingly split and a great deal of movement has occurred between the last two rounds, so as a consequence Round 2 household identification numbers and Round 2 plot numbers are no longer unique identifiers for Round 3 plots. In a small number of cases it appears that the household has split in Round 3, but that both resulting households are reporting the same plot from Round 2 (possibly because they remain in close proximity to the original household, such as in the case of a child moving out). Further investigation showed that the cases fell into the following two categories: (1) the actual plot size splitting between the two Round 3 households, so that each household owns a smaller portion of the original plot but as the *entire* plot originated from the Round 2 plot a duplicate will exist, as well as (2) both Round 3 households reporting the entire plot on their plot roster. The amount of occurrences is negligible but should be noted as it will lead to imperfect merges between rounds.

The plot areas were measured using Garmin eTrex HC series GPS devices. The survey protocol indicates that all plots should be measured as long as they were within one hour's transportation (either on foot, by bicycle / motorbike, or, if possible, by vehicle) from the household. The only other acceptable reason for the plot not to be measured would be if the household refused.

The plot names, descriptions, and GPS coordinates are excluded for confidentiality reasons. A separate GIS dataset has been compiled using plot location information.

SECTION 3A/3B: PLOT DETAILS

Level of Observation:	Plot	Date File:	AG_SEC_3A/3B
Unique Identifier:	y3_hhid, plotnum	Additional Info:	

Description:

Detailed information on usage of plot, main cultivated crops, decision-makers in household, soil type and quality with a focus on erosion, sources of irrigation, ownership status of plot, rental value, usage patterns of fertilizers, and agricultural inputs obtained on credit. Household and hired labor for farming activities is also reported.

Key Notes:

Identical questions are asked in “AG_SEC_3A” and “AG_SEC_3B”, with the exception of Q75-85 which gather brief information on their rainy season counterpart’s plot usage. Questions in 3A again refer to plots owned or cultivated during the 2012 long rainy season, while 3B refers to the last completed short rainy season.

The data file for 3A contains only those plots cultivated in the long rainy season, while 3B is a comprehensive set of both long and short rainy season plots.

SECTION 4A/4B: ANNUAL CROPS BY PLOT

Level of Observation:	Plot-crop	Date File:	AG_SEC_4A/4B
Unique Identifier:	y3_hhid, plotnum, zaocode	Additional Info:	

Description:

Crop planting patterns, intercropping, area and quantity harvested, associated losses, crop seeds purchased along with associated values, source and type of seed for all annual crops.

Key Notes:

“AG_SEC_4A” is asked of the long rainy season in 2012, while “AG_SEC_4B” is asked of the most recent short rainy season (dependent on date of interview). This section should only include annual crops, but due to interviewer errors some permanent and fruit crops were also captured.

SECTION 5A/5B: ANNUAL CROP PRODUCTION AND SALES

Level of Observation:	Crop	Date File:	AG_SEC_5A/5B
Unique Identifier:	y3_hhid, zaocode	Additional Info:	

Description:

Questions on quantity of crops sold, value of sales, customers crops sold to, average distance that crops were transported to for sale, post-harvest losses, how crop residue was handled, method and duration for which crop was stored.

Key Notes:

“AG_SEC_5A” is asked of the long rainy season in 2012, while “AG_SEC_5B” is asked of the most recent short rainy season (dependent on date of interview).

In some cases crops produced by the household were not represented in the list of response codes. In these cases crops were classified as “other” with a corresponding code.

SECTION 6A: FRUIT TREES BY PLOT

Level of Observation:	Plot-crop	Date File:	AG_SEC_6A
Unique Identifier:	y3_hhid, plotnum, zaocode	Additional Info:	

Description:

Number of fruit trees planted on the plot, when these were planted, presence of intercropping, quantity produced, loss before and after harvest, quantity sold, associated value and location sold, method and quantity of crop stored are asked in this section.

Key Notes:

This section should include only fruit trees but due to a small number of interviewer errors, some fruits are included in Section 4 instead while some permanent crops are included in this section. Note that in the English version of the questionnaire, both peaches and plums appear twice in the crop listing. This is due to the fact that some fruits common in Tanzania have the same English translation, while the names are different in Swahili.

Note that this section should include only fruits but due to a small number of interviewer errors, some fruits are included in Section 4 instead and some permanent crops are also included in this section.

SECTION 6B: PERMANENT CROPS BY PLOT

Level of Observation:	Plot-crop	Date File:	AG_SEC_6B
Unique Identifier:	y3_hhid, plotnum, zaocode, zaoname	Additional Info:	

Description:

Number of permanent crops planted on the plot, when these were planted, how many were planted in the past 12 months, intercropping activities, quantity produced, losses before and after harvest, quantity sold, associated value and location sold, method and quantity of crop stored are asked in this section.

Key Notes:

Questions in “AG_SEC_6A” and “AG_SEC_6B” are identical, however 6A is asked only of fruit trees while 6B is asked of permanent trees/crops. In the data, a number of crops within the plot share the following crop category codes (zaocode): “Firewood/fodder”, “Timber”, “Medicinal Plants”, “Fence Tree” and “Other.” Differentiation for these categories is preserved in the dataset (zaoname) and the option to collapse on specific variables is left to the end user.

SECTION 7A: FRUIT CROPS – PRODUCTION AND SALES

Level of Observation:	Crop	Date File:	AG_SEC_7A
Unique Identifier:	y3_hhid, zaocode	Additional Info:	

Description:

Quantity of crop sold, associated value and location sold, post production losses and method and quantity of crop stored are included.

Key Notes: None

SECTION 7B: PERMANENT CROPS – PRODUCTION AND SALES

Level of Observation:	Crop	Date File:	AG_SEC_7B
Unique Identifier:	y3_hhid, zaocode, zaoname	Additional Info:	

Description:

Quantity of crop sold, associated value and location sold, post production losses and method and quantity of crop stored are included.

Key Notes:

Similar to Section 5B, crop names are included to assist with the differentiation of duplicate reported crop categories as described above.

Although 7B was intended to be a direct continuation of Section 6B and therefore include all crops listed in 6B, crops that were used specifically for own consumption were often not reported. Consequently, Section 7B has fewer observations than what is reported in Section 6B.

SECTION 8: INPUT VOUCHERS

Level of Observation:	Input	Date File:	AG_SEC_08
Unique Identifier:	y3_hhid, inputid	Additional Info:	

Description:

Information is asked about amount of inputs redeemed from vouchers, household members that received the vouchers and how the inputs redeemed from vouchers were used by the household.

Key Notes:

Only households utilizing agricultural inputs completed this module. The filter question for this section is included in the “FILTERS” data file.

SECTION 9A/9B/9C: OUTGROWER SCHEMES AND CONTRACT FARMING

Level of Observation:	Input	Date File:	AG_SEC_9A/9B/9C
Unique Identifier:	y3_hhid, zaocode	Additional Info:	

Description:

Information on crops, companies, pre-planting agreements, and buyer compliance are recorded for farmers engaging in outgrower schemes and contract farming.

Key Notes:

Questions asked in each of the three sections are identical, however “AG_SEC_9A” focuses on crops grown as part of the long rainy season 2012, while 9B refers to the last completed short rainy season, and 9C collects information on fruit trees and permanent crops.

A filter question in the “FILTERS” data file eliminates any households that did not cultivate any crops, as part of an outgrower scheme or contract farming system at any time over the past 12 months.

SECTION 10: PROCESSED AGRICULTURAL PRODUCTS AND AGRICULTURAL BY-PRODUCTS

Level of Observation:	Input	Date File:	AG_SEC_10
Unique Identifier:	y3_hhid, zaocode, ag10_02_3, ag10_03	Additional Info:	

Description:

Information on crops, by-product names and quantity produced, amount of crop used as input, quantity sold, associated prices and buyers and costs incurred due to labor/other inputs are included in this section.

Key Notes:

As a household can have more than one by-product associated with the same crop it is necessary to use the following to uniquely identify observations: “y3_hhid” to identify the household, “zaocode” to identify the crop, “ag10_02_3” to identify if the product was deliberately processed or produced as a by-product of another process, and “ag10_03” to identify the product.

Crops listed in this section should have been harvested by the household, and therefore should also appear in Section 5 and Section 7. However, due to interviewer error, some of the crops found in this section (primarily maize) were most likely purchased instead of harvested, and therefore will not appear in Sections 5 and 7.

Only households processing products harvested on this module. The filter question for this section is included in the “FILTERS” data file.

SECTION 11: FARM IMPLEMENTS AND MACHINERY

Level of Observation:	Input	Date File:	AG_SEC_11
Unique Identifier:	y3_hhid, itemid	Additional Info:	

Description:

Detailed information on the number of farm implements and machinery used or owned by the household in the past 12 months along with associated value if sold, whether the item was used, reasons for no usage, whether any of these items were rented or borrowed for use in the last twelve months and associated rents paid.

Key Notes: None

SECTION 12A: EXTENSION

Level of Observation:	Input	Date File:	AG_SEC_12A
Unique Identifier:	y3_hhid, sourceid	Additional Info:	

Description:

Any extension services or advice that the household received for agricultural or livestock activities in the past 12 months through government extension, NGOs, Cooperative/Farmer’s Association, or Large Scale Farmers, including what activity advice was sought for, subjective rating for advice received, and price paid for receiving advice.

