FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

M&E GUIDANCE SERIES

Guidance for the Implementation of Zone of Influence Surveys for Feed the Future Target Countries

Endline/Round 1

January 2024

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ABBREVIATIONS

5DE	Five Domains of Empowerment
AAS	Annual Agricultural Survey
ADL	analytics, data, and learning
A-WEAI	Abbreviated Women's Empowerment in Agriculture Index
BHA	Bureau for Humanitarian Assistance
BMI	body mass index
COR	Contracting Officer's Representative
DEFF	design effect
DHS	Demographic and Health Survey
EA	enumeration area
FIES	Food Insecurity Experience Scale
FY	fiscal year
HAZ	height-for-age z-score
HWISE-4	Brief Household Water Insecurity Experiences
LSMS	Living Standards Measurement Study
MDD-W	Minimum Dietary Diversity—Women
MEL	monitoring, evaluation, and learning
MOE	margin of error
NSO	national statistics office
OCI	Office of Country Implementation
P2	phase two
P3	phase three
PBS	population-based survey
PPP	purchasing power parity
PPS	probability proportional to size
REFS	Bureau for Resilience, Environment, and Food Security
RFSA	Resilience Food Security Activity
RFZ	Resilience Focus Zone
SOW	scope of work
TA	technical advisor
USAID	United States Agency for International Development
WHZ	weight-for-height z-score
ZOI	Zone of Influence

1. INTRODUCTION

This document provides policy guidance and technical direction for planning and conducting the **first round** of the population-based survey (PBS) in the selected phase three Zones of Influence (P3-ZOIs) in the 20 countries selected as Feed the Future target countries under the Global Food Security Strategy fiscal year (FY) 2022–2026. It also provides guidance on conducting the **endline** ZOI PBS for relevant target countries[1] under Feed the Future phase two that are continuing as target countries under Feed the Future phase three.

The purpose of the first round of the Feed the Future P3-ZOI Survey, hereafter referred to as the P3-ZOI Round 1 Survey, is to establish and track levels of poverty, hunger, malnutrition, and related household characteristics in the selected P3-ZOIs and provide a basis against which to measure progress toward a 2030 performance target for increasing the proportion of women in Feed the Future ZOIs who consume a nutritious diet. The purpose of the phase two ZOI (P2-ZOI) Endline Survey is to measure the progress of poverty, food insecurity, and select nutrition indicators in P2-ZOIs since baseline and midline (where relevant) values were collected.[2]

The primary audiences for this document are United States Agency for International Development (USAID) Missions and in-country interagency partners, USAID Washington and interagency partners, the World Bank's Living Standards Measurement Study (LSMS) team, survey implementing organizations, and other stakeholders.

In an ongoing effort to continually improve the quality, reliability, and use of Feed the Future ZOI PBS data, this guidance addresses key challenges and lessons learned from a recent series of consultations with Missions and Feed the Future stakeholders who shared their experiences on managing and utilizing ZOI PBS data for decision-making purposes. The policy and technical guidance provided in this document reflect agreed-on changes to ZOI PBS requirements based on these lessons learned.

This guidance should be used in conjunction with the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026), which provides mandatory technical guides, templates, and tools to standardize data collection processes and ensure data quality.[3] These materials, combined with the close engagement of and technical advice from the Bureau for Resilience, Environment, and Food Security (REFS) Feed the Future Analytics, Data, and Learning (ADL) Division, and the collaboration of the World Bank LSMS implementation team, where applicable, are designed to support the guiding principles for implementing Feed the Future ZOI Surveys:

- Collection, analysis, and reporting of accurate, complete, and high-quality data
- Standardization of technical approaches and methods

[1] Not all phase two target countries continuing as target countries under phase three (e.g., Guatemala, Honduras, Nigeria) will be required to conduct an endline PBS.

[2] Most P2-ZOI Baseline Surveys were conducted in target countries between 2018 and 2020. Where relevant, P2-ZOI Midline Surveys were conducted between 2022 and 2023.

[3] All Feed the Future ZOI Survey Methods Toolkits can be found on www.agrilinks.org. Users accessing Toolkit materials will notice that technical guides, templates, and tools are now housed in a publicly accessible GitHub repository. The former Google Drive repository is no longer active. Users of the ZOI Survey Methods Toolkits are encouraged to register for a GitHub account to receive alerts when new Toolkit materials have been added or revised.

- Appropriate timing of survey implementation

Missions that want to deviate from the policy and technical direction contained in this guidance or in the manuals, templates, and tools contained in the Toolkit should consult with their ADL Survey Methods Advisor and their Office of Country Implementation (OCI) Monitoring, Evaluation, and Learning Technical Advisor (MEL TA).

Transitioning to ZOI Survey Rounds

Beginning in phase three, the Feed the Future ZOI PBS will be conducted in survey "rounds" and will no longer be referred to as a baseline, interim/midline, or endline ZOI PBS. Under previous ZOI PBS guidance, Missions were required to conduct surveys at baseline, interim/midline, and endline to align with program cycles under Feed the Future Country Plans. However, a number of constraints in aligning ZOI Survey implementation with program cycles led to a decision to transition to an approach that better reflects Feed the Future's need to track ZOI-level progress using a survey that cannot always be directly linked to the timing of a specific program or set of activities.

As this guidance document is both relevant and applicable for target countries conducting an Endline ZOI PBS for phase two or the first round of the P3-ZOI PBS, we continue to use established terminology for P2-ZOI Endline Surveys while transitioning to survey rounds for phase three (i.e., P3-ZOI Round 1 Surveys).

2. ZOI SURVEY DATA COLLECTION REQUIREMENTS

Feed the Future phase three target countries[4] are required to identify a ZOI, a focused geographic area where the U.S. Government investments are expected to have the most measurable and sustainable improvements in food security, resilience, and nutrition. In the selected P3-ZOI, Feed the Future target countries are required to collect representative PBS data to establish and track values for a set of required ZOI-level indicators, including one performance indicator, HL.9-d Percent of women of reproductive age consuming a diet of minimum diversity (or Minimum Dietary Diversity—Women [MDD-W]), which will be used to measure progress toward increasing the proportion of women in Feed the Future ZOIs who consume a nutritious diet.[5]

In addition, most Feed the Future phase two target countries continuing as target countries under phase three are expected to collect endline PBS data in their P2-ZOIs to track progress in poverty, food insecurity, and select nutrition indicators since baseline and midline (where relevant) values were collected. These data will be used to inform initiative-level analyses, assessing Feed the Future progress across phase two implementation, which was guided by the previous Global Food Security Strategy FY 2017–2021. For continuing target countries conducting both a P3-ZOI Round 1 and P2-ZOI Endline

[4] Phase three target countries include Bangladesh, Democratic Republic of the Congo, Ethiopia, Ghana, Guatemala, Honduras, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nepal, Niger, Nigeria, Rwanda, Senegal, Tanzania, Uganda, and Zambia.
[5] For performance monitoring purposes, Feed the Future target countries will be required to set 2030 ZOI-level targets for MDD-W. For countries with no P2-ZOI baseline data, targets for MDD-W will be set after P3-ZOI Round 1 data are available. For target countries with P2-ZOI baseline data, targets have already been set using P2-ZOI MDD-W estimates from the highest quintile of the asset-based wealth index. Changes in MDD-W will be measured and compared against set targets in subsequent ZOI Survey rounds.

Survey, Missions are encouraged to collect required data using a single survey. **In these countries, technical, timing, and other logistical decisions should be driven by what is optimal for the P3-ZOI Round 1 Survey**. REFS recognizes and accepts that this may result in decreased comparability between baseline, midline (where relevant), and endline for some P2-ZOI indicators in some countries.

As noted earlier, Missions and survey implementers should use the tools and templates contained in the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026). While not yet complete, the Toolkit is being developed to reflect data collection requirements for P2-ZOI Endline and P3-ZOI Round 1 Surveys and will help Missions streamline ZOI Survey design, data collection, and analysis.

Frequency and timing of subsequent ZOI Survey rounds

New phase three target countries[6] should plan to conduct their P3-ZOI Round 1 Surveys between 2024 and 2026. For continuing phase two target countries, the required P3-ZOI Round 1 Survey and P2-ZOI Endline Survey will take place in 2025 or 2026, approximately 5 to 7 years after the P2-ZOI Baseline Survey. All subsequent rounds of P3-ZOI Surveys will be conducted **every 4 years,** with P3-ZOI Round 2 Surveys to be conducted between 2028 and 2030.

3. SOURCES OF ZOI SURVEY DATA

P3-ZOI Round 1 Surveys and P2-ZOI Endline Surveys will use a combination of primary and secondary data sources to produce ZOI estimates for the required indicators. The data source depends on the indicator. By using a mix of data sources, Feed the Future will reduce the time and cost needed to collect and generate ZOI indicator estimates for P3-ZOI and P2-ZOI reporting needs.

Most ZOI indicators collected in the P3-ZOI Round 1 Survey or P2-ZOI Endline Survey will be collected through a household survey. However, if recent data are available, country-specific Demographic and Health Survey (DHS) data will be used to construct ZOI-level estimates for up to six nutrition indicators and one hygiene indicator. When feasible, the LSMS or country-led Annual Agricultural Surveys (AAS), supported under the 50x2030 Initiative will also be used to construct ZOI-level estimates for two agricultural productivity indicators. Secondary data sources will be limited to DHS, LSMS, and AAS data. See Section 5 of this guidance document for more information on use of secondary data sources for ZOI indicator reporting.

4. ZOI SURVEY DATA COLLECTION APPROACHES

This section describes the two main approaches to collect primary ZOI PBS data: **strengthening national data systems** and **contracting stand-alone household surveys**. REFS prefers that Missions try to fulfill the requirement of collecting ZOI PBS data through a strengthening national data systems approach (where feasible), and Missions will need to discuss the strengths, opportunities, and limitations of both options with their ADL Survey Methods Advisor and OCI MEL TA.

[6] New phase three target countries include the Democratic Republic of the Congo, Liberia, Madagascar, Malawi, Mozambique, Rwanda, Tanzania, and Zambia.

4.1 Strengthening National Data Systems

For target countries conducting a single purpose P3-ZOI Round 1 Survey (i.e., no P2-ZOI Endline), REFS prefers that Missions fulfill the requirement of collecting ZOI PBS data while also supporting partner governments' national data needs and the capacity of national data systems. Specifically, under an existing public international organization grant with the World Bank, target countries with an ongoing LSMS can support their partner country's national statistics office (NSO) to implement a nationally representative, multi-topic panel survey[7] with a sufficient sample in the P3-ZOI. In addition to the important development objective of strengthening national data systems and fulfilling country data needs, this approach has additional benefits, including the following:

- It offers better value for the U.S. Government because these surveys will provide national-level and, in some cases, subnational-level data, as well as ZOI-level data. Over time, this value should increase through the leverage of support from partner governments and other donors.
- It adds important analytical value because most indicator data are from a single data source, including national-level indicators. This includes the possibility for conducting quasi-experimental impact evaluations that compare results in the P3-ZOI to similar areas outside the P3-ZOI for key indicators to determine the attributable impact of Feed the Future.
- The World Bank LSMS team has decades of experience in providing technical assistance to implement household surveys in many countries.