Key Notes: None

SECTION 12B: EXTENSION

Level of Observation:	Input	Date File:	AG_SEC_12B
Unique Identifier:	y3_hhid, sourceid	Additional Info:	

Description:

Any extension services or advice that the household received for agricultural or livestock activities in the past 12 months through government extension, NGOs, Cooperative/Farmer's Association, Large Scale Farmers, Radio/television, Publications or Neighbors including what activity advice was sought for, subjective rating for advice received, and price paid for receiving advice.

Key Notes:

Note that in both datasets in Section 12 (A and B), the variables to uniquely identify observations are "y3_hhid" and "sourceid." However, these two variables are not equivalent and it is not possible to merge the two datasets using these variables.

SECTION NETWORK

Level of Observation:	Household	Date File:	AG_NETWORK
Unique Identifier:	y3_hhid, agnr_id	Additional Info:	

Description:

Throughout the various sections of the agricultural questionnaire, there are questions that refer to persons outside the household that are involved in the agricultural process. Examples include landlords, suppliers of inputs, harvest purchasers, outgrower partners, etc.. The network roster file contains the location and category of each of these persons.

Key Notes:

The names have been removed for confidentiality reasons.

Table 3: Livestock/Fisheries Questionnaire

This questionnaire is divided into two separate parts: Livestock (Section 2-8) and Fisheries (Section 9-13). All households that answered Question 9 in Section U2 as "yes" should appear in this module. Section 2-8 are administered only to households that were reported to have owned any animals in the last 12 months; and section 9-13 are administered only to households that have participated in fishing, fish farming or fish trading in the last 12 months. The entirety of this questionnaire would not be administered to a household unless that household participated in both livestock activities and fisheries activities in the last 12 months. Note that the cover page is not included in the dataset because they do not contain any additional information beyond what is included in the household questionnaire cover page.

Note that Section 2 and Sections 3-7 ask for information about a household's livestock at different levels. Section 2 asks for information at the level of individual animal types (i.e. cows, chickens, etc.) while Sections 3-7 ask information at the broader level of aggregated animal types (i.e. large ruminants, small ruminants, etc.).

SECTION A: HOUSEHOLD IDENTIFICATION / SURVEY STAFF DETAILS

Level of Observation:	Household	Date File:	LF_SEC_A
Unique Identifier:	y3_hhid	Additional Info:	

Description:

Household location variables, unique within panel round household identification variables, date and time of interview, analytic weights, cluster identification, sampling strata identification, enumerator identification, supervisor identification, and data entry clerk identification.

Key Notes:

All sensitive identifying variables, such as name of the village, the name of the household head, the name of the tracking target, the description of the household location, and the names of the interviewer, supervisor, and data entry operators have been removed from the dissemination version of this dataset to preserve the confidentiality of the respondent.

SECTION 01: HOUSEHOLD ROSTER

Level of Observation:	Individual	Date File:	LF_SEC_01
Unique Identifier:	y3_hhid, indidy3	Additional Info:	

Description:

Key roster information only, including name, age, sex of household members as well as which member is the key respondent for the agricultural questionnaire.

Key Notes:

The name of the respondent has been masked to protect respondent confidentiality.

SECTION 02: LIVESTOCK STOCK

Level of Observation:	Livestock	Date File:	LF_SEC_02
Unique Identifier:	y3_hhid, lvstckid	Additional Info:	

Description:

For 16 animal categories, this section asks questions about the last 12 months on topics related to ownership, purchases, gifts received, diseases and animals lost because of them, thefts, sales and associated earnings, slaughtering and associated earnings.

Key Notes: None

SECTION 03: ANIMAL HEALTH

Level of Observation:	Livestock group	Date File:	LF_SEC_03
Unique Identifier:	y3_hhid, lvstckcat	Additional Info:	Appendix F

Description:

Detailed information on the health of animals in the last 12 months related to diseases affecting the animals, vaccinations provided, de-worming treatments, preventative and treatment measures taken against tick borne diseases, and associated spending for any preventative and treatment measures.

Key Notes:

Questions in this section are only asked of large and small ruminants, pigs and poultry. Additional information on main animal diseases for which vaccination is available in Appendix F.

SECTION 04: FEED, WATER, HOUSING, BREEDING,

Level of Observation:	Livestock group	Date File:	LF_SEC_04
Unique Identifier:	y3_hhid, lvstckcat	Additional Info:	Appendix G

Description:

This section asks about fodder and water costs for the animals, type of housing used for the animals, and breeding strategies used by the household.

Key Notes:

Questions in this section are only asked of large and small ruminants, pigs and poultry. Additional information on breeding strategies may be found in Appendix G.

SECTION 05: LIVESTOCK LABOUR

Level of Observation:	Livestock group	Date File:	LF_SEC_05
Unique Identifier:	y3_hhid, lvstckcat	Additional Info:	

Description:

This section gathers information about the household members responsible for activities associated with upkeep of animals, the months in which the household hired help (if any) to assist in the upkeep of animals, and any associated costs with hired labor.

Key Notes:

Questions in this section are only asked of large and small ruminants.

SECTION 6: MILK

Level of Observation:	Livestock group	Date File:	LF_SEC_06
Unique Identifier:	y3_hhid, lvstckcat	Additional Info:	

Description:

This section asks about characteristics of milk production by the animals and the amount of milk produced that were consumed by the household, sold, or processed in the last 12 months.

Key Notes: None

SECTION 7: ANIMAL POWER AND DUNG

Level of Observation:	Livestock group	Date File:	LF_SEC_07
Unique Identifier:	y3_hhid, lvstckcat	Additional Info:	

Description:

Detailed information related to amount of dung produced by the animals, characteristics of the use of the dung, associated earnings from any sales of dung, and use of animals for transport or ploughing.

Key Notes:

Questions in this section are only asked of large and small ruminants.

SECTION 8: OTHER LIVESTOCK PRODUCTS

Level of Observation:	Product	Date File:	LF_SEC_08
Unique Identifier:	y3_hhid, itemcode	Additional Info:	

Description:

Information is collected on livestock by-products, including the quantity produced, the quantity sold, value of sold goods, buyers of by product sold.

Key Notes: None

SECTION 9: FISHERY – HOUSEHOLD LABOUR

Level of Observation:	Individual	Date File:	LF_SEC_09
Unique Identifier:	y3_hhid, indidy3	Additional Info:	

Description:

For members that are listed as being involved in fishing in the last 12 months, questions on time spent fishing, time spent processing and time spent trading are recorded by number of weeks, days per week and hours per day.

Key Notes:

The unique identifiers can be used to merge data from this section with the characteristics of the individual fisherman from the household section.

SECTION 10: FISHERY – HIRED LABOUR

Level of Observation:	Labour input	Date File:	LF_SEC_10
Unique Identifier:	y3_hhid, rowid	Additional Info:	

Description:

For hired labor, the number of fishing men, women and children and associated time investment is collected in addition to information on wages, share of boat catch and share of boat revenue.

Key Notes: None

SECTION 11A: FISHING INPUTS

Level of Observation:	Gear	Date File:	LF_SEC_11A
Unique Identifier:	y3_hhid, gearid	Additional Info:	Appendix H

Description:

Focuses on fishing input/gear and boats/engines used by any member of the household in the last 12 months and includes questions on the number of fishing gears operated, owned, purchased, rented and associated rental value for purchase.

Key Notes:

Additional information on types of gear can be found in Appendix H.

SECTION 11B: OTHER INPUTS

Level of Observation:	Input Expense	Date File:	LF_SEC_11B
Unique Identifier:	y3_hhid, inputid	Additional Info:	

Description:

Information on all other costs associated with purchases during the last 12 months such as taxes, licenses, auction fees, wicks, rent for storage, transportation, buoys, thread for net sewing, beeswax/sealant, lubricant and chicken wire. The associated costs and units consumed are also included for each of these categories.

Key Notes: None

SECTION 12: FISHERIES OUTPUT

Level of Observation:	Fish	Date File:	LF_SEC_12
Unique Identifier:	y3_hhid, fishid	Additional Info:	

Description:

Information on the output of fishing activities in the last 12 months, including questions related to type of fish caught, area fished in, quantity caught, fish processing mechanisms, sales and in-house consumption. Approximately 19% of households indicate having caught another type of fish than those on the list.

Key Notes:

The filter question for this section can be found in the "FILTERS" data file.

The best effort has been made to categorize fish into groups, but due to the wide variation of local names for fish species across Tanzania, a large number of "others" remain.

SECTION 13A: FISH TRADING

Level of Observation:	Fish	Date File:	LF_SEC_13A
Unique Identifier:	y3_hhid, fishcode	Additional Info:	

Description:

Detailed information on purchases and sales of fish by the household, including questions on type of fish sold, average sales per week, and quantity of fish purchased from other sources.

Key Notes:

This section is only administered to those household members that were engaged in fish trading in the last 12 months. The filter question for this section can be found in the “FILTERS” data set.

SECTION 13B: FISH TRADING

Level of Observation:	Cost	Date File:	LF_SEC_13B
Unique Identifier:	y3_hhid, costcode	Additional Info:	

Description:

Costs associated with the fish trading are collected in this section, including amount spent by household on hired labour, transport, packaging, ice, and taxes.

Key Notes:

The screening question for this section can be found in the “FILTERS” data set.

SECTION NETWORK

Level of Observation:	Household	Date File:	LF_NETWORK
Unique Identifier:	y3_hhid, lfnr_id	Additional Info:	

Description:

This section captures persons outside the household involved in the livestock and/or fisheries related activities of the household.

Key Notes:

Note that persons appearing on the agriculture network roster will be identified with the prefix “N” while persons from the livestock/fisheries network roster will be identified by the prefix “LF.” The names have been removed for confidentiality reasons.

Table 4: Community Questionnaire

For the purposes of this survey a “community” is defined as the village in rural areas and the mtaa in which the cluster is located in urban areas. The community questionnaire was administered to a group of local leaders determined by the field supervisors. In general, in rural areas this group included the ward executive officer, village chairperson and the VEO, as well as other members from the village council. In urban areas the group included the ward executive officer, mtaa chairperson and possibly other local leaders. Note that not all sample clusters have

a corresponding community questionnaire. Particularly in urban areas, clusters within the same ward share the same administration and therefore community level information. In the 2012/2013 dataset, there are 12 sample clusters that do not have individual level community information, but it should be considered to be the same as the EA within the same region, district, and ward in the dataset.

In addition, individuals that moved to new communities since 2010/2011 would not have corresponding community information as this information was only collected for the originally selected EAs.

SECTION A1/A2: COMMUNITY IDENTIFICATION & SURVEY STAFF DETAILS			
Level of Observation:	Community	Date File:	COM_SEC_A1A2
Unique Identifier:	id_01, id_02, id_03, id_04	Additional Info:	
Description:			
Community identification information including region, district, ward, regional capital identifier, location of market price information, and enumeration area, as well as survey staff information such as interviewers ID code, supervisor, and direct observation questions.			
Key Notes:			
Sensitive identifying variables, such as name of village, GPS coordinates, and the names of the interviewer, supervisor, and data entry operators have been removed from the dissemination version of this dataset to preserve confidentiality.			

SECTION CB: ACCESS TO BASIC SERVICES			
Level of Observation:	Community	Date File:	COM_SEC_CB
Unique Identifier:	id_01, id_02, id_03, id_04, cm_b0a	Additional Info:	
Description:			
Information on access to basic services in terms of distance and associated transportation costs for these services.			
Key Notes:			
Names of services/institutions have been dropped from the public data file to preserve confidentiality.			

SECTION CC: INVESTMENT PROJECTS			
Level of Observation:	Community	Date File:	COM_SEC_CC
Unique Identifier:	id_01, id_02, id_03, id_04, cm_c0a	Additional Info:	
Description:			
Sources of funds and associated amounts for recent construction projects such as road construction/maintenance, market construction/maintenance, water supply such as wells and pumps, school construction and maintenance at pre-primary, primary and secondary levels, health and veterinary services, irrigation schemes and grain storages.			
Key Notes: None			

SECTION CD: LAND USE

Level of Observation:	Community	Date File:	COM_SEC_CD
Unique Identifier:	id_01, id_02, id_03, id_04	Additional Info:	

Description:

Land use related issues with estimated percentages of how different types of village land are used (cultivation, forest, pasture, wetland, residential, business), as well as reasons for re-allocation of land (if any), number of households affected, and associated compensation.

Key Notes:

This section contains a fairly high percentage of missing values as sometimes key informants did not know all the information asked in the questionnaire.

SECTION CE: DEMOGRAPHICS, LAND, AND LIVESTOCK

Level of Observation:	Community	Date File:	COM_SEC_CE
Unique Identifier:	id_01, id_02, id_03, id_04	Additional Info:	

Description:

Participants utilizing SACCOs and other farmer cooperative groups, activities undertaken by cooperatives, the timing and quantity of the masika and vuli rainy seasons, detailed information on maize seed suppliers and sales, and the migration patterns of community members due to livestock activities.

Key Notes:

The name of the nearest supplier of improved maize seeds has been dropped for confidentiality purposes.

SECTION CF: MARKET PRICES

Level of Observation:	Community	Date File:	COM_SEC_CF
Unique Identifier:	id_01, id_02, id_03, id_04, itemid, item_name	Additional Info:	

Description:

Market prices for the surveyed communities, reported for both the village level and the district capital area.

Key Notes:

If district prices were already recorded in another community questionnaire, the cluster ID of that questionnaire is entered at the top of the market prices table and district prices are skipped. The regional capital identifier and the location at which the prices were gathered are included in the section CA dataset.

The name of the item must be included in the unique identifier as food item IDs are taken directly from the consumption module and sometimes group items together (i.e. code 601 is “Onions, tomatoes, carrots, green peppers, other viungo”) while in Section CF each item is individually identified (item_name) and priced, though it remains under the collective consumption code (itemid).

The GPS coordinates are removed for confidentiality purposes.

SECTION CG: LOCAL UNITS

Level of Observation:	Community	Date File:	COM_SEC_CG
Unique Identifier:	id_01, id_02, id_03, id_04, item_code, item_name, item_num	Additional Info:	

Description:

Records the local units used for certain items in the surveyed communities. Similar to Section CF, the information is collected both at the village level and the district capital area. The kilogram or liter equivalent for the local units is collected, in addition to the price of the item in that local unit.

Key Notes:

The unique identifier is a combination of the community location variables plus the food item code, food item name, and food item number. This is necessary as each food item (item_code) is allowed up to three separate responses of local units (item_num), in addition to the combined food items per consumption code similar to the occurrences described above (i.e. cooking bananas and irish potatoes are both code 205).

Table 5: Supplemental Data Sets

SECTION GIS: HOSHEOLD GEOVARIABLES

Level of Observation:	Household	Date File:	TZY3.HH.Geovariables
Unique Identifier:	y3_hhid	Additional Info:	Appendix J

Description:

Compiled geospatial information for the household location.

Key Notes: None

SECTION CONS3: HOSHEOLD CONSUMPTION AGGREGATE

Level of Observation:	Household	Date File:	TZY3.HH.Consumption
Unique Identifier:	y3_hhid	Additional Info:	Appendix B

Description:

Household consumption aggregates from NPS 2012/13.

Key Notes: None

Appendix A: Confidential Information, Geospatial Variables

To maintain the confidentiality of our respondents, certain parts of the NPS database have not been made publicly available. The confidential variables pertain to (i) names of the respondents in the household and community questionnaires, (ii) village and constituency names, (iii) descriptions of household dwelling and agricultural plot locations, (iv) phone numbers of household members and their reference contacts, (v) GPS-based household and agricultural plot locations, (vi) names of the children of the head/spouse living elsewhere, (vii) names of the deceased household members, (viii) names of individuals listed in the network roster, and (ix) names of field staff.

To add contextual information to the NPS data, a set of geospatial variables has been compiled using the georeferenced plot and household locations in conjunction with various geospatial databases that were available to the survey team. The table in Appendix J provides the name, type, source, reference period, resolution, description, and source of each variable.

The geovariables are stored in two data files, one at the household-level, and the other at the plot-level. The plot-level file, named **Plot.Geovariables**, contains several geospatial variables describing the physical landscape and plot distance to household. The observations are uniquely identified by the combination of **y3_hhid** and **plotnum**. The observations included in this file are rainy season plots that are owned and/or cultivated by the household and that have been visited for GPS-based land area measurement. The rest of the geovariables are stored in **HouseholdGeovariables.dta** and the observations are uniquely identified by **y3_hhid**.

To partially satisfy the demand for georeferenced household and community locations while preserving the confidentiality of sample household and communities, we have computed the average of household GPS coordinates in each EA, applied a random offset within a specified range of the average EA location (following the MeasureDHS methodology)¹⁰ and provided the off-set EA latitudes and longitudes in the table **HouseholdGeovariables.dta**. For households that have moved or split-off and are more than 5 km from their baseline location, the offset is with respect to the new household location.

More specifically, the coordinate modification strategy relies on random offset of cluster center-point coordinates (or average of household GPS locations by EA in NPS 2008/2009) within a specified range determined by an urban/rural classification. For urban areas a range of 0-2 km is used. In rural areas, where communities are more dispersed and risk of disclosure may be higher, a range of 0-5 km offset is used. An additional 0-10 km offset for 1% of rural clusters effectively increases the known range for all rural points to 10 km while introducing only a small amount of noise. Offset points are constrained at the district level, so that they still fall within the correct district for spatial joins, or point-in-polygon overlays. The result is a set of coordinates, representative at the EA level, that fall within known limits of accuracy. Users should take into account the offset range when considering different types of spatial analysis or queries with the data. Analysis of the spatial relationships between locations in close proximity would not be reliable. However, spatial queries using medium or low resolution datasets should be minimally affected by the offsets.

¹⁰ Information on the MeasureDHS methodology can be found at <http://spatialdata.dhsprogram.com/methodology/>

All geospatial variables have been produced by using the unmodified GPS data. These include extensive measures of distance, climatology, soil and terrain and other environmental factors. Time-series on rainfall and vegetation have also been used to describe the survey agricultural season relative to normal conditions. These variables are intended to provide some understanding of how geophysical characteristics vary at the landscape level.

Appendix B. Consumption Aggregate

This Appendix explains the steps involved in the construction of the consumption measure and describes the estimation of the nominal household consumption. The methodology used for the NPS2012/2013 is identical to the methodology used in the previous rounds (both 2008/2009 and 2010/2011) so that the aggregates are comparable over time.

1.0 The construction of the consumption aggregate

Creating the consumption aggregate is guided by theoretical and practical considerations. First, it must be as comprehensive as possible given the available information. Omitting some components assumes that they do not contribute to people's welfare or that they do not affect the ranking of the population. Second, market and non-market transactions are to be included, which means that purchases are not the sole component of the indicator. Third, expenditure is not consumption. For perishable goods, mostly food, it is usual to assume that all purchases are consumed. However, for other goods and services, such as housing or durable goods, corrections have to be made. Fourth, a common reference period should be chosen. Typically each consumption module in a survey has a different reference period, for instance, education could refer to the last 12 months, food could refer to the last week, and health could refer to the last month. Following common practice in Tanzania, consumption will be reported per 28 days.