While recognizing these significant benefits, REFS also acknowledges that this approach comes with the potential risk that the frequency and timing of the country-specific LSMS, which is typically conducted every 3 years, may not align with the frequency and timing of ZOI Survey rounds. In addition, not all of the desired Feed the Future ZOI-level indicators may be collected in the LSMS. These surveys are country-owned and led, so the NSO in a particular country will ultimately make decisions on the surveys, after negotiations and consultations with the in-country Technical Working Group. For this reason, Missions should engage with Technical Working Groups and play an active role in them, closely review the technical aspects of the survey, and advocate for the inclusion of Feed the Future ZOI-level indicators and required design features. Missions should also proactively engage in related donor groups to advocate for support from other donors for the survey and other efforts to strengthen country-specific data systems.[8]

4.2. Contracting Stand-alone Household Surveys

For many target countries, collecting ZOI PBS data in the context of strengthening national data systems will not be feasible. In these circumstances, Missions are strongly encouraged to buy into the ADL

[7] Panel surveys are surveys that return in each round to interview the same set of households that were selected at baseline, rather than drawing a new sample each time.

[8] In addition to the LSMS, Feed the Future is advancing the multi-donor 50x2030 Initiative to Close the Agricultural Data Gap under an agreement with the World Bank Multi-donor Trust Fund. The 50x2030 Initiative is designed to increase the capacity of 50 low- and lower middle-income countries to generate and apply data to decisions in the agricultural sector by scaling up annual agricultural surveys. For more information about this effort and how Mission funds can be used to support critical technical assistance needs for surveys conducted under the 50x2030 Initiative, USAID staff can refer to this Fact Sheet or contact Mousumi Sarkar (msarkar@usaid.gov), the Agreement Officer's Representative for the REFS Public International Organization agreement with the World Bank Multi-donor Trust Fund, or Chris Hillbruner (chillbruner@usaid.gov), the USAID Representative on the 50x2030 Partnership Council.

centrally managed survey mechanism (see Section 4.2.1) to support a stand-alone survey that meets the P3-ZOI Round 1 and/or P2-ZOI Endline Survey reporting requirements.

Missions can also contract a separate firm through their own bilateral mechanism but must ensure that a well-qualified survey organization conducts the ZOI PBS. Prior direct experience in organizing large-scale household surveys and collecting and analyzing the types of data required for the Feed the Future indicators are essential. Missions contracting a stand-alone survey should closely mirror the Feed the Future ZOI Survey Scope of Work (SOW) template in the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026) to ensure that all required steps are followed and all basic deliverables are correctly specified. Missions should require that the survey implementers rigorously apply the technical guidance, templates, and tools from the Toolkit throughout the survey process. Use of the Toolkit is essential to address common issues faced in previous survey rounds and to increase the quality, reliability, standardization, and comparability of PBS data collected across target countries. Note that Missions can work with the country's NSO to be a data collection partner in this endeavor, even if using the ADL centrally managed mechanism or a similar mechanism for a stand-alone survey, and thus help strengthen in-country NSO capacity.

4.2.1. Advantages of using the ADL centrally managed survey mechanism

Using the ADL centrally managed survey mechanism for conducting the required ZOI PBS presents a number of benefits to Missions. The design and implementation of the ZOI PBS will require continual proactive oversight of the survey implementer throughout the entire survey process to ensure timely, high-quality data. When buying into the mechanism, this oversight will be provided by ADL and the OCI MEL, whose role is to support ZOI PBS implementation, thereby reducing the management and technical supervision required from Missions to ensure the delivery of high-quality data. This mechanism also has the added benefit of reducing any barriers to accessing ZOI PBS data for initiative-level analyses and streamlining communication and coordination between Missions and REFS. Finally, the ADL centrally managed mechanism is implemented by organizations with extensive experience in large-scale PBS methodology with the requisite technical expertise, knowledge, and systems required to implement the ZOI PBS at scale.

While Missions that use the ADL centrally managed survey mechanism will still play an important role in the survey design and implementation process, the mechanism is designed to create efficiencies and quality assurance systems for ZOI PBS implementation. For more information on how to buy into the ADL centrally managed survey mechanism, Missions should contact Lindsey Anna (lanna@usaid.gov) or their OCI MEL TA.

4.2.2. Coordinating stand-alone ZOI Surveys with Resilience Food Security Activity Baseline and Endline Surveys

As a Feed the Future intra-agency partner, USAID's Bureau for Humanitarian Assistance (BHA) aligns its Resilience Food Security Activity (RFSA) indicators with the Feed the Future suite of indicators. BHA conducts a baseline and endline PBS in RFSA implementation areas to collect population-based indicators. In countries with ongoing or planned RFSAs, Missions should discuss with their BHA counterpart and their OCI MEL TA the planned timeline for the RFSA PBS and the Feed the Future ZOI

PBS to highlight possible opportunities to collaborate and coordinate to reduce duplication of effort and cost.

4.2.3 Coordinating stand-alone ZOI Surveys with Resilience Focus Zone Surveys

Many Feed the Future target countries are designated as USAID resilience focus countries.[9] Missions that are in a resilience focus country must designate a Resilience Focus Zone (RFZ), a targeted geographic area where investments aim to strengthen resilience in areas of recurrent and protracted crises. Missions in a USAID resilience focus country can opt to conduct a periodic PBS in their RFZ to collect an expanded set of population-based resilience indicators and track progress over time. If countries opt to conduct an RFZ survey, Missions may prefer to conduct the RFZ survey and the Feed the Future ZOI PBS in a single survey. Missions should discuss possible options for collaboration and coordination with their ADL Survey Methods Advisor and OCI MEL TA.

4.3 Timing of the ZOI Surveys

4.3.1 Length of the survey process

The entire survey process for a stand-alone survey should take 15–18 months, from the inception visit (or consultation) though delivery of final datasets and results dissemination, assuming that the materials in the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026) are used. **This includes approximately 6 months of lead time between submission of the final SOW and when fieldwork begins.** The length of the survey process may vary across countries under the LSMS national data systems strengthening approach. The Feed the Future ZOI Survey SOW template in the Toolkit provides a description with a Gantt chart that highlights different phases of survey planning and implementation.

Preceding the fieldwork, sufficient time should be allocated for the following:

- **Inception visit or consultation (month 1):** Preparatory activities for the survey should be undertaken, including meeting with government officials, obtaining information for the sampling plan, and developing a detailed survey activity and deliverables timeline in the form of a Gantt chart. If the contractor is not in-country, this should be done through an inception visit as one of the first steps after award.
- **Subcontracting (months 1–2):** If the contractor has decided to subcontract any aspect of the work to a subcontractor, time should be built into the schedule to allow for identification or solicitation and award.
- **Survey instrument adaptation (months 2–3):** The survey instrument and protocols should be reviewed, adapted, and translated to produce customized, country-specific versions of relevant documents. In the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026), REFS provides core ZOI Survey technical guidance and templates, including the survey instrument and protocols. These tools and guidance save significant time in the survey implementation process, but the tools and templates will improve data quality only if

[9] USAID resilience focus countries include Burkina Faso, Democratic Republic of the Congo, Ethiopia, Haiti, Kenya, Malawi, Mali, Mozambique, Niger, Nigeria, Somalia, South Sudan, Uganda, and Zimbabwe.

sufficient time and expertise are given to adapting the tools and templates to the local country context. The questionnaire should be translated into target languages spoken by 10 percent or more of the ZOI population following the Feed the Future Translation Protocol. All language versions of the survey instrument should be loaded onto tablets and be provided to the field teams in hardcopy. If English is not an official language or the language in which trainings will be conducted, training materials should also be translated into one of the country's official languages.

- **Ethical Review Board submission (months 2–3):** In-country and U.S.-based ethical review board approvals should be sought as early as possible. Ideally, all approvals should be obtained before the start of pretest activities.
- **Household listing (months 4–5):** An updated household listing in selected enumeration areas (EAs) should be carried out prior to the second stage systematic sampling of households.
- **Training and pretesting (months 5–6):** Training and pretest activities are another significant component of survey preparation and require at least 6–8 weeks to implement. Activities include conducting a training of trainers, survey pretest, main field staff training, and a pilot. Guidance and report templates for these activities will be available in the Toolkit.

4.4 Timing of Fieldwork

Timing of survey fieldwork is critical. Under previous ZOI Survey guidance, Missions were encouraged to align survey fieldwork with the post-harvest season of select value chain commodities to produce reliable estimates for agricultural productivity indicators, notably yield. As these indicators will no longer be directly collected in the ZOI PBS (see Section 5), Feed the Future will transition the timing of survey fieldwork to start and conclude **prior to the onset of the lean season** in the target country ZOI.

For phase three, this shift in data collection timing will allow Feed the Future to better assess household food insecurity during a critical time of year when food stocks are nearly depleted and post-harvest season is months away. However, REFS recognizes and accepts that this timing does not align with the timing of P2-ZOI Baseline and Midline Surveys, which may result in decreased comparability between baseline, midline (where relevant), and endline indicator estimates for countries conducting P2-ZOI Endline Surveys. Missions conducting a P2-ZOI Endline Survey should consult with their ADL Survey Methods Advisor and OCI MEL TA on timing of fieldwork during the survey SOW development.

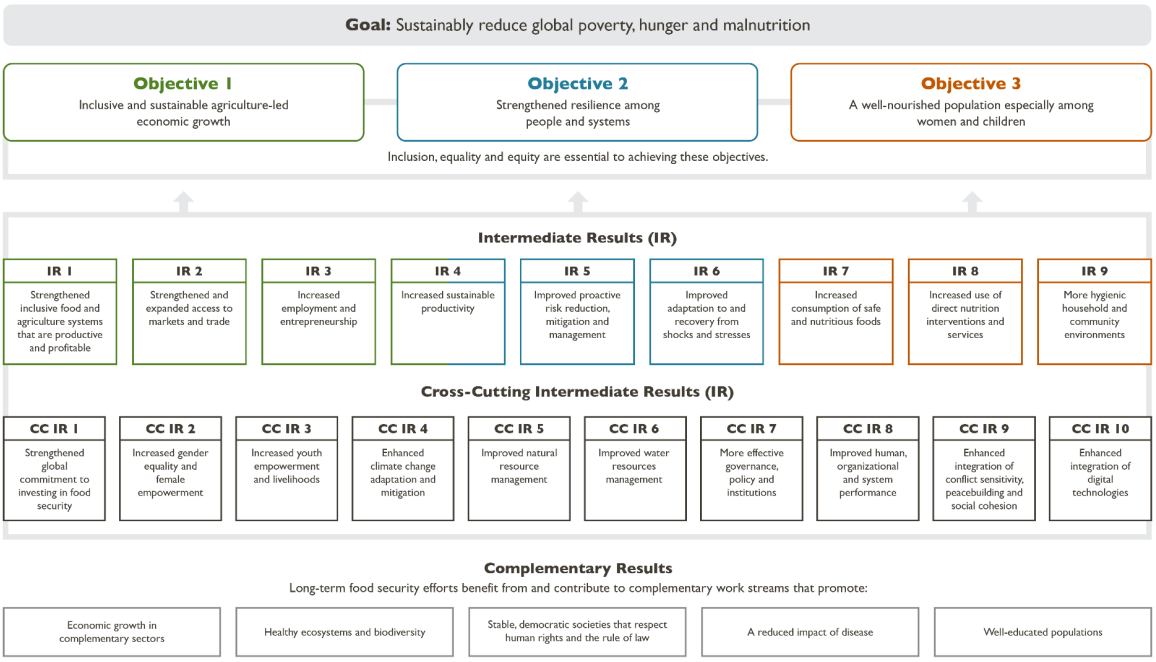
Seasonal and cultural factors (e.g., major holidays), political and security issues (e.g., timing of elections or other events that may preclude fieldwork), and country- or Mission-specific considerations should also be taken into account when planning the timing of fieldwork for the ZOI PBS.