1.1 Food component

A few general principles are applied in the construction of this component. First, all possible sources of consumption are included. This means that the food component comprises not only consumption from purchases in the market or from meals eaten away from home but also food that was produced by the household or received as a gift. Second, only food that was actually consumed, as opposed to total food purchases or total home-produced food, enters into the consumption aggregate. Third, non-purchased consumed food needs to be valued and included in the welfare measure. The NPS gathers information on the amount spent on purchases and on the quantity purchased for all food items. A measure of prices, or rather a measure of unit values, can be obtained by dividing the expenditure by the quantity and can be used to value own-consumption or food received as a gift.

1.2 Non-food component

Data on an extensive range of non-food items are usually available: utilities such as water, kerosene, electricity, health, transportation, communications, recreation, education, furnishings, personal care, etc. Unlike food, the NPS only collects data on purchases of non-food items, that is, the survey assumes that the consumption of non-food goods and services coming from own-production, from gifts or from other sources is negligible and can be ignored. In addition, the NPS does not gather information on quantities purchased because most non-food items are too heterogeneous to try to calculate prices.

Each non-food component is associated with a particular reference period, which reflects the frequency of that purchase or consumption. For instance, expenses on public transportation are collected for the last seven days, expenses on mobile phones and personal care are collected for the last month, and expenses on furnishings and small appliances for the last twelve months.

The information about some non-food goods and services needs to be excluded from the consumption aggregate because those items are not consumption. Payments of mortgages or debts are financial transactions and not consumption. Losses to theft are neither expenditure nor consumption. Remittances to other households are expenditures but not consumption. Expenditures on marriages, dowries, births and funerals are consumption but given their sporadic nature and the fact that the reported amounts are typically rather large, this consumption is left out to avoid overestimating the true level of welfare of the household.

1.3 Durable goods

Ownership of durable goods could be an important component of the welfare of the households. Given that these goods last for many years, the expenditure on purchases is not the proper indicator to consider. The right measure to estimate, for consumption purposes, is the stream of services that households derive from all durable goods in their possession over the relevant reference period. This flow of utility is unobservable but it can be assumed to be proportional to the value of the good. Information on the number of durable goods owned, their age, and their value (current or original) is required to estimate this component of consumption. Unfortunately, Rounds 1 and 2 of the NPS only provide data on the number of durable goods owned by the household, while Round 3 asks for the number owned, age, and value. Calculating this consumption component in previous rounds would have involved making assumptions about their age, their current value and their lifespan. This might have resulted in an extremely imprecise estimation, thus it was decided to exclude this component from the consumption aggregate in Round 1 and 2, and as this is a panel survey, the durables component was likewise excluded from Round 3 to maintain comparability.

1.4 Housing

Housing conditions are considered to be an essential part of people's living standards. Nonetheless, in most developing countries limited or non-existent housing rental markets pose a

difficult challenge for the estimation and inclusion of this component in the consumption aggregate. As in the case of durable goods, the objective is to measure the flow of services received by the household from occupying its dwelling. When a household lives in a rented dwelling, and provided that rental markets function well, that value would be the actual rent paid. If enough families rent dwellings, imputations can be made for those families that own their dwelling. It is common to include a question for homeowners asking them to provide the hypothetical rent they would pay for renting their dwelling. These self-reported rents can in principle be used to value the consumption the household gets from occupying its dwelling, but these amounts are not always credible or usable, particularly in rural areas where very few households rent. If imputed rents cannot be estimated, actual rents must be excluded from the consumption aggregate for the sake of consistency. Round 2 of the NPS did not collect information on imputed rents and given that the number of households living in rented dwellings is fairly small, this component was excluded from the consumption aggregate for that round. In Round 3, both actual and estimated rents are reported; however, this component was again excluded in order to maintain comparability between rounds.

2.0 Price adjustment

Nominal consumption of the household must be adjusted for cost-of-living differences. Temporal and spatial price adjustments are required to adjust consumption to real terms. Temporal differences are associated with the duration of the fieldwork (TSh 1,000 in October 2012 may not have the same value as in August 2013) as well as with the different recall periods (TSh 1,000 spent in the last month may not have the same value as in the last quarter or in the last year). Spatial differences are associated with the location of households interviewed in the survey (the purchasing power of TSh 1,000 in Dar es Salaam may be different than in Ruvuma).

The price index required to adjust nominal consumption could come partly or fully from the NPS. A price index is a combination of prices and budget shares in a base and a comparison period. The budget shares are the weights that each commodity has in the index and are equivalent to their share in the cost of the bundle being analysed. The NPS can provide information on budget shares for all items, but information on prices (unit values) only for food items. Two possible price indices could be constructed: a price index based only on food items (the assumption would be that non-food items show the same temporal and spatial differences than food items) or a price index that takes into account both food and non-food by combining information from the survey (food prices and weights for food and non-food items) and the official consumer price index (non-food prices).

Fisher price indices based only on food items were employed to adjust the nominal consumption aggregate for spatial and temporal price differences. Fisher price indices do a better job than Laspeyres or Paasche price indices at capturing differences in consumption patterns across domains as a consequence of differences in relative prices. They also avoid overstating or understating the true inflation (as would be the case with Laspeyres and Paasche respectively).¹¹ Price indices were estimated by stratum and quarter (a period of three consecutive months) and the base period comprises the entire period of each round of the NPS – that is, price indices were

¹¹ See Deaton and Tarozzi (2000).

calculated separately for each round. A price index by stratum and month would have been ideal, but complications arose with the sample size because in some combinations of stratum and month few households were interviewed. Price indices by stratum and quarter might not be as precise as price indices by stratum and month but they provide more robust results. Fisher price indices by stratum and quarter were constructed using the following formula:

$$F_i = \sqrt{L_i P_i}$$

where i is a combination of stratum and quarter, L refers to a Laspeyres price index and P refers to a Paasche price index. The Laspeyres and Paasche price indices are defined as

$$L_i = \sum_{k=1}^n w_{0k} \left(\frac{p_{ik}}{p_{0k}} \right), P_i = \left[\sum_{k=1}^n w_{ik} \left(\frac{p_{ik}}{p_{0k}} \right)^{-1} \right]^{-1}$$

where w_{0k} is the average household budget share of item k in the country, w_{ik} is the average household budget share of item k in stratum and quarter i , p_{0k} is the national median price of item k and p_{ik} is the median price of item k in stratum and quarter i .

Food items that had been purchased by at least 10 households by stratum and quarter were included in the construction of the price indices. Residual or catch-all food categories were also excluded because their unit values effectively mix several items. The share of the bundle considered for the price indices with respect to total food consumption is similar in both rounds of the NPS: it stands at around 67% at the national level and goes from 63% in rural mainland to more than 80% in Dar es Salaam and Zanzibar. Median unit values were estimated for the price indices because the median is less sensitive to outliers than the mean.

Table 2.1 shows the Fisher food price indices for each round of the NPS. Spatial price differences across strata remain fairly constant over time. The most expensive stratum is Dar es Salaam whereas the cheapest is rural areas in mainland. The cost of living in other urban areas in mainland and Zanzibar is relatively similar. Temporal price differences across quarters are noticeably larger during the NPS 2010/2011, thus reflecting a higher inflation in the second round compared to the first round.

Table 2.1: Fisher food price indices by stratum and quarter, NPS 2008/2009, NPS 2010/2011, NPS 2012/2013

NPS 2008/2009	Oct-Dec 2008	Jan-Mar 2009	Apr-Jun 2009	Jul-Sep 2009
Dar es Salaam	1.08	1.18	1.20	1.15
Other urban	1.00	1.04	1.04	1.04
Rural	0.92	0.86	0.92	0.96
Zanzibar	1.03	1.06	1.07	1.07
NPS 2010/2011	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	Jul-Sep 2011
Dar es Salaam	1.05	1.14	1.17	1.18
Other urban	0.90	0.97	1.06	1.08
Rural	0.87	0.86	0.98	1.02
Zanzibar	0.89	0.98	1.06	1.07
NPS 2012/2013	Oct-Dec 2012	Jan-Mar 2012	Apr-Jun 2013	Jul-Sep 2013
Dar es Salaam	1.12	1.17	1.13	1.07
Other urban	0.99	1.04	1.02	0.93
Rural	0.95	0.94	1.00	0.93
Zanzibar	0.88	0.91	0.93	0.99

Updating monetary figures across rounds of the NPS

Price indices will also be required to update monetary figures across rounds of the NPS. The price indices from Table 1 are used to adjust nominal consumption for cost of living differences within each round of the NPS. Yet it would not be correct to compare real consumption at NPS 2008/09 prices with real consumption at NPS 2010/11 or NPS 2012/2013 prices.

Fisher price indices based only on food items were employed to adjust consumption for spatial and temporal price differences across rounds of the NPS. It was assumed that non-food goods and services show the same temporal and spatial price differences across rounds as food items. Price indices were estimated for the entire country and for the full extent of each round: in the case of the NPS 2012/2013, the base period is the 12 months of the NPS 2010/2011 and the comparison period is the 12 months of the NPS 2012/2013.