5. INDICATORS

5.1 P3-ZOI Round 1 Indicators

Feed the Future tracks progress toward its goal of sustainably reducing global poverty, hunger, and malnutrition using a suite of indicators that capture key steps along the impact pathway reflected in the Global Food Security Strategy Results Framework, FY 2022–2026 (see **Figure 1**).

Figure 1: U.S. Government Global Food Security Strategy Results Framework, FY 2022–2026



For phase three, Feed the Future has identified a set of 19 indicators to be collected or computed at the ZOI population level. These indicators represent the set of indicators to inform reporting requirements for P3-ZOI Round 1 Surveys. Of the 19 indicators, 18 are ZOI-level tracking indicators,[10] and 1 is a performance indicator, "Percent of women of reproductive age consuming a diet of minimum diversity (MDD-W)."

Table 1 lists the Feed the Future P3-ZOI Round 1 indicators. With the exception of the new household water insecurity indicator, "Percent of households that are water insecure (HWISE-4)," which is not an official Feed the Future indicator (see Section 5.4.4), indicator reference sheets for each P3-ZOI Round 1 indicator can be found in the Feed the Future Indicator Handbook (November 2023 edition).

Table 1: P3-ZOI Round 1 Indicators

Indicator number	Indicator title
EG-j	Prevalence of poverty: Percent of people living on less than $2.15/day 2017 PPP
EG-e	Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
EG-g	Percent of households below the comparative threshold for the poorest quintile of the asset-based Comparative Wealth Index

[10] One ZOI-level tracking indicator on the "Percent of households that are water insecure (HWISE-4)," which is not an official ZOI-level indicator and is not included in the Feed the Future Indicator Handbook (November 2023 edition), has been identified to fill important information gaps on household water availability, accessibility, and reliability.

Indicator number	Indicator title
EG-k	Depth of poverty of the poor: Mean percent shortfall of the poor relative to the $2.15/day 2017 PPP poverty line
EG-i	Prevalence of near-poor: Percent of people who are "Near-Poor", living on 100 percent to less than 125 percent of the $2.15/day 2017 PPP poverty line
RESIL-a	Ability to recover from shocks and stresses index
HL.9-a	Prevalence of stunted (HAZ < -2) children under five (0-59 months)
HL.9-b	Prevalence of wasted (WHZ < -2) children under five (0-59 months)
HL.9-i	Prevalence of healthy weight (WHZ ≤ 2 and ≥-2) among children under five (0-59 months)
HL.9-d	Prevalence of underweight (BMI < 18.5) women of reproductive age
HL.9.1-d	Percent of women of reproductive age consuming a diet of minimum diversity ("MDD-W")
HL.9.1-a	Percent of children 6-23 months receiving a minimum acceptable diet
HL.9.1-b	Prevalence of exclusive breastfeeding of children under 6 months of age
EG.3-h	Yield of targeted agricultural commodities
EG.3.2-a	Percent of producers who have applied targeted improved management practices or technologies
EG.3-i	Five Domains of Empowerment (5DE) score for women
HL.8.2-a	Percent of households with access to a basic sanitation service
HL.8.2-b	Percent of households with soap and water at a handwashing station on premises
-	Percent of households that are water insecure (HWISE-4)

BMI=body mass index, HAZ=height-for-age z-score, HWISE-4=Brief Household Water Insecurity Experiences, PPP=purchasing power parity, WHZ=weight-for-height z-score

Context indicators

Under phase three implementation, Feed the Future reporting requirements no longer include a set of ZOI context indicators. Of the five ZOI context indicators previously required, one indicator—percent of people 'near poor'—is now a required tracking indicator, EG-i. Another indicator—percent of women achieving adequacy in the six indicators of the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI)—has been replaced with the average adequacy score of disempowered women, and is calculated as part of the Five Domains of Empowerment (5DE) score for women, EG.3-i. The three ZOI-level context agromet indicators[11] previously required under phase two have been dropped. However, when available through secondary sources, these indicators can still serve as useful inputs for interpreting secondary agriculture productivity information (e.g., yield).

[11] The three agromet indicators are Average Standard Precipitation Index score during the main growing season, Average deviation from 10-year average Normalized Difference Vegetation Index during the main growing season, and Total number of heat stress days above 30 °C during the main growing season.

5.2 P2-ZOI Endline Indicators

For relevant target countries conducting P2-ZOI Endline Surveys, Missions are required to collect or compute seven ZOI-level poverty, food insecurity, and children's anthropometry indicators. These selected indicators represent Feed the Future's high-level goals against which initiative-level progress across phase two will be measured. It is a streamlined set of indicators aimed at reducing the overall burden of P2-ZOI Endline data collection while meeting data needs for initiative-level analyses. **Table 2** lists the seven P2-ZOI indicators to be collected or computed as part of the P2-ZOI Endline Survey. Indicator reference sheets for these indicators can be found in the Feed the Future Indicator Handbook (September 2019 edition).

Table 2: P2-ZOI Endline Indicators

Indicator number	Indicator title
EG-c	Prevalence of poverty: Percent of people living on less than $1.90/day 2011 PPP
EG-h	Depth of poverty of the poor: Mean percent shortfall of the poor relative to the $1.90/day 2011 PPP poverty line
FTF Context-9	Percent of people who are 'Near-Poor', living on 100 percent to less than 125 percent of the $1.90 2011 PPP poverty line
EG-e	Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
HL.9-a	Prevalence of stunted (HAZ < -2) children under five (0-59 months)
HL.9-b	Prevalence of wasted (WHZ < -2) children under five (0-59 months)
HL.9-i	Prevalence of healthy weight (WHZ ≤ 2 and ≥-2) among children under five (0-59 months)

HAZ=height-for-age z-score, PPP=purchasing power parity, WHZ=weight-for-height z-score

5.3 Collecting P3-ZOI Round 1 and P2-ZOI Endline Indicators

P3-ZOI Round 1 Surveys and P2-ZOI Endline Surveys will use a mix of primary and secondary data sources to produce ZOI indicator estimates. The source of data depends on the indicator. Not all indicators will be collected through the ZOI PBS. For both P3-ZOI Round 1 Surveys and P2-ZOI Endline Surveys, indicators fall into three main categories based on their source of data and data collection method:

- Indicators collected **only** through the ZOI PBS
- Indicators computed **only** from secondary data sources
- Indicators computed from secondary data sources **OR** collected through the ZOI PBS

Of the nineteen P3-ZOI Round 1 indicators, 10 indicators will be collected through the ZOI PBS. When recent data are available (see Sections 5.2.2 and 5.2.3 for further guidance), secondary data sources should be used to produce estimates for up to six nutrition indicators, one hygiene indicator, and two agricultural productivity indicators. Secondary data sources for computing these indicators are restricted to DHS, LSMS, or AAS. DHS data should be used to generate ZOI-level estimates for nutrition and hygiene indicators and LSMS or AAS data should be used to generate ZOI-level estimates for agricultural productivity indicators.

When recent DHS data are not available, P3-ZOI Round 1 Surveys must include additional data collection to produce ZOI-level estimates for three children's anthropometry indicators, including prevalence of stunted, wasted, and healthy weight children. Only in such instances should these three indicators be added to P3-ZOI Round 1 data collection. Missions are **not** required to collect additional data in the P3-ZOI Round 1 Survey to generate estimates for the remaining four nutrition and hygiene indicators. REFS accepts that, in these instances, results for those indicators will not be reported. When recent LSMS or AAS data are not available, Missions are **not** required to collect additional data in the P3-ZOI Round 1 Survey to generate estimates for the two agricultural productivity indicators, and results for those indicators will not be reported. **Appendix 1** provides a list of P3-ZOI Round 1 indicators to be collected or computed, by data source and data collection method.

Of the seven P2-ZOI Endline indicators, four indicators will be collected through the ZOI PBS. Following the same guidance provided previously, when recent data are available, DHS data should be used to generate ZOI-level estimates for the three children's anthropometry indicators, including prevalence of stunted, wasted, and healthy weight children. When recent DHS data are not available, P2-ZOI Endline Surveys must include additional data collection to produce ZOI-level estimates for these indicators. **Appendix 2** provides a list of P2-ZOI Endline indicators to be collected or computed, by data source and data collection method.

To assist Missions in determining when secondary data sources can be used to compute ZOI indicator estimates and when additional data collection is required in the P3-ZOI Round 1 or P2-ZOI Endline Survey, REFS has developed a decision tree tool (see **Appendix 3**). Missions are encouraged to use this tool when developing the ZOI Survey SOW to ensure that clear guidance on the use of DHS, LSMS, or AAS data are provided to survey implementing organizations and that all additional indicators are included in ZOI PBS data collection when needed.

The sections that follow provide additional guidance on the three main categories of indicators according to their data source and data collection method.

5.2.1 Indicators collected only through the ZOI PBS

To meet P3-ZOI Round 1 reporting requirements, a minimum of 10, but up to 13, indicators must be collected in the ZOI PBS. To meet P2-ZOI Endline reporting requirements, a minimum of four, but up to seven, indicators must be collected in the ZOI PBS. **Table 3** presents the indicators that must be collected in the P3-ZOI Round 1 and P2-ZOI Endline Surveys.

Table 3: Indicators collected only through the ZOI PBS

Indicator number	Indicator title
P3-ZOI Round 1 Surveys	
EG-j	Prevalence of poverty: Percent of people living on less than $2.15/day 2017 PPP
EG-e	Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)

Indicator number	Indicator title
EG-g	Percent of households below the comparative threshold for the poorest quintile of the asset-based Comparative Wealth Index
EG-k	Depth of poverty of the poor: Mean percent shortfall of the poor relative to the $2.15/day 2017 PPP poverty line
EG-i	Prevalence of near-poor: Percent of people who are "Near-Poor", living on 100 percent to less than 125 percent of the $2.15/day 2017 PPP poverty line
RESIL-a	Ability to recover from shocks and stresses index
HL.9.1-d	Percent of women of reproductive age consuming a diet of minimum diversity ("MDD-W")
EG.3-i	Five Domains of Empowerment (5DE) score for women
HL.8.2-a	Percent of households with access to a basic sanitation service
-	Percent of households that are water insecure (HWISE-4)
P2-ZOI Endline Surveys	
EG-c	Prevalence of poverty: Percent of people living on less than $1.90/day 2011 PPP
EG-h	Depth of poverty of the poor: Mean percent shortfall of the poor relative to the $1.90/day 2011 PPP poverty line
FTF Context-9	Percent of people who are 'Near-Poor', living on 100 percent to less than 125 percent of the $1.90 2011 PPP poverty line
EG-e	Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)

HWISE-4=Brief Household Water Insecurity Experiences, PPP=purchasing power parity

NOTE: As discussed in the previous section, if recent DHS data are not available to compute three children's anthropometry indicators—prevalence of stunted, wasted, and healthy weight children (see **Table 5**)—these indicators must be collected in the P3-ZOI Round 1 or P2-ZOI Endline Survey. Section 5.2.3 provides additional guidance on when DHS secondary data can be used to compute ZOI-level estimates and when data collection is required in the ZOI PBS.

5.2.2 Indicators computed only from secondary data sources (P3-ZOI Round 1 Surveys only[12])

For P3-ZOI Round 1 Surveys, Feed the Future will leverage secondary data sources, restricted to DHS, LSMS, and AAS, to compute ZOI-level estimates for up to nine indicators. Use of these secondary data sources is dependent on when the secondary data were collected and alignment of that timing with planned ZOI data collection for the P3-ZOI Round 1 Survey. The following policy guidance should be used to determine whether secondary data can be used for computing estimates for the P3-ZOI Round 1 indicators identified in Table 4:

- If data collection from the secondary data source occurred **within the 2 years prior to** the planned P3-ZOI Round 1 data collection or is scheduled to be collected **within 1 year of** the

[12] None of the ZOI-level indicators in this category are required for P2-ZOI endline reporting; therefore, the guidance in this section is only applicable to P3-ZOI Round 1 Surveys.

planned P3-ZOI Round 1 data collection, data from the secondary data source should be used to compute ZOI-level estimates for the indicators listed in **Table 4**.

- If data collection from the secondary data source occurred **more than 2 years prior to** the planned P3-ZOI Round 1 data collection and is **not scheduled to be collected within 1 year of** the planned P3-ZOI Round 1 data collection, the indicators listed in Table 4 should not be computed, and ZOI-level results for those indicators will not be reported.

Table 4: Indicators computed only from secondary data sources

Indicator number	Indicator title	Secondary data source
P3-ZOI Round 1 Surveys		
EG.3-h	Yield of targeted agricultural commodities	50x2030 AAS or LSMS
EG.3.2-a	Percent of producers who have applied targeted improved management practices or technologies	50x2030 AAS or LSMS
HL.9-d	Prevalence of underweight (BMI < 18.5) women of reproductive age	DHS
HL.9.1-a	Percent of children 6-23 months receiving a minimum acceptable diet	DHS
HL.9.1-b	Prevalence of exclusive breastfeeding of children under 6 months of age	DHS
HL.8.2-b	Percent of households with soap and water at a handwashing station on premises	DHS

BMI=body mass index

5.2.3 Indicators computed from secondary data sources OR collected in the ZOI PBS

The three children's anthropometry indicators listed in **Table 5**—prevalence of stunted, wasted, and healthy weight children—must be computed using secondary data sources OR collected in the ZOI PBS to meet P3-ZOI Round 1 and P2-ZOI Endline reporting requirements. The following policy guidance should be used to determine whether DHS data are recent enough to produce ZOI estimates for these indicators:

- If DHS data collection occurred **within the 2 years prior to** the planned ZOI PBS data collection or is scheduled to be collected **within 1 year of** the planned ZOI PBS data collection, data from the DHS should be used to compute ZOI-level estimates for these indicators. Missions should consult with their Nutrition Technical Advisor in the REFS Center for Nutrition to confirm the feasibility of using DHS data for this purpose.
- If DHS data collection occurred **more than 2 years prior to** the planned ZOI PBS data collection and is **not scheduled to be collected within 1 year of** the planned ZOI PBS data collection, the three children's anthropometry indicators must be collected in the ZOI PBS along with the required indicators identified in **Table 3.**

Table 5: Indicators computed from secondary DHS data OR collected in the ZOI PBS

Indicator number	Indicator title	Data Source
P3-ZOI Round 1 and P2-ZOI Endline Surveys		
HL.9-a	Prevalence of stunted (HAZ < -2) children under five (0-59 months)	DHS or ZOI PBS
HL.9-b	Prevalence of wasted (WHZ < -2) children under five (0-59 months)	DHS or ZOI PBS
HL.9-i	Prevalence of healthy weight (WHZ ≤ 2 and ≥-2) among children under five (0-59 months)	DHS or ZOI PBS

HAZ=height-for-age z-score, WHZ=weight-for-height z-score

5.2.4 Indicators dropped

The indicators listed in **Table 6** have been dropped as Feed the Future ZOI indicators and will not be collected or reported as part of the P3-ZOI Round 1 Survey or P2-ZOI Endline Survey. In addition, descriptive information collected in P2-ZOI Midline Surveys related to program participation and COVID-19 will not be collected or reported as part of the P3-ZOI Round 1 Survey or P2-ZOI Endline Survey.

Table 6: Indicators dropped

	Indicator number	Indicator title
1	RESIL-b	Index of social capital at the household level
2	RESIL-c	Percent of households that believe local government will respond effectively to future shocks and stresses
3	EG.4.2-a	Percent of households participating in group-based savings, micro-finance, or lending programs

5.3 Indicator-specific Considerations and Optional Modules

The transition to Feed the Future phase three implementation coincides with several changes to the measures used to calculate ZOI-level poverty, women's dietary diversity, and women's empowerment indicators and, as noted earlier, includes a new indicator on household water insecurity. These changes are described in the sections that follow. In addition, Section 5.3.5 contains information about a climate adaptation module that Missions can opt to include in their P3-ZOI Round 1 Survey to capture additional descriptive information on climate adaptation knowledge and practices.

5.3.1 Poverty

The P2-ZOI prevalence of poverty indicator uses the $1.90/day at 2011 purchasing power parity (PPP) threshold, and the P3-ZOI prevalence of poverty indicator uses the $2.15/day at 2017 PPP threshold. These indicators can be computed at the analysis stage, using the household consumption expenditure data collected as part of the P2-ZOI Endline or P3-ZOI Round 1 Surveys respectively. The 2011 and 2017 PPP conversion factors needed to generate ZOI prevalence of poverty estimates at both thresholds are provided in **Table 7.**

Table 7: 2011 PPP and 2017 PPP conversion factor, private consumption for target countries

(Local currency unit per international $)

Feed the Future target countries	2011 PPP ($1.90/day)	2017 PPP ($2.15/day)
Bangladesh	24.849	29.514
Democratic Republic of the Congo	537.732	630.606
Ethiopia	5.439	8.496
Ghana	0.788	1.751
Guatemala	3.873	4.403
Honduras	10.080	10.839
Kenya	35.430	41.635
Liberia	0.568	0.426
Madagascar	704.913	962.960
Malawi	78.017	241.931
Mali	221.868	205.273
Mozambique	15.527	21.988
Nepal	25.759	30.513
Nigeria	79.531	112.098
Niger	228.753	245.160
Rwanda	246.834	293.705
Senegal	246.107	238.578
Tanzania	585.520	754.621
Uganda	946.890	1,221.088
Zambia[13]	2,505.341	4.224

Sources: World Bank, World Development Indicators, Updated November 2022

5.3.2 Minimum Dietary Diversity—Women

Under phase two implementation, prevalence of women of reproductive age consuming a diet of minimum dietary diversity, or MDD-W, was collected for the first time using a multiple-pass recall method, comprising an uninterrupted recall of the diet from the past 24 hours (pass 1) before asking about a list of foods and beverages not mentioned during the recall (pass 2). For P3-ZOI Round 1 Surveys, Feed the Future will transition its MDD-W data collection method to a full list-based approach using country-adapted Diet Quality Questionnaires developed under the Global Diet Quality Project. The Diet Quality Questionnaire is a rapid, low-cost survey instrument that collects country-specific,

[13] In 2013, the Government of Zambia rebased its currency, leading to substantial differences in PPP conversion factors used for prevalence of poverty calculations at the $1.90/day 2011 PPP and $2.15/day 2017 PPP thresholds.

comparable food group consumption data to calculate numerous diet quality indicators, including MDD-W.

The transition to a Diet Quality Questionnaire reduces the overall time needed to collect women's dietary information in the ZOI PBS and increases comparability of ZOI-level MDD-W results with other secondary data sources that follow the same approach, notably the DHS.

5.3.3 Five Domains of Empowerment score for women

Under phase three, Feed the Future has adapted the A-WEAI indicator to focus on the component that measures women's empowerment directly, or the 5DE. For P3-ZOI Round 1 Surveys,[14] survey implementers will only collect the data required to compute the 5DE score from primary female adult decision-makers. These data will be used to calculate results for the 5DE sub-index of the A-WEAI, track progress in the proportion of women who are empowered, and measure changes to and progress in the key constraints to empowerment in agriculture for women in the ZOI. The A-WEAI indicator will no longer be calculated because the ZOI PBS will not collect data from primary adult male decision-makers, which are required to calculate one of the two A-WEAI sub-indices, the gender parity index.

5.3.4 Household water insecurity

ZOI Surveys will collect data to estimate a new indicator on the "percent of households that are water insecure" in the P3-ZOI Round 1 Survey, even though it is not an official Feed the Future ZOI-level indicator. For some phase two target countries, these data were collected in P2-ZOI Midline Surveys. Using the Brief Household Water Insecurity Experiences (HWISE-4) scale, the indicator quantifies how often households encounter problems with access, use, and reliability of water for domestic use. The four questions comprising the HWISE-4 scale are as follows:

- In the last 4 weeks, how frequently did you or anyone in your household worry you would not have enough water for all your household needs?
- In the last 4 weeks, how frequently have you or anyone in your household had to change schedules or plans due to problems with your water situation?
- In the last 4 weeks, how frequently have you or anyone in your household had to go without washing hands after dirty activities (e.g., defecating or changing diapers, cleaning animal dung) because of problems with water?
- In the last 4 weeks, how frequently has there not been as much water to drink as you would like for you or anyone in your household?