Food items that had been purchased by at least 50 households in the country were included in the construction of the price indices. As with the previous price indices, residual food categories were also excluded and median rather than mean unit values were used. The share of the bundle considered for the price indices with respect to total food consumption is similar in both rounds of the NPS: it stands at around 98 percent. The Fisher food price index across the NPS 2010/2011 and the NPS 2012/2013 is estimated at 1.34, that is, the cost of an average food bundle consumed in the country increased by 34% between rounds of the NPS. This inflation will be employed to adjust the consumption aggregate and the poverty lines across the NPS 2010/2011 and the NPS 2012/2013.

3.0 Household composition adjustment

The final step in constructing the welfare indicator involves going from a measure of standard of living defined at the household level to another at the individual level. Ultimately, the concern is to make comparisons across individuals and not across households. Two types of adjustments have to be made to correct for differences in composition and size. The first relates to demographic composition. Household members have different needs based mainly on their age and gender, although other characteristics can also be considered. Equivalence scales are the factors that reflect those differences and are used to convert all household members into “equivalent adults”. For instance, children are thought to need a fraction of what adults require, thus if a comparison is made between two households with the same total consumption and equal number of members, but one of them has children while the other is comprised of only adults, it could be expected that the former will have a higher individual welfare than the latter. Unfortunately there is no agreement on a consistent methodology to calculate these scales. Some are based on nutritional grounds, but while a child may need only 50% of the food requirements of an adult, it is not clear why the same scale should be carried over non-food items. It may very well be the case that the same child requires a larger proportion than the adult in education or clothing.¹²

The second adjustment focuses on the economies of scale in consumption within the household. The motivation for this is the fact that some of the goods and services consumed by the household have characteristics of “public goods”. A good is said to be public when its consumption by a member of the household does not necessarily prevent another member from consuming it as well. Examples of these goods could be housing and durable goods. For example, one member watching television does not preclude another from watching too. Larger households may need to spend less to be as well-off as smaller ones. Hence, the bigger the share of public goods in total consumption, the larger the scope for economies of scale. On the other hand, private goods cannot be shared among members – once one household member has consumed them, no other member can. Food is the classic example of a private good and, for instance, in poor economies, where food represents a sizeable share of the household budget, little room exists for economies of scale.

Poverty analysis in Tanzania employs an adult-equivalent scale to implement these two adjustments (see Table 3.1). In general, children are thought to consume less than adults and women less than men. An alternative and common practice would have been to use a per capita

¹² See Deaton and Muellbauer (1986) or Deaton (1997).

adjustment for household composition. This is a special case of both adjustments and implies that children consume as much as adults and there is no room for economies of scale. In other words, all members within the household consume equal shares of the total consumption and costs increase in proportion to the number of people in the household. In general, per capita measures will underestimate the welfare of households with children with respect to families with no children, and the welfare of large households with respect to families with a small number of members.

Table 3.1: Adult-equivalent scale by gender and age

Age (years)	Male	Female
0-2	0.40	0.40
3-4	0.48	0.48
5-6	0.56	0.56
7-8	0.64	0.64
9-10	0.76	0.76
11-12	0.80	0.88
13-14	1.00	1.00
15-18	1.20	1.00
19-59	1.00	0.88
60 and more	0.80	0.72

Appendix C: Tanzanian Educational System

Tanzania has 13 years of formal schooling – D1 to D7 and F1 to F6.

D1 - Standard I (1st year)

D2 - Standard II (2nd year)

D3 - Standard III (3rd year)

D4 - Standard IV (4th year)

D5 - Standard V (5th year)

D6 - Standard VI (6th year)

D7 - Standard VII (7th year)

F1 - Form I (8th year)

F2 - Form II (9th year)

F3 - Form III (10th year)

F4 - Form IV (11th year)

F5 - Form V (12th year)

F6 - Form VI (13th year)

Prior to independence, there used to be a D8 – Grade 8. Additionally, all classes used to be taught in English but following independence, the Tanzanian primary education system switched

to being based in Swahili. Until the early 1970s, a student was required to take an exam after Standard IV in order to proceed to Standard V.

For a student to proceed to a government secondary school, the student has to receive a passing grade on the Primary School Leaving Exam, which is taken after Standard VII. Otherwise, the student can continue education in a private secondary school.

If an individual does not proceed to Form I (F1), they can take the MS+ Course. This is a vocational course – for jobs such as carpentry - that ranges from three months to a year. For a student to proceed to Form V (F5), they must take the Form IV (F4) national level exam, which is also known as O+. It is important to note that the O+ does not constitute an extra year school. It is simply a required final exam an individual must take to advance educationally. So an individual could have finished Form IV (F4) but have failed the O+, thus not proceeding to Form V (F5). Students must also take a national level exam, A+, after completing Form VI (F6). If they pass the A+ exam with a certain grade, they go directly to University (U1 through U5).

If one does not pass the O+ exam, one can take a certificate course at a technical school.

If one does not pass the A+ exam, one can do the Diploma course or choose to not pursue further education. If the individual completes the Diploma course, they can then enroll into University.

U1 – 14th year
U2 – 15th year
U3 – 16th year
U4 – 17th year
U5 – 18th year
U5+ -- 18th plus year

The Diploma course can range from one to three years. Acquiring a Diploma degree in Tanzania can qualify an individual to be a primary school teacher. However, participating in the Diploma course does not technically add additional years of education to an individual's record. This is because universities treat A+ certification and Diploma's equally for admission. Therefore, to calculate the number of educational years an individual, who attended the Diploma course, has is to add one year to their current university level (U1 through U5+). For example, a student with a Diploma who is in U2 would have 16 years of schooling.

Appendix D: Description of the Tanzania Standard Classification of Occupation (TASCO)

In Section E of the Household Questionnaire (HH_SEC_E.dta), the TASCO codes are used for questions 16, 31, and 45. Respondents were asked to describe what kind of job/work they did. Based off the respondent's description, the TASCO codes were assigned. Depending on the specificity of the job/work description affects if there is a two or three digit TASCO code. Respondents were asked to be specific as possible but in some cases, their responses did not

allow for a three digit TASC0 code to be assigned. The following list is all of the potential TASC0 codes and those used within the survey.

MAJOR GROUP 1: LEGISLATORS, ADMINISTRATORS AND MANAGERS

11 Legislators and Administrators

- 111 Legislators
- 112 Senior Government Executive
- 113 Village Leaders
- 114 Senior Administrators of Special-Interest Organizations

12 Company Directors and Corporate Managers

- 121 Company Directors and Non-Government Chief Executives
- 122 Specialised Managers and Senior Administrators
- 123 Production and Operations Managers and Senior Administrators

13 Small Business Managers and Managing Supervisors

- 131 Small Business Managers and Managing Supervisors

MAJOR GROUP 2: PROFESSIONALS

21 Physical, Mathematical, and Engineering Science Professionals

- 211 Physical Scientists and Related Professionals
- 212 Mathematicians, Statisticians, and Related Professionals
- 213 Computing Professionals
- 214 Architects, Engineers, and Related Professionals

22 Life Science and Health Professionals

- 221 Life Science Professionals
- 222 Medical and Health Professionals (Except Nurses)
- 223 Nursing Professionals

23 Teaching Professionals

- 231 College, University, and Higher Education Teaching Professionals
- 232 Secondary Education Teaching Professionals
- 239 Other Teaching and Related Professionals

24 Other Professionals

- 241 Business and Administrative Professionals
- 242 Legal Professionals
- 243 Archivists, Librarians, and Related Information Professionals
- 244 Social and Related Science Professionals
- 245 Artistic Professionals
- 246 Religious Professionals

MAJOR GROUP 3: TECHNICIANS AND RELATED PROFESSIONALS

31 Physical, Mathematical, and Engineering Science Associate Professionals

- 311 Physical, Science, and Engineering Technicians
- 312 Computer Assistants and Equipment Controllers
- 313 Optical and Electronic Equipment Controllers
- 314 Ship and Aircraft Controllers and Technicians
- 315 Building, Safety, Health, and Quality Inspectors

- 32 Life Science and Health Associate Professionals
 - 321 Life Science Technicians and Related Workers
 - 322 Modern Medicine and Health Associate Professionals (Except Nurses)
 - 323 Nursing and Midwifery Associate Professionals
 - 324 Traditional Medicine Practitioners and Faith Healers
- 33 Teaching Associate Professionals
 - 331 Secondary Education Teachers, Associate Professionals
 - 332 Technical/Vocational Education Teachers
 - 333 Primary Education Teachers
 - 334 Pre-Primary Education Teachers
 - 335 Special Education Teachers, Associate Professionals
 - 339 Other Teaching Associate Professionals
- 34 Other Associate Professionals
 - 341 Finance and Sales Associate Professionals
 - 342 Trade Brokers and Business Services Agents
 - 343 Administrative Associate Professionals
 - 344 Government Associate Professionals
 - 345 Social Work Associate Professionals
 - 346 Creative and Performing Art, and Artistic Entertainment, and Sports Associate Professionals
 - 347 Religious Associate Professionals
 - 348 Other Associate Professionals

MAJOR GROUP 4: CLERKS

- 41 Office Clerks
 - 411 Secretaries, Keyboard Operators, and Registry Assistants
 - 412 Numerical Clerks
 - 413 Material Recording and Transport Clerks
 - 414 Library, Mail, and Related Clerks
 - 415 Other Office Clerks
- 42 Customer Service Clerks
 - 421 Cashiers, Tellers, and Related Clerks
 - 422 Client Information Clerks and Telephone Operators