5.3.5 Climate adaptation (optional module)

Feed the Future recognizes the pressing challenge of addressing climate change and providing resources and training to help people adapt to extreme weather and climate shocks in target country ZOIs. Although a Feed the Future indicator on climate adaption does not currently exist, a climate adaptation module was previously developed and piloted in P2-ZOI Midline Surveys, providing useful descriptive information about climate change knowledge and adaptation practices applied by ZOI households. For

[14] Neither the 5DE score for women nor the A-WEAI are required indicators for P2-ZOI Endline Surveys.

P3-ZOI Round 1 and P2-ZOI Endline Surveys, Missions can opt to include a forthcoming revised climate adaptation module in survey data collection and should discuss inclusion of that module with their ADL Survey Methods Advisor and OCI MEL TA as part of the SOW development for the ZOI PBS.

6. ZOI SURVEY SAMPLE DESIGN

For Missions planning to implement a strengthening national data systems approach by integrating their ZOI PBS with an ongoing LSMS panel survey (preferred option), integration should only be considered if conducting a single-purpose P3-ZOI Round 1 Survey. It is not advised for target countries with plans to collect P2-ZOI Endline and P3-ZOI Round 1 data in a single survey to integrate data collection with an ongoing LSMS panel survey. For Missions that are able to integrate their data collection, several survey sample design options can be considered to meet the dual objectives of continuing the panel and estimating representative values for P3-ZOI Round 1 indicators. Missions should consult with their ADL Survey Methods Advisor and OCI MEL TA to discuss the advantages and disadvantages of integration and survey sample design options.

For Missions implementing a stand-alone ZOI PBS, implementers should use a cross-sectional, stratified,[15] multi-stage cluster design, with three or four stages of sampling.[16] EAs should be selected using systematic probability proportional to size (PPS) in the first phase. If applicable, EA segments should be selected using PPS in the second stage. Households should be selected using fractional interval systematic sampling[17] in the third stage, and eligible household members should be selected using "take all" sampling in the fourth stage. "Take all" sampling means that all household members who meet the eligibility criteria to respond to specific questions or have measurements taken (e.g., women of reproductive age for the minimum dietary diversity indicator; children under five for stunting, wasting, and healthy weight indicators, if applicable) should be included in the sample, and no subsampling among eligible members should occur. **Table 8** summarizes the methods for the sampling stages.

Table 8: Summary of Methods for Each Stage of Sampling

	Stage 1: Selection of EAs	Stage 2: Selection of segments	Stage 3: Selection of households	Stage 4: Selection of individuals
Method of sampling	Systematic PPS	PPS	Fractional interval systematic	Take all

[15] ZOI Surveys are typically stratified geographically (e.g., by region) and then by urban/rural in each geographical stratum.

[16] The Sample Design and especially the Sample Size sections in this guidance draw extensively from Stukel, D. M. (2018). *Feed the Future population-based survey sampling guide*. Washington, DC: Food and Nutrition Technical Assistance Project, FHI 360, which forms part of the package of technical tools and templates that support this guidance. Feed the Future PBS implementers should carefully review the *Feed the Future PBS Sampling Guide* (available in the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026)) and follow the technical recommendations included therein as closely as possible.

[17] Fractional interval systematic sampling involves selecting households from the EA sample frame systematically at a set sampling interval after determining a random start somewhere between 1 and the sampling interval.

7. SAMPLE SIZE

7.1 P3-ZOI Round 1 Survey Sample Size

7.1.1 Key indicators to inform P3-ZOI Survey sample size

The P3-ZOI Round 1 Survey sample size should be the largest of the sample sizes needed to provide a single point-in-time estimate for Feed the Future's phase three goal-level indicators of poverty, food insecurity, and stunting and the performance indicator for the "percent of women of reproductive age consuming a diet of minimum diversity." The following P3-ZOI Round 1 indicators are used to calculate the sample size:

- Prevalence of poverty: Percentage of people living on less than $2.15/day 2017 PPP
- Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
- Prevalence of stunted (HAZ < -2) children under 5 years of age *(when collected in the survey)*[18]
- Percent of women of reproductive age consuming a diet of minimum diversity (MDD-W)

7.1.2 Sample size per indicator

The sample size for each indicator depends on an *estimated base value,* the *degree of confidence,* and the *margin of error* (MOE) required in the survey, and the *expected design effect* (DEFF) of the survey. In addition, stunting (where applicable) and MDD-W indicator sample sizes must account for the number of households that would need to be visited to find the required number of children and women of reproductive age, respectively, and sample sizes for all four indicators must include a cushion of additional households in case some of the selected households decline to be interviewed.

This section provides recommended parameters for computing the P3-ZOI sample size for each indicator. Since P2-ZOI data can serve as an important resource for P3-ZOI sample size calculations, recommended parameters in **Table 9** and **Table 10** are provided for target countries with and without existing P2-ZOI information. Missions should use these inputs with the "Descriptives for Proportions" tab in the Sample Size Calculator in the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026) to determine the final sample sizes for poverty, food insecurity, stunting (where applicable), and MDD-W indicators.[19]

Because sample size calculations are a critical and complex component of the ZOI PBS design, Missions should consult with their ADL Survey Methods Advisor and OCI MEL TA on the parameters and inputs used for indicator sample size calculations to ensure that final sample size calculations meet the technical standards and requirements for the ZOI PBS and are sufficient to meet reporting needs.

[18] If stunting estimates will be produced using secondary DHS data, this indicator should not be included in the sample size calculations.

[19] Sample size for stunting should only be calculated if stunting will be directly collected in the phase three Round 1 Survey (see Section 5).

Estimated base values for the P3-ZOI

In an ideal situation, Missions should identify a source of data for the *estimated base values* for the prevalence of poverty, food insecurity, stunting, and MDD-W indicators in the P3-ZOI. Secondary data sources such as the P2-ZOI Baseline or Midline Survey and recent national poverty and demographic and health surveys, such as DHS, the Multiple Indicator Cluster Survey, or LSMS, are the most likely sources. For continuing target countries with existing P2-ZOI data, REFS recommends using the P2-ZOI baseline values as the estimated P3-ZOI base values for the four indicators.[20]

In target countries where no recent secondary data sources are likely to exist to reasonably estimate a base value for the P3-ZOI, Feed the Future recommends using an estimated base value of 50 percent prevalence for all four indicators, which would result in the highest possible sample size requirement for each indicator and guarantees sufficient sample size to meet reporting needs.

Degree of confidence

The alpha (α) error, or significance level, reflects the degree of confidence, or probability, that the observed estimate did not happen by chance. Missions should use the standard alpha level of 0.05 (also known as 95 percent significance).

Margin of Error

The MOE represents the amount of uncertainty, due to random sampling error, expected between the observed estimate and the true population estimate. A smaller MOE means less uncertainty and more precise estimates. For the ZOI PBS, Missions should set the MOE to 5 percent (MOE=0.05).

Design Effect

The DEFF is an adjustment made to the sample size as a result of the multi-stage sampling method and other complex sample design features used. For continuing target countries with P2-ZOI baseline information, achieved DEFFs from the Baseline Survey should be used in the P3-ZOI sample size calculation. If the Baseline Survey implementer used the Feed the Future P2-ZOI final baseline report template, the DEFFs should be located in Table A1.1 of the report.

For target countries with no existing data source, REFS recommends using a DEFF of 4.3 for poverty, 3.6 for food insecurity, 2.4 for stunting, and 2.4 for MDD-W, which represent the average achieved DEFFs across P2-ZOI Baseline Surveys and the most up-to-date information available for estimating DEFFs in the P3-ZOI Round 1 Survey.

[20] Some phase two target countries will have more recent P2-ZOI midline data on poverty, food, insecurity, stunting, and MDD-W indicators. However, given the global COVID-19 shock and the evidence available on its documented impacts on poverty, food insecurity, and nutrition across target countries, a recovery to P2-ZOI baseline levels is likely a more reasonable approximation for the estimated base values of P3-ZOI Round 1 indicators. Therefore, REFS recommends using P2-ZOI baseline indicator values (where relevant) when computing the required indicator sample sizes.

Table 9: P3-ZOI sample size parameters

	Parameter	Countries with P2-ZOI data	Countries without P2-ZOI data
P_{est}	Estimate of proportion (estimated base value)	P2-ZOI baseline indicator value	0.50[21]
α	Alpha	0.05	0.05
MOE	MOE	0.05	0.05
D_{est}	DEFF	Achieved DEFF in P2-ZOI baseline report (Table A1.1)	Poverty: 4.3 FIES: 3.6 Stunting: 2.4 MDD-W: 2.4

Initial P3-ZOI sample size and adjustments

After the required inputs from **Table 9** are applied in the Feed the Future Sample Size Calculator, an initial sample size for the indicator will be generated. From there, two adjustments must be made in the calculator. These adjustments are discussed in the paragraphs that follow. **Table 10** provides a summary of the parameters and recommended sources of information for each required adjustment for countries with and without P2-ZOI data.

The first adjustment (Adjustment 1) is only applicable for stunting and women's minimum dietary diversity indicators. It adjusts the total sample size to account for the number of households that would need to be visited to find the required number of children and women of reproductive age. For Adjustment 1, Missions will need to use recommended data sources to estimate the proportion of the population under 5 years of age (for stunting), the proportion of the population who are women of reproductive age (for MDD-W), and the average household size. These inputs will produce Adjustment 1 in the Sample Size Calculator.

For countries with P2-ZOI data, Missions should use population proportions and average household sizes from their most recent P2-ZOI Survey (Midline or Baseline). For countries without P2-ZOI data, Missions can use a variety of other sources to estimate the required population proportions and average household size, including P1-ZOI Survey reports (where applicable) or the World Bank Health Nutrition and Population Statistics. **Appendix 4** provides country-specific input values for Adjustment 1 for stunting and MDD-W indicators for countries without P2-ZOI data.[22]

The second adjustment (Adjustment 2) accounts for an estimated gross household non-response rate. For target countries with P2-ZOI data, Missions should use the actual gross household response rate[23] achieved in the most recent P2-ZOI Survey (Midline or Baseline) and subtract from 100. These inputs

[21] Assuming a 50 percent estimate for each indicator is the most conservative approach for calculating sample size. In future survey rounds, Round 1 Survey indicator estimates will be used to produce estimates for sample size calculations for Round 2 Surveys, and so on.

[22] Input values in **Appendix 4** are based on data sources available as of December 2023. Missions should verify whether a more recent data source exists for the input values following the guidance in **Table 10.**

[23] The gross household response rate is the number of households interviewed divided by the number of households selected for the survey. This is in contrast to the net household response rate, which is defined as the number of households interviewed divided by the number of valid households found in the field (i.e., households occupied).

will produce Adjustment 2 in the Sample Size Calculator. For target countries without P2-ZOI data, REFS recommends using a gross non-response rate of 5.5 percent.

Table 10: P3-ZOI sample size adjustment parameters

Adjustment 1: For poverty and FIES, choose "Household" and skip to Adjustment 2. For stunting and MDD-W, choose "Individual" and fill the two requested parameters to account for households without children under 5 years of age and without women of reproductive age, respectively.			
	Parameter	**Countries with P2-ZOI data**	**Countries without P2-ZOI data**
(1)	Proportion of the population in the age group underlying the indicator	Compute as *Total number of eligible individuals in ZOI ÷Total ZOI population* Source of information (in order of preference): (1) **P2-ZOI Midline Survey Report:** Table 1.2.1: Population of Individuals in the ZOI, by Category (2) **P2-ZOI Baseline Survey Report:** Table 1.2.1: Population of Individuals in the ZOI, by Category	Compute as *Total number of eligible individuals in ZOI ÷ Total ZOI population* Source of information (in order of preference): (1) **P1-ZOI Endline Survey Report** (2) **P1-ZOI Interim Survey Report** (3) Other relevant sources: recent census or World Bank Health Nutrition and Population Statistics[24] See **Appendix 4** for country-specific proportions based on these sources.
(2)	Average household size	Use *mean household size* from one of the following sources (in order of preference): (1) **P2-ZOI Midline Survey Report:** Table 3.1.1: Comparison of the Household Demographic Characteristics in the ZOI (2) **P2-ZOI Baseline Report:** Table 3.1.1: Household Demographic Characteristics in the ZOI, in Total and by Gendered Household Type	Use *mean household size* from one of the following sources (in order of preference): (1) **P1-ZOI Endline Survey Report** (2) **P1-ZOI Interim Survey Report** (3) Rural disaggregate from the latest country DHS using STATcompiler See **Appendix 4** for country-specific average household sizes based on these sources.

[24] Estimates of the proportion of the population that is under 5 years of age and women of reproductive age can be obtained from the World Bank Health Nutrition and Population Statistics database (http://databank.worldbank.org/data/reports.aspx?source=health-nutrition-and-population-statistics). For children under 5 years of age, select the series "Population ages 00-04, female," "Population ages 00-04, male," and :Population, total." Sum the first two and divide by the third for an estimate of the proportion of the population that is under 5 years of age. For women of reproductive age, select the series "Population ages 15-19, female," "Population ages 20-24, female," "Population ages 25-29, female," "Population ages 30-34, female," "Population ages 35-39, female," "Population ages 40-44, female," "Population ages 45-49, female," and "Population, total." Sum the first seven and divide by the "Population, total" for an estimate of the proportion of the population that is women of reproductive age at the national level.

Adjustment 2: Inflate sample size to account for potential non-response			
	Parameter	**Countries with P2-ZOI data**	**Countries without P2-ZOI data**
	Anticipated gross household non-response rate (%)	Compute as *100 – (Number of households interviewed ÷ Number of households selected x 100) (%)* Source of information (in order of preference): (1) **P2-ZOI Midline Survey Report:** Table 2.2.1: Comparison of Results of Household and Individual Interviews in the ZOI (2) **P2-ZOI Baseline Survey Report:** Table 2.1: Results of Household and Individual Interviews, in Total and by Residence	5.5%

7.1.3 Final P3-ZOI sample size

The final P3-ZOI sample size is the largest of the sample sizes calculated for the three goal-level indicators for poverty, food insecurity, and stunting (where applicable), and the Feed the Future performance indicator, women's minimum dietary diversity. However, if the steps outlined above result in a sample size above 2,200 households,[25] Missions may cap the P3-ZOI sample size at **2,200 households** to save on time and cost. The minimum sample size required is 1,000 households.

7.2 P2-ZOI Endline Survey Sample Size

Similar to P3-ZOI Round 1 Surveys, P2-ZOI Endline Surveys will be designed to provide single point-in-time estimates for the three goal-level indicators of poverty, food insecurity, and stunting.[26] This means that it will be possible to detect statistically significant differences only if the difference between baseline and endline values is large enough.

Following the detailed guidance and parameters provided in Section 7.1.2, the following three goal-level indicators will be used to determine the sample size needed for P2-ZOI Endline Surveys:[27]

- Prevalence of poverty: Percentage of people living on less than $2.15/day 2017 PPP
- Prevalence of moderate or severe food insecurity in the population, based on the FIES

[25] The household cap was determined by examining sample size effects on precision of ZOI-level indicator estimates. The 2,200 household cap meets the desired precision for most ZOI-level indicators in most target countries while keeping data collection costs within reason.

[26] Unlike P2-ZOI Endline Surveys, P2-ZOI Baseline Surveys were designed to capture a defined level of change over time from baseline to endline.

[27] MDD-W is not a performance indicator for phase two implementation and is not included in sample size calculations for P2-ZOI Endline Surveys.

- Prevalence of stunted (HAZ < -2) children under 5 years of age *(when collected in the survey)*[28]

The final P2-ZOI Endline sample size is the largest of the sample sizes calculated for these indicators. However, if the steps to calculate the P2-ZOI Endline sample size result in a sample size above 2,200 households, Missions may cap the sample size at 2,200 households. The minimum sample size required is 1,000 households.

Most continuing target countries will conduct a P2-ZOI Endline and P3-ZOI Round 1 Survey in a single survey, and REFS acknowledges that time and resource constraints are an important consideration when determining a final sample size for a combined, or dual purpose, P2-ZOI Endline and P3-ZOI Round 1 Survey. Because technical decisions are driven by what is optimal for the P3-ZOI Round 1 Survey, Missions implementing a P2-ZOI Endline and P3-ZOI Round 1 Survey may need to make a final adjustment to the P2-ZOI Endline sample size if the overall computed sample size for the dual purpose survey is greater than **3,200 households.** In other words, if the final sample size for a dual purpose P2-ZOI Endline and P3-ZOI Round 1 Survey exceeds 3,200 households, the P2-ZOI Endline sample size will be adjusted. Additional guidance on how to compute and adjust the P2-ZOI Endline sample size in this scenario is described in Section 7.3.

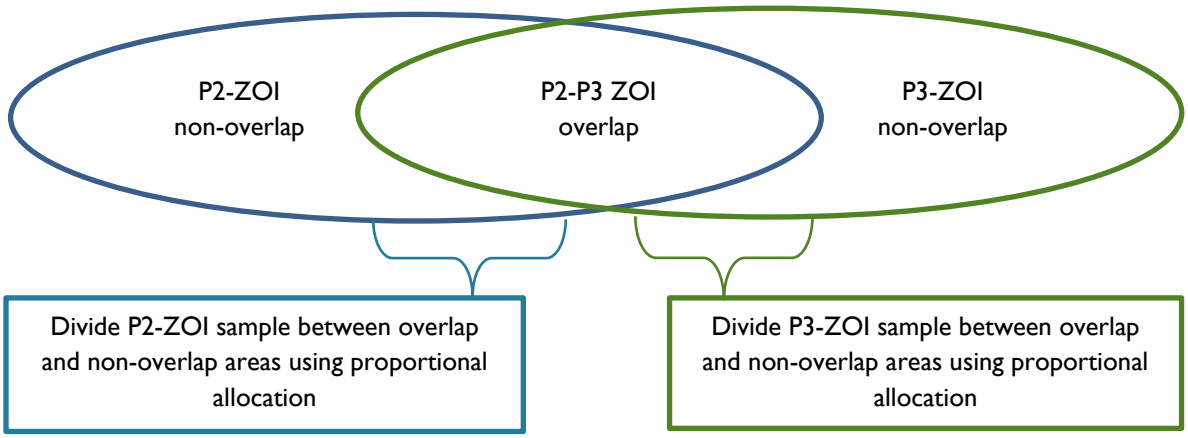
7.3 Dual Purpose P2-ZOI Endline and P3-ZOI Round 1 Survey Sample Size

The final sample size of a dual purpose P2-ZOI Endline and P3-ZOI Round 1 Survey is determined by three factors: (1) the calculated sample size for each survey; (2) the geography of the P2-ZOI and P3-ZOI, including the proportion of each ZOI population in the overlapping and non-overlapping areas; and (3) the 3,200 household sample size cap (described in Section 7.2).

Missions should first calculate the sample size for each survey. Next, teams should determine the total population of households or individuals (depending on which measure of size is used in the sample frame) in the P2-ZOI and P3-ZOI and the proportion of the population in the overlap and non-overlap areas of the two ZOIs (see **Figure 2**).

[28] If stunting estimates will be produced using secondary DHS data, this indicator should not be included in the sample size calculations.

Figure 2: Example of Overlap Between P2-ZOI and P3-ZOI



Finally, Missions can input these parameters in the "Dual Purpose Survey" tab in the Sample Size Calculator to determine the final sample size for the dual purpose P2-ZOI Endline and P3-ZOI Round 1 Survey, using the step-by-step guidance that follows. Specific examples using the step-by-step guidance are provided in **Appendix 5.**

Step-by-step Instructions for Determining the Sample Size for the Dual Purpose P2-ZOI Endline and P3-ZOI Round 1 Survey

1. Calculate the P3-ZOI Round 1 sample size using the guidance in Section 7.1, capping the sample size at 2,200 households as needed.
2. Calculate the P2-ZOI Endline sample size using the guidance in Section 7.2, capping the sample size at 2,200 households as needed.
3. Determine the proportion of the P2-ZOI population and the proportion of the P3-ZOI population in the overlap area of the two ZOIs.
4. Divide the P2-ZOI sample size between overlap and non-overlap areas using proportional allocation (see Figure 2).
5. Divide the P3-ZOI sample between overlap and non-overlap areas using proportional allocation (see Figure 2).
6. Sum the sample in the P2-ZOI non-overlap and P3-ZOI non-overlap areas and add the largest of the sample sizes calculated for the P2-ZOI or P3-ZOI overlap. If the sum of these sample sizes is 3,200 households or less, **skip to step 10.** If the total sample size is greater than 3,200 households, cap the sample size at 3,200 households and **continue to step 7** to determine final sample sizes for the P2-ZOI and P3-ZOI.
7. Subtract 3,200 from the total sample size to determine the overage between the overall sample size and the 3,200 cap.
8. If the P2-ZOI overlap sample is greater than the P3-ZOI overlap sample, **continue to step 9.** If the P2-ZOI overlap sample is less than or equal to the P3-ZOI overlap sample, subtract the overage calculated in step 7 from the P2-ZOI non-overlap and **skip to step 10.**
9. Subtract the overage calculated in step 7 from the P2-ZOI sample size, proportional to the population in the P2 non-overlap and the P2-ZOI and P3-ZOI overlap.

10. Sum the P2-ZOI non-overlap sample and the largest sample of the P2-ZOI and P3-ZOI overlap to determine the final P2-ZOI Endline sample size.
11. Sum the P3-ZOI non-overlap sample and the largest sample of the P2-ZOI and P3-ZOI overlap to determine the final P3-ZOI Round 1 sample size.
12. Sum the P2-ZOI non-overlap sample, the largest sample calculated for the P2-ZOI and P3-ZOI overlap, and the P3-ZOI non-overlap sample to confirm the final sample size for the dual purpose survey.

7.4 Stratification and Sample Allocation

In general, the stage one sample frame of EAs should be stratified—that is, ordered geographically (e.g., by region) and then by urban and rural EAs in each geographic stratum before the first-stage sample selection. This will help reduce the standard error and increase the precision of the indicator estimates.