MAJOR GROUP 5: SERVICE WORKERS AND SHOP SALES WORKERS

- 51 Personal Service Workers
 - 511 Travel Attendants and Guides
 - 512 Housekeeping and Restaurant Services Workers, Institutional
 - 513 Housekeeping and Restaurant Services Workers, Domestic
 - 514 Personal Care Workers
 - 515 Astrologers, Fortune-Tellers, and Related Workers
 - 516 Other Personal Service Workers
- 52 Protective Service Workers
 - 520 Protective Service Workers
 - 53 Salespersons, Demonstrators, and Models
 - 531 Salespersons and Demonstrators

- 532 Stall and Market Salespersons
- 533 Fashion and Other Models

MAJOR GROUP 6: SKILLED AGRICULTURAL AND FISHERY WORKERS

- 61 Skilled Agricultural and Fishery Workers
 - 611 Farmers and Crop Skilled Workers
 - 612 Animal Producers and Skilled Workers
 - 613 Forestry and Related Skilled Workers
 - 614 Fishery Workers, Hunters, and Trappers
- 62 Subsistence, Agricultural, Forestry, Fishery, and Related Workers
 - 621 Subsistence Agricultural, Forestry, Fishery, and Related Workers

MAJOR GROUP 7: CRAFT AND RELATED WORKERS

- 71 Extraction and Building Trades Workers
 - 711 Miners and Blasters Stone Cutters and Carvers
 - 712 Building Frame and Related Trades Workers
 - 713 Building Finishers and Related Trades Workers
 - 714 Painters, Structural Cleaners, and Related Workers
- 72 Metal and Machinery Trades Workers
 - 721 Metal Moulders, Welders, Sheet-Metal Workers, Structural Metal Preparers, and Related Workers
 - 722 Blacksmiths, Toolmakers, and Related Workers
 - 723 Machinery Mechanics and Fitters
 - 724 Electrical and Electronic Equipment Fitters, Installers, and Repairers
- 73 Precision, Handicraft, Printing, and Related Trades Workers
 - 731 Precision Workers in Metal, Diamonds, Plastics, Rubber, Paper, and Other Related Materials
 - 732 Potters, Glass Formers, and Related Workers
 - 734 Handicraft Workers in Wood, Textile, Leather, and Related Materials
 - 735 Printing and Related Trades Workers
- 74 Other Crafts and Related Trades Workers
 - 741 Food and Related Products Procession Trades Workers
 - 742 Cabinet Makers, Wood Treaters, and Related Trades Workers
 - 743 Textile and Garment Trades Workers
 - 744 Pelt, Leather, and Shoemaking Trades Workers
 - 749 Other Craft and Related Trades Workers, NEC

MAJOR GROUP 8: PLANT AND MACHINE OPERATORS AND ASSEMBLERS

- 81 Industrial Plant Operators
 - 811 Mining and Mineral-Processing Plant Operators
 - 812 Metal-Processing Plant Operators
 - 813 Glass and Ceramics Kiln and Related Plant Operators
 - 814 Wood-Processing and Papermaking Plant Operators
 - 815 Chemical-Processing Plant Operators
 - 816 Power-Generating and Related Plant Operators
- 82 Stationary Machine Operators and Assemblers

- 821 Metal and Mineral Products Processing Machine Operators
- 822 Chemical Products Machine Operators
- 823 Rubber, Plastics, and Leather Products Machine Operators
- 824 Wood Products Machine Operators
- 825 Printing, Binding, and Paper Products Machine Operators
- 826 Textile Products Machine Operators
- 827 Food and Related Products Processing Machine Operators
- 828 Assemblers
- 829 Other Stationary Machine Operators and Assemblers
- 83 Drivers and Mobile Machinery Operators
 - 831 Railway Engine Drivers and Related Workers
 - 832 Motor Vehicle Drivers and Riders
 - 833 Agricultural, Earthmoving, Lifting, and Other Mobile Material-Handling Equipment Operators
 - 834 Ships Deck Crew and Related Workers

MAJOR GROUP 9: ELEMENTARY OCCUPATIONS

- 91 Sales and Services Elementary Occupations
 - 911 Street Vendors and Related Workers
 - 912 Shoe Cleaning and Other Street Services Elementary Occupations
 - 913 Domestic Helpers and Cleaners and Related Workers
 - 914 Building Caretakers and Window Cleaners
 - 915 Messengers, Watchers, and Related Workers
 - 916 Garbage Collectors and Related Labourers
 - 919 Other Sales and Services Elementary Occupations
- 92 Agricultural, Forestry, Fishery, and Related Labourers
 - 921 Agricultural, Forestry, and Fishery Labourers
 - 93 Labourers in Mining, Construction, Manufacturing, and Transport
 - 931 Mining and Construction Labourer
 - 932 Manufacturing Labourers
 - 933 Transport Labourers
 - 934 Hand Packers, Weighers, and Related Elementary Workers

MAJOR GROUP 0: DEFENCE FORCES

- 01 Defense Forces
 - 011 Tanzania People's Defense Forces
 - 012 National Service (JKT)

MAJOR GROUP X: WORKERS NOT CLASSIFIED BY OCCUPATIONS

- XI New Workers Seeking Employment
 - X11 Fresh Graduates and Under-Graduates Seeking Employment
 - X12 Fresh Secondary School Leavers and Dropouts Seeking Employment
 - X13 Fresh Primary School Leavers and Dropouts Seeking Employment
 - X14 Fresh Literates Seeking Employment
- X2 Workers Reporting Occupations Unidentifiable or Inadequately Described
 - X21 Workers Reporting Occupations Unidentifiable or Inadequately Described

X3 Workers Not Reporting Any Occupation
X31 Workers Not Reporting Any Occupation

Appendix E: List of International Standard Industry Codes (ISIC)

In Section E of the Household Questionnaire (HH_SEC_E.dta), the ISIC codes are used for questions 17, 32, 46, and 53. Respondents were asked to describe their association to different trades and businesses. Based off the respondent's description, the ISIC codes were assigned. Depending on the specificity of trade/business description affects if there is a two, three, or four digit ISIC code. Respondents were asked to be specific as possible but in some cases, their responses did not allow for a three or four digit ISIC code to be assigned. The following list is all of the potential ISIC codes and those used within the survey.

A - *Agriculture, forestry and fishing*

- 01 - Crop and animal production, hunting and related service activities
- 02 - Forestry and logging
- 03 - Fishing and aquaculture

B - *Mining and quarrying*

- 05 - Mining of coal and lignite
- 06 - Extraction of crude petroleum and natural gas
- 07 - Mining of metal ores
- 08 - Other mining and quarrying
- 09 - Mining support service activities

C - *Manufacturing*

- 10 - Manufacture of food products
 - 101 - Processing and preserving of meat
 - 102 - Processing and preserving of fish, crustaceans and mollusks
 - 103 - Processing and preserving of fruit and vegetables
 - 104 - Manufacture of vegetable and animal oils and fats
 - 105 - Manufacture of dairy products
 - 106 - Manufacture of grain mill products, starches and starch products
 - 107 - Manufacture of other food products
 - 108 - Manufacture of prepared animal feeds
- 11 - Manufacture of beverages
- 12 - Manufacture of tobacco products
- 13 - Manufacture of textiles
- 14 - Manufacture of wearing apparel
- 15 - Manufacture of leather and related products
- 16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 17 - Manufacture of paper and paper products
- 18 - Printing and reproduction of recorded media
- 19 - Manufacture of coke and refined petroleum products
- 20 - Manufacture of chemicals and chemical products
- 21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations
- 22 - Manufacture of rubber and plastics products
- 23 - Manufacture of other non-metallic mineral products
- 24 - Manufacture of basic metals

- 25 - Manufacture of fabricated metal products, except machinery and equipment
- 26 - Manufacture of computer, electronic and optical products
- 27 - Manufacture of electrical equipment
- 28 - Manufacture of machinery and equipment n.e.c.
- 29 - Manufacture of motor vehicles, trailers and semi-trailers
- 30 - Manufacture of other transport equipment
- 31 - Manufacture of furniture
- 32 - Other manufacturing
- 33 - Repair and installation of machinery and equipment
- D - *Electricity, gas, steam and air conditioning supply*
 - 35 - Electricity, gas, steam and air conditioning supply
- E - *Water supply; sewerage, waste management and remediation activities*
 - 36 - Water collection, treatment and supply
 - 37 - Sewerage
 - 38 - Waste collection, treatment and disposal activities; materials recovery
 - 39 - Remediation activities and other waste management services
- F - *Construction*
 - 41 - Construction of buildings
 - 42 - Civil engineering
 - 43 - Specialized construction activities
- G - *Wholesale and retail trade; repair of motor vehicles and motorcycles*
 - 45 - Wholesale and retail trade and repair of motor vehicles and motorcycles
 - 46 - Wholesale trade, except of motor vehicles and motorcycles
 - 47 - Retail trade, except of motor vehicles and motorcycles
 - 471 - Retail sale in non-specialized stores
 - 472 - Retail sale of food, beverages and tobacco in specialized stores
 - 473 - Retail sale of automotive fuel in specialized stores
 - 474 - Retail sale of information and communications equipment in specialized stores
 - 475 - Retail sale of other household equipment in specialized stores
 - 476 - Retail sale of cultural and recreation goods in specialized stores
 - 477 - Retail sale of other goods in specialized stores
 - 478 - Retail sale via stalls and markets
 - 479 - Retail trade not in stores, stalls or markets
- H - *Transportation and storage*
 - 49 - Land transport and transport via pipelines
 - 491 - Transport via railways
 - 492 - Other land transport
 - 4921 - Urban and suburban passenger land transport
 - 4922 - Other passenger land transport
 - 4923 - Freight transport by road
 - 493 - Transport via pipeline
 - 50 - Water transport
 - 51 - Air transport
 - 52 - Warehousing and support activities for transportation
 - 53 - Postal and courier activities
- I - *Accommodation and food service activities*