As long as every household in each stratum has a known and non-zero probability of being randomly selected in the sample, the sample is **representative** at the stratum level. Note, however, this does not mean that indicator estimates calculated at the level of each stratum will have the same level of **precision** as the overall ZOI-level estimates. To obtain the same level of precision at the stratum level, teams would need to collect the same size sample at the stratum level that had been calculated for the ZOI level—in other words, to multiply the ZOI sample size by the number of strata of interest. In many cases, this results in a sample size larger than the Mission is able to support given funds available, even if the team is interested in precise estimates at a sub-ZOI level.

After sample strata have been defined, the overall sample needs to be allocated (i.e., divided) among the strata. REFS recommends that the sample be allocated proportionally to the population (of households or individuals) in each stratum, which favors precision of ZOI-level estimates. If the Mission is interested in equally allocating among the strata (equal allocation), which favors the precision of stratum-level estimates, they should consult their ADL Survey Methods Advisor and OCI MEL TA. For more information and the sample allocation formula, see the *Feed the Future PBS Sampling Guide* in the Survey Methods Toolkit.

If the ZOI Survey is a dual purpose P2-ZOI Endline and P3-ZOI Round 1 Survey, the stage one sample frame (of EAs in the combined P2-ZOI and P3-ZOI) should be stratified first into three stratum as follows: (1) the P2-ZOI non-overlap area, (2) the P3-ZOI non-overlap area, and (3) the P2-ZOI and P3-ZOI overlap area. Then within each of the primary strata, the sample frame should be stratified, first geographically and then by urban/rural location. The sample should then be allocated proportionally among sub-strata.

7.5 Number of Households to Interview per Enumeration Area

After the sample has been allocated among the sub-strata, the number of EAs that need to be selected per sub-stratum should be calculated. To calculate this, the sample size per sub-stratum is divided by the number of households to be interviewed per EA. REFS recommends that data be collected from 20 to 30 households per EA, which provides a reasonable compromise between logistical and statistical

efficiency.[29] In addition, a minimum of 2 EAs should be assigned per stratum to increase the likelihood that data from a minimum of 30 households are collected after accounting for any non-response. This will ensure a minimum level of statistical representativeness at the sub-stratum level.

8. DATA PROCESSING AND ANALYSIS

Missions should ensure that survey implementers follow the *Feed the Future Data Processing Manual* and *Feed the Future Guide to Statistics* from the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026) to ensure that data collected in the ZOI PBS are cleaned, missing values are handled appropriately, sampling weights are applied, indicators are computed, and analyses are conducted correctly and uniformly using a consistent naming convention.

Survey implementers must use appropriate specialized statistical software packages, such as Stata and R, that can take into account the complex design features of the ZOI PBS, such as clustering and unequal probabilities of selection, to generate indicator estimates with confidence intervals and standard errors. Spreadsheet packages such as Excel should not be used. It is critical that the correct syntax for complex survey designs be used, and therefore users should familiarize themselves with such software before undertaking any data analysis. The Toolkit (linked above) will contain the *Feed the Future Guide to Statistics* and Stata data analysis programs for cleaning and manipulating ZOI PBS data, constructing the indicators, conducting the analysis, and producing the required information. In addition, the Toolkit will contain Stata syntax for auto-populating the required tables. The final tables should present confidence intervals and the unweighted number of sample units to clearly communicate actual achieved sample size (i.e., the number of cases on which the estimate is actually based).

8.1 Secondary Data Analysis

Survey implementers contracted to conduct the ZOI PBS will be responsible for conducting secondary analysis of DHS,[30] LSMS,[31] or AAS[32] data to produce ZOI-level estimates for relevant indicators, when available. An approach for conducting secondary analysis of DHS data for ZOI reporting purposes has been developed and will be shared in the *Feed the Future Guide to Statistics*. Survey implementers must follow the approach to ensure that secondary analysis of DHS data is conducted in a standardized manner. REFS expects a similar approach to be used for conducting secondary analysis of LSMS and AAS data to generate ZOI-level estimates for agricultural productivity indicators. Additional guidance on this will be provided in the *Feed the Future Guide to Statistics* as well.

In instances in which DHS, LSMS, or AAS data are being collected in the year following planned data collection for the ZOI PBS and are not yet available for analysis purposes, Missions and survey implementers should work with their ADL Survey Methods Advisor and OCI MEL TA to assess the feasibility of using the contracted survey mechanism or the ADL centrally managed mechanism to

[29] See the Feed *the Future PBS Sampling Guide* in the Survey Methods Toolkit for more detail on the tradeoff between logistical and statistical efficiency when determining the appropriate number of households to sample per EA.

[30] Once available, DHS data can be found at: https://dhsprogram.com/data/. The website contains instructions on how to register for dataset access.

[31] Once available, LSMS data relevant to the Feed the Future ZOI PBS, can be found at: https://www.worldbank.org/en/programs/lsms/initiatives/lsms-ISA.

[32] Survey implementers will need to contact the relevant country NSO to access AAS datasets.

conduct secondary analysis at a later time when the dataset is available. If secondary data become available after the ZOI PBS report has been finalized, the responsible party conducting the secondary analysis should submit an addendum to the final ZOI PBS report presenting the results using the secondary data. This addendum should be submitted to the USAID Contracting Officer's Representative (COR) of the mechanism conducting the secondary data analysis, the ADL Survey Methods Advisor, and the OCI MEL TA.

9. REPORTING

Survey implementers should present the methods and results of the ZOI PBS using the standardized table shells and report templates in the Feed the Future ZOI Survey Methods Toolkit—Endline/Round 1 Surveys (2024–2026). Survey implementers conducting a dual purpose P3-ZOI Round 1 and P2-ZOI Endline Survey will need to produce separate tables and reports for each survey.

To increase the utility of the ZOI PBS data and disseminate results more quickly, survey implementers will first develop a key findings report (maximum 30 pages), highlighting key background and methodological features of the P3-ZOI Round 1 Survey or P2-ZOI Endline Survey and presenting Feed the Future indicator results alongside graphs and other data visualization elements. Survey implementers will also develop a final ZOI Survey report that includes a more detailed description of the survey methods used in the P3-ZOI Round 1 Survey or P2-ZOI Endline Survey and presents all Feed the Future indicator results tables with required disaggregates and descriptive tables.

For P2-ZOI Endline Surveys, results should be presented alongside P2-ZOI baseline and midline (where relevant) results. Statistical tests of differences should be conducted to assess statistically significant changes between each time point.

For all surveys, the final key findings report and the full ZOI Survey report should be posted to the Development Experience Clearinghouse within 30 calendar days after the reports are approved by the USAID COR of the contracted survey mechanism.

10. DATASET PREPARATION AND SUBMISSION

In addition to producing separate reports for the P2-ZOI Endline or P3-ZOI Round 1 Surveys, survey implementers are required to prepare three separate datasets for each survey:

- **Non-public access version** for USAID internal use
- **Public access version** for public use
- **Restricted public access version** for internal and external analysis

The datasets should be prepared according to the *Feed the Future Protocol for Preparing Non-Public, Restricted Public, and Public Access Datasets* contained in the Toolkit. The USAID non-public access version will include key recoded variables and retain allowable personally identifiable information variables (e.g., non-displaced geospatial information); it should be transmitted to the USAID COR of the contracted mechanism overseeing the survey and the ADL Data and Analysis team (refs.adl.da@usaid.gov). The public access version will protect respondent privacy and confidentiality by removing or masking identifying information from the data, including direct identifiers (information such

as names, addresses, global positioning system coordinates, or any other personally identifying number or characteristic) and indirect identifiers (data that do not specifically identify a person or location but that can be used to do so, one variable at a time or in combination, because they uniquely describe a person or household); it should be submitted to the USAID Development Data Library within 30 calendar days after the final report is approved by the USAID COR of the contracted survey mechanism. Finally, the restricted public access version will remove or mask identifying information from the data while allowing some sensitive indirect identifiers necessary for internal and external analysis; it should be submitted to the USAID COR of the contracted mechanism, the ADL Data and Analysis team, and the USAID Development Data Library within 30 calendar days after the final report is approved.

11. RESULTS DISSEMINATION

To increase awareness and use of the ZOI PBS results generated through the surveys, Missions and survey implementers are encouraged to conduct a 1-day results dissemination workshop with government officials, implementing partners, and other stakeholders to communicate ZOI PBS findings and share data use cases. Similar workshops have been developed for several P2-ZOI Midline Surveys. Missions should discuss data dissemination workshop options with their ADL Survey Methods Advisor and OCI MEL TA and include them in the SOW for the ZOI PBS.

APPENDIX 1: FEED THE FUTURE P3-ZOI ROUND 1 INDICATORS, BY DATA SOURCE AND DATA COLLECTION METHOD

	Indicator title	Collected in ZOI PBS	Computed from DHS, LSMS, or AAS data	Computed from DHS data OR collected in ZOI PBS
1	Prevalence of poverty: Percent of people living on less than $2.15/day 2017 PPP	X		
2	Depth of poverty of the poor: Mean percent shortfall of the poor relative to the $2.15/day 2017 PPP poverty line	X		
3	Prevalence of near-poor: Percent of people who are "Near-Poor", living on 100 percent to less than 125 percent of the $2.15 2017 PPP poverty line	X		
4	Percent of households below the comparative threshold for the poorest quintile of the asset-based Comparative Wealth Index	X		
5	Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)	X		
6	Ability to recover from shocks and stresses index	X		
7	Percent of women of reproductive age consuming a diet of minimum diversity ("MDD-W")	X		
8	Five Domains of Empowerment (5DE) score for women	X		
9	Percent of households with access to a basic sanitation service	X		
10	Percent of households that are water insecure (HWISE-4)	X		
11	Prevalence of underweight (BMI < 18.5) women of reproductive age		X	
12	Prevalence of children 6-23 months receiving a minimum acceptable diet		X	
13	Yield of targeted agricultural commodities		X	
14	Percent of producers who have applied targeted improved management practices or technologies		X	
15	Prevalence of exclusive breastfeeding of children under six months of age		X	
16	Percent of households with soap and water at a handwashing station on premises		X	
17	Prevalence of stunted (HAZ < -2) children under five (0-59 months)			X

	Indicator title	Collected in ZOI PBS	Computed from DHS, LSMS, or AAS data	Computed from DHS data OR collected in ZOI PBS
18	Prevalence of wasted (WHZ < -2) children under five (0-59 months)			X
19	Prevalence of healthy weight (WHZ ≤ 2 and ≥-2) among children under five (0-59 months)			X

BMI=body mass index, HAZ=height-for-age z-score, HWISE-4=Brief Household Water Insecurity Experiences, WHZ=weight-for-height z-score

APPENDIX 2: FEED THE FUTURE P2-ZOI ENDLINE INDICATORS, BY DATA SOURCE AND DATA COLLECTION METHOD

	Indicator title	Collected in ZOI PBS	Computed from DHS, LSMS, or AAS data	Computed from DHS data OR collected in ZOI PBS
1	Prevalence of poverty: Percent of people living on less than $1.90/day 2011 PPP	X		
2	Depth of poverty of the poor: Mean percent shortfall of the poor relative to the $1.90/day 2011 PPP poverty line	X		
3	Percent of people who are 'Near-Poor', living on 100 percent to less than 125 percent of the $1.90 2011 PPP poverty line	X		
4	Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)	X		
5	Prevalence of stunted (HAZ < -2) children under five (0-59 months)			X
6	Prevalence of wasted (WHZ < -2) children under five (0-59 months)			X
7	Prevalence of healthy weight (WHZ ≤ 2 and ≥-2) among children under five (0-59 months)			X

HAZ=height-for-age z-score, WHZ=weight-for-height z-score

APPENDIX 3: DECISION TREES FOR USING SECONDARY DATA

Decision tree for using DHS data

Dates of planned data collection for the ZOI PBS:

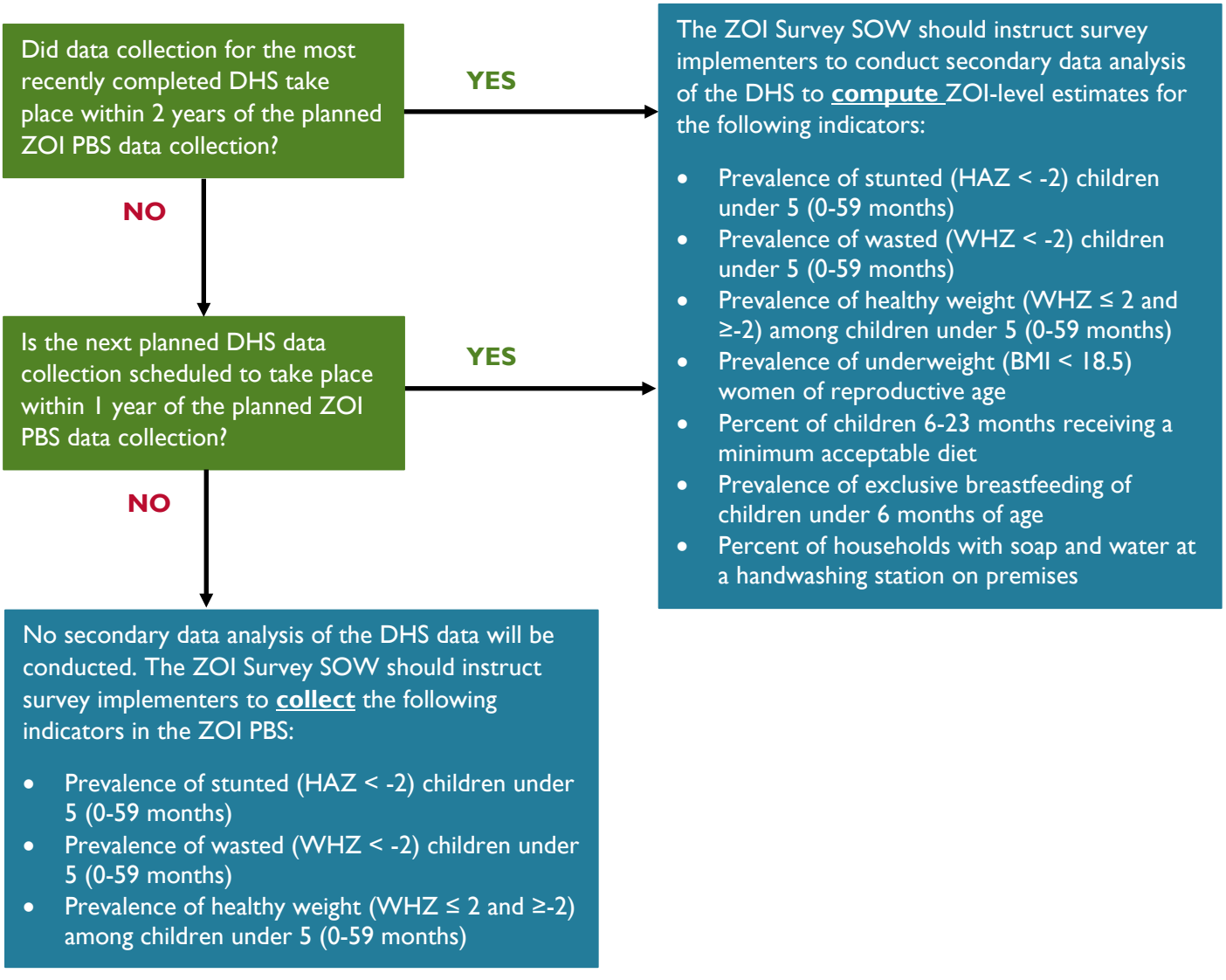
_____

Dates of data collection for the most recently completed DHS:

_____

Dates of data collection for the planned DHS:

_____



Decision tree for using LSMS and AAS data

Dates of planned data collection for the ZOI PBS:

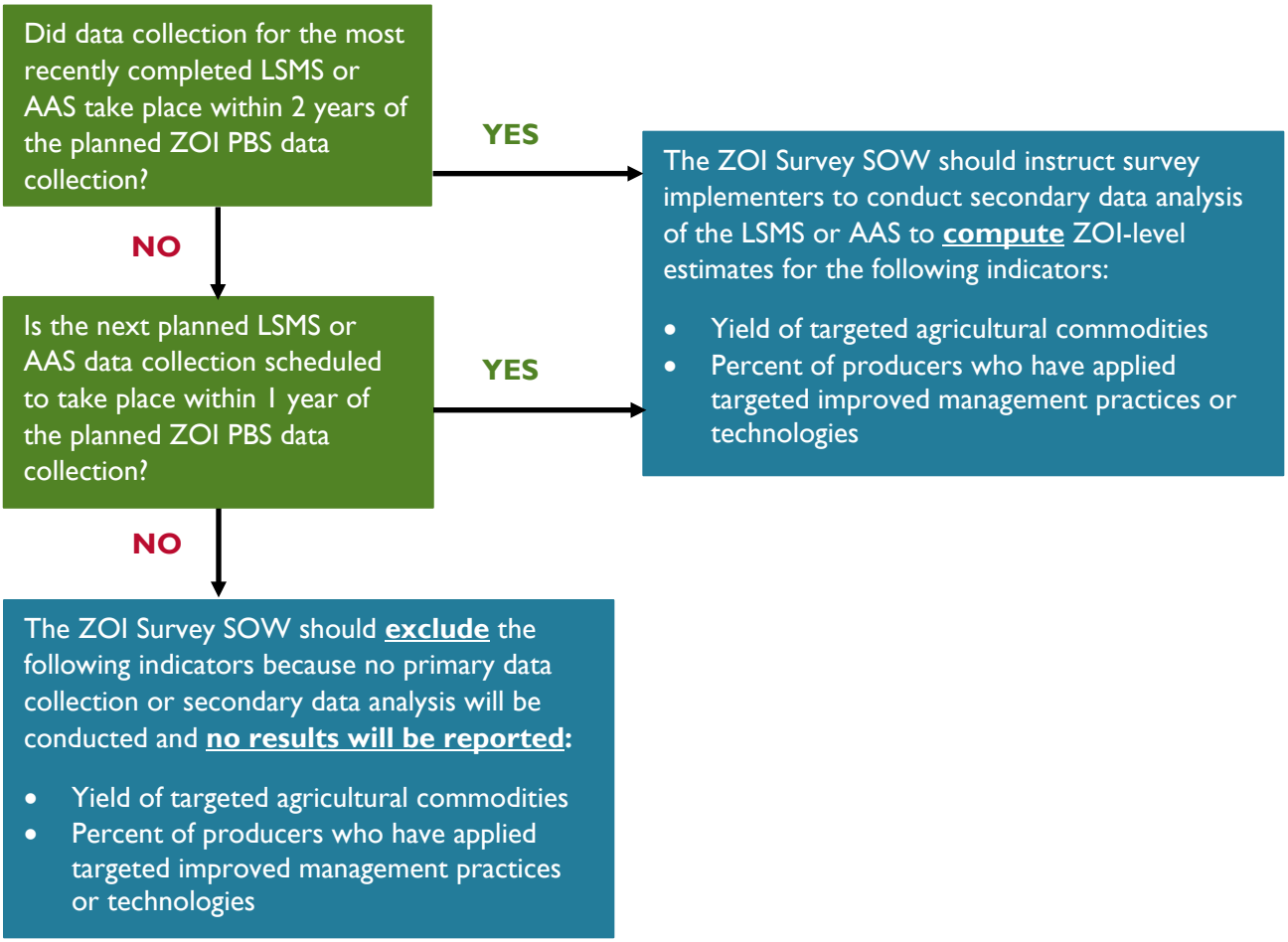
_____

Dates of data collection for the most recently completed LSMS or AAS:

_____

Dates of data collection for planned LSMS or AAS:

_____



APPENDIX 4: INPUTS FOR SAMPLE SIZE ADJUSTMENT 1

The following table provides the inputs needed for Adjustment 1 for stunting and MDD-W indicators for countries without phase two data. In lieu of these data, Missions may choose to use more recent data for their P3-ZOI sample size calculation, if available.

Target country	Proportion of children under 5 years in the ZOI population (%)	Proportion of women of reproductive age (15-49 years) in the ZOI population (%)	Average household size	Source
Democratic Republic of the Congo	18.4*	22.2*	5.1**	*World Bank Health Nutrition and Population Statistics (2022) **2013-14 DRC DHS
Guatemala	13.5	26.2	5.8	2015 Phase 1 ZOI Interim Survey[33]
Honduras	11.9	23.8	5.0	2015 Phase 1 ZOI Interim Survey
Liberia	17.7	23.4	5.9	2015 Phase 1 ZOI Interim Survey
Madagascar	14.2*	24.8*	4.4**	*World Bank Health Nutrition and Population Statistics (2022) **2021 Madagascar DHS
Malawi	18.9	22.7	4.8	2015 Phase 1 ZOI Interim Survey
Mozambique	19.4	21.9	4.6	2015 Phase 1 ZOI Interim Survey
Rwanda	13.9	23.9	4.7	2014-15 Phase 1 ZOI Interim Survey
Tanzania	16.6	24.7	4.5	2019-20 Phase 1 ZOI Endline Survey
Zambia	15.6	21.1	5.3	2018 Phase 1 ZOI Endline Survey

[33] Guatemala Phase 1 Interim Survey values for proportion of children under 5 and proportion of women of reproductive age are estimated from baseline using estimated age group growth rates from the World Bank's Health Nutrition and Population Statistics database (https://databank.worldbank.org/source/health-nutrition-and-population-statistics).

APPENDIX 5: INSTRUCTIONS FOR SAMPLE SIZE CALCULATIONS FOR DUAL PURPOSE P2-ZOI ENDLINE/P3-