- 55 – Accommodation
- 56 - Food and beverage service activities
 - 561 - Restaurants and mobile food service activities
 - 562 - Event catering and other food service activities
 - 563 - Beverage serving activities
- J - *Information and communication*
 - 58 - Publishing activities
 - 59 - Motion picture, video and television programme production, sound recording and music publishing activities
 - 60 - Programming and broadcasting activities
 - 61 – Telecommunications
 - 62 - Computer programming, consultancy and related activities
 - 63 - Information service activities
- K - *Financial and insurance activities*
 - 64 - Financial service activities, except insurance and pension funding
 - 65 - Insurance, reinsurance and pension funding, except compulsory social security
 - 66 - Activities auxiliary to financial service and insurance activities
- L - *Real estate activities*
 - 68 - Real estate activities
- M - *Professional, scientific and technical activities*
 - 69 - Legal and accounting activities
 - 70 - Activities of head offices; management consultancy activities
 - 71 - Architectural and engineering activities; technical testing and analysis
 - 72 - Scientific research and development
 - 73 - Advertising and market research
 - 74 - Other professional, scientific and technical activities
 - 75 - Veterinary activities
- N - *Administrative and support service activities*
 - 77 - Rental and leasing activities
 - 78 - Employment activities
 - 79 - Travel agency, tour operator, reservation service and related activities
 - 80 - Security and investigation activities
 - 81 - Services to buildings and landscape activities
 - 82 - Office administrative, office support and other business support activities
- O - *Public administration and defense; compulsory social security*
 - 84 - Public administration and defense; compulsory social security
- P – *Education*
 - 85 - Education
- Q - *Human health and social work activities*
 - 86 - Human health activities
 - 87 - Residential care activities
 - 88 - Social work activities without accommodation
- R - *Arts, entertainment and recreation*
 - 90 - Creative, arts and entertainment activities
 - 91 - Libraries, archives, museums and other cultural activities
 - 92 - Gambling and betting activities

93 - Sports activities and amusement and recreation activities

S - *Other service activities*

94 - Activities of membership organizations

95 - Repair of computers and personal and household goods

96 - Other personal service activities

T - *Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use*

97 - Activities of households as employers of domestic personnel

98 - Undifferentiated goods- and services-producing activities of private households for own use

U - *Activities of extraterritorial organizations and bodies*

99 - Activities of extraterritorial organizations and bodies

Appendix F: Main Animal Diseases & Key Terms

DISEASE NAME	DEFINITION	HOSTS AFFECTS	CLINICAL SIGNS / SYMPTONS
FMD Foot and Mouth Disease	A highly contagious viral disease	Cattle, sheep, goats, pigs and water buffalos	Fever, ulcerations in the mouth, nose, muzzle, feet, teats. Drooling of saliva can also be observed
CBPP (Contagious Bovine Pleuro-pneumonia)	A highly infectious acute/sub-acute/chronic disease affecting lungs and occasionally joints	Cattle	Fever, cough, increased respiratory rate (in sequence).
CCPP (Contagious Caprine Pleuro-pneumonia)	An acute highly contagious disease	Goats	Fatal weeping pneumonia, labored breathing, death within 7-10 days after onset of clinical signs.
LSD Lumpy Skin Disease	It is a viral disease transmitted by insects.	Cattle	Persistent fever, generalized skin nodules, edema of corresponding lymph nodes, hair loss.
Anthrax	It is an infectious but non- contagious	All domestic animals and buffalo	Sudden death, fever, severe diarrhea with blood, bloody nasal discharge.
Blackleg	Blackleg is a highly fatal disease of young cattle	Young cattle	Lameness, loss of appetite, rapid breathing and the animal is usually depressed and has a high fever. Characteristic swellings develop in the hip, shoulder, chest, back, neck or elsewhere
PPR (Peste des petits ruminants)	An acute viral Rinderpest like disease of sheep and goats	Goats and sheep	Similar to those of rinderpest in cattle: Respiratory difficulty with cough, high fever, weakness, dull coat, nasal discharge, severe bloody diarrhea.
Sheep and goat pox	Contagious viral disease of small ruminants, There is a high mortality rate in susceptible populations	Small ruminants (sheep and goats)	Onset of fever followed by erythematous macules that develop into papules. Lesions may also develop on the mucous membrane and on internal organs, causing systemic signs (respiratory signs, diarrhea, depression, emaciation, abortion and sometimes death).
Newcastle disease	A highly contagious zoonotic poultry disease	Chicken and other domestics fowls and wild avian species.	High mortality above 30%, characterized by respiratory and nervous symptoms,
Fowl pox	Fowlpox is a relatively low-spreading viral disease of poultry	Chicken and other domestics fowls and wild avian species.	skin lesions and/or plaques in the pharynx
Avian flu	Avian influenza is a highly-contagious flu infection in birds. It is a zoonotic disease	Chicken and other domestics fowls and wild avian species.	Decrease in bird's activities, decline in egg production, swelling of the face with blue colored combs and wattles, breathing problems, diarrhoea, muscle paralysis and sudden death.
IBD (Infectious Bursal Disease) / Gumboro	A highly contagious disease of young chicks	Chicken	Mortality at 3-6 weeks and can rise up to 75%. Birds are depressed, watery diarrhea.

KEY TERMS	
Contagious	Spread by means of contact.
Infectious	Spread by means of virus, bacteria or a parasite.
Fatal	Leads to death.
Zoonotic disease	An infectious disease that can be transmitted to humans and vice versa.
Curative	care provided to improve a situation (especially medical procedures or applications that are intended to relieve illness or injury)

Appendix G: Animal Breeding Types

CODE	BREEDING TYPE	DESCRIPTION
1	None	No particular strategy is adopted for the breeding of animals. Animals are allowed to mate
2	Natural mating, sire selected from within herd	Animals mate naturally, but specific male(s) are selected from within the herds for mating/reproduction.
3	Natural mating, sire purchased	Animals mate naturally, but specific male(s) are purchased specifically for mating/reproduction.
4	Natural mating, sire exchanged	Animals mate naturally, but male(s) are exchanged with other households specifically for mating/reproduction.
5	Artificial insemination	The technique of placing semen from the male into the reproductive tract of the female by means other than natural service.
6	Dam purchased	Animals mate naturally, but specific female(s) are purchased specifically for mating/reproduction.
7	Dam exchanged	Animals mate naturally, but specific female(s) are exchanged with other households specifically for mating/reproduction.
8	Non-breeding males castrated	Males that are not preferred for breeding/reproduction are castrated to prevent them from mating.

Appendix H: Fishing Gear

GEAR ID	GEAR	DESCRIPTION
1 & 2	Beach Seines	These include Mosquito net, Chambo seine, Kambuzi seine, and Matemba seine. Similar in construction except for headline length and mesh size.
3	Long-lines:	Passive gear consists of a strong length of cord with mono-filament traces and hooks attached at intervals. The hooks are baited with pieces of fish. The long-line is then weighted to the bottom and is generally set overnight and lifted following morning. Long-line hooks are generally larger than those on handlines. Handlines: Consist of mono-filament nylon with hooks attached and at the bottom of the line a weight is attached. The hooks are baited with earthworms or Usipa depending on fish being targeted.
4	Gill nets	Rectangular gear usually surface set or bottom set and used normally as passive gear. Set in the morning and retrieved the following morning. But at times this net may be used as active gear in open-water operated like <i>chilimira</i> net; slowly dragged behind two boats; set in shallow water and fish chased into it by pounding the water- <i>chiombera</i> .
5	Fish Traps Mono	Generally funnel-valve made of bamboo set in shallow river or lake areas to catch <i>chambo</i> and predators like <i>Mlamba</i> overnight. The fish trap may be used with a weir or fence, which serves to guide the fish into the trap.
6	Cast Net	Conical shape with footrope weighted with small stones. Generally used by two people, one paddles the other casts while standing in front of the canoe indicating to the paddler in which direction he wishes to be propelled. Immediately prior to the net being cast, the paddling ceases. As soon as the thrown net sinks to the bottom, the canoe is propelled forward so that the cast net is retrieved almost vertically.
7	Large Fish Trap	Wooden box with a lattice construction that allows water to pass through. The box has one entry point in the middle that allows fish to enter, but prevents them from leaving. A weight is attached to the box and food is kept inside to attract the fish.
8	Night boat fishing	One large boat is surrounded by smaller boats. The smaller boats put out lanterns to attract the fish toward the larger boat to be caught.

Appendix I: List of Definitions

GULIO (local market)

Gulio is a local market mostly at the Village level which can occur at any frequency – once a week, twice etc. One can get any sort of goods at a Gulio and it mostly operates in rural areas. Farmers get together at a certain place once a week and sell their produce. Note that these sellers travel across the country – it could be that every Monday they operate in Village A, every Tuesday in Village B, every Wednesday in Village C and so on.

SOKO KUU (main market)

Soko kuu is the main market that people go to that usually operates daily and they operate at the village or ward level. Soko Kuu is the primary market for all goods. The difference between Soko Kuu and Gulio is that Soko Kuu operates daily while Gulio operates on a fixed schedule basis, which is why they are referred to as the Main Market.

SOKO (market)

Soko is a small market located at street corner that sells few items like vegetables, and some other household goods. Soko's are frequently found in Dar for example. Usually these markets do not carry high value goods and have fewer items than a Soko Kuu.

MNADA (auction)

Mnanda is an English auction for a very specific good – like a cow for example. A minimum price is set, beyond which the bidders can go up to any amount. The highest bidder wins. It is an open auction in the sense that all the bidders find out how much each is bidding and can competitively bid more.

M/BIASHARA BINAFSI (private business person)

This is usually a vendor or a hawker who sells goods by walking door to door – like cigarette/water sellers or vegetable vendors in Dar.

DUKANI/MCHUUZI (grocery local merchant)

This is a small shop owner around street corners that sell very specific items. This could be a shop for stationery, shop for buying everyday essentials like bread, toothpaste, etc... or even a medical shop. Dukani/Mchuuzi sell very specific goods and are fixed shops owned by merchants unlike the Biasharas who are travelers.

Appendix J: Geovariables Description

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
Distance	OpenStreetMaps, TANROADS	Household Distance to Main Road	dist01	Continuous	N/A	N/A	Household distance to nearest trunk road (as defined by TANROADS)	
	City population	Household Distance to Towns	dist02	Continuous	N/A	N/A	Household distance to nearest town of > 20,000 pop	http://www.citypopulation.de
	USAID FEWSNET	Household Distance to Key Market Centers	dist03	Continuous	N/A	N/A	Household distance to nearest major market (FEWSNET key market centers)	
	Tracks4Africa, roads, borders	Household Distance to Border Posts	dist04	Continuous	N/A	N/A	Household distance to nearest border post on main road	
	World Gazetteer Towns, Statoids	Household Distance to District Headquarters	dist05	Continuous	N/A	N/A	Household distance to the headquarters of the district of residence	www.statoids.com

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
Climatology	UC Berkeley	WorldClim Bioclimatic Variables	clim01	Continuous	1960-1990	0.008333 dd	Average annual temperature calculated from monthly climatology, multiplied by 10 (°C)	http://www.worldclim.org/bioclim
	UC Berkeley	WorldClim Bioclimatic Variables	clim02	Continuous	1960-1990	0.008333 dd	Average temperature of the wettest quarter, from monthly climatology, multiplied by 10. (°C)	http://www.worldclim.org/bioclim

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
	UC Berkeley	WorldClim Bioclimatic Variables	clim03	Continuous	1960-1990	0.008333 dd	Total annual precipitation, from monthly climatology (mm)	http://www.worldclim.org/bioclim
	UC Berkeley	WorldClim Bioclimatic Variables	clim04	Continuous	1960-1990	0.008333 dd	Precipitation of wettest month, from monthly climatology (mm)	http://www.worldclim.org/bioclim
	UC Berkeley	WorldClim Bioclimatic Variables	clim05	Continuous	1960-1990	0.008333 dd	Precipitation of wettest quarter, from monthly climatology (mm)	http://www.worldclim.org/bioclim

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
Landscape Typology	ESA and UC Louvain	GlobCover v 2.3	land01	Categorical	2009	0.002778 dd	Majority landcover class within approximately 1km buffer	http://ionia1.esrin.esa.int/
	ESA and UC Louvain	GlobCover v 2.3	land02	Continuous	2009	0.002778 dd	Percent under agriculture within approx 1 km buffer	http://ionia1.esrin.esa.int/
	IFPRI	IFPRI standardized AEZ based on elevation, climatology	land03	Categorical		0.008333 dd	Agro-ecological zones created using WorldClim climate data and 0.0833dd resolution LGP data from IIASA.	http://harvestchoice.org/producton/biophysical/agroecology
	WorldPop	Africa 2010 Demography (v ap10_180313)	land04	Categorical	2010	0.008333 dd	2010 Population Density Range (people per km2), with national totals adjusted to match UN population division estimates, 2012 revision	http://www.worldpop.org.uk/

Theme	Source	Dataset Title	Variable Name	Variable Type	Resolution	Description	Web
Soil & Terrain	NASA	SRTM 90m	soil01	Continuous	0.00833 dd	Average elevation (m) within 1 km block	ftp://xftp.jrc.it/pub/srtmV4/arca/sci/
	USGS	Slope (percent)	soil02	Continuous	0.008333 dd	Derived from 90m SRTM	http://pubs.usgs.gov/of/2007/1188/ , data provided USGS upon request
	AfSIS	Topographic Wetness Index	soil03	Continuous	0.000833 dd	Derived from modified 90m SRTM. Local upslope contributing area and slope are combined to determine the potential wetness index: WI = $\ln(A s / \tan(b))$ where A s is flow accumulation or effective drainage area and b is slope gradient.	http://www.ciesin.columbia.edu/afsis/bafsis_fullmap.htm#
	LSMS-ISA	Terrain Roughness	soil04	Categorical	0.000833 dd	Derived from 90m SRTM using Meybeck relief classes and 5x5 pixel neighborhood	
	FAO	Harmonized World Soil Database	soil05	Categorical	0.083333 dd	Nutrient availability	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	soil06	Categorical	0.083333 dd	Nutrient retention capacity	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	soil07	Categorical	0.083333 dd	Rooting conditions	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	soil08	Categorical	0.083333 dd	Oxygen availability to roots	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	soil09	Categorical	0.083333 dd	Excess salts	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	soil10	Categorical	0.083333 dd	Toxicity	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	soil11	Categorical	0.083333 dd	Workability (constraining field management)	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
Crop Season Parameters	NOAA CPC	Rainfall Estimates (RFE)	crops01	Continuous	2001-2013	0.1 dd	Average 12-month total rainfall (mm) for July-June	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	crops02	Continuous	2001-2013	0.1 dd	Average total rainfall in wettest quarter (mm) within 12-month periods from July-June	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	crops03	Continuous	2001-2013	0.1 dd	Average start of wettest quarter in dekads 1-36, where first dekad of July =1	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	crops04	Continuous	2011-2012	0.1 dd	12-month total rainfall (mm) in July-June, starting July 2011	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	crops05	Continuous	2011-2012	0.1 dd	Total rainfall in wettest quarter (mm) within 12-month periods starting July 2011	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	crops06	Continuous	2011-2012	0.1 dd	Start of wettest quarter in dekads 1-36, where first dekad of July 2011 =1	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	crops07	Continuous	2012-2013	0.1 dd	12-month total rainfall (mm) in July-June, starting July 2012	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	crops08	Continuous	2012-2013	0.1 dd	Total rainfall in wettest quarter (mm) within 12-month periods starting July 2012	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	crops09	Continuous	2012-2013	0.1 dd	Start of wettest quarter in dekads 1-36, where first dekad of July 2012 =1	ftp://ftp.cpc.ncep.noaa.gov/fews/newalgo_est_dekad/

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops10	Continuous	2001- 2013	0.004176 dd	Average total change in greenness (integral of daily EVI values) within primary growing season, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops11	Continuous	2001- 2013	0.004176 dd	Average timing of onset of greenness increase in day of year 1-356, where Jul 1 = 1, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops12	Continuous	2001- 2013	0.004176 dd	Average timing of onset of greenness decrease in day of year 1-356, where Jul 1 = 1, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops13	Continuous	2011- 2012	0.004176 dd	Total change in greenness (integral of daily EVI values) within primary growing season for July 2011 - Jun 2012, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops14	Continuous	2011- 2012	0.004176 dd	Onset of greenness increase in day of year 1-356, starting July 1 2011, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops15	Continuous	2011- 2012	0.004176 dd	Onset of greenness decrease in day of year 1-356, starting July 1 2011, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops16	Continuous	2012-2013	0.004176 dd	Total change in greenness (integral of daily EVI values) within primary growing season for July 2012- Jun 2013, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops17	Continuous	2012-2013	0.004176 dd	Onset of greenness increase in day of year 1-356, starting July 1 2012, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crops18	Continuous	2012-2013	0.004176 dd	Onset of greenness decrease in day of year 1-356, starting July 1 2012, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crop19	Continuous	2001-2013	0.004176 dd	Average EVI value at peak of greenness within growing season, starting July 1	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crop20	Continuous	2011-2012	0.004176 dd	EVI value at peak of greenness within growing season, starting July 1 2011, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University
	BU	MOD12Q2 (DOY 185) Land Cover Dynamics from MODIS	crop21	Continuous	2012-2013	0.004176 dd	EVI value at peak of greenness within growing season, starting July 1 2012, averaged by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005 , DOY185 version provided upon request from MODIS Land Cover Group at Boston University

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
Coordinates	LSMS-ISA	GPS Latitude Modified	lat_dd_mod	Continuous	2013	N/A	Coordinates of location, modified to preserve anonymity	
	LSMS-ISA	GPS Longitude Modified	lon_dd_mod	Continuous	2013	N/A	Coordinates of location, modified to preserve anonymity	
	LSMS-ISA	Distance to Baseline Location	distY1Y3	Continuous	2013	N/A	Distance to baseline location (km)	

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
Plot	LSMS-ISA	Plot Distance to Household	plot01	Continuous	2013	N/A	Coordinates of location, modified to preserve anonymity	
	UGSS	Plot Slope (percent)	plot02	Continuous		0.000833 dd	Average slope, derived from 90m SRTM	
	USGS	Plot Elevation (m)	plot03	Continuous	2013	0.000833 dd	Average elevation, derived from 90m SRTM	
	AfSIS	Plot Potential Wetness Index	plot04	Continuous		0.000833 dd		http://www.ciesin.columbia.edu/afsis/bafsis_fullmap.htm#

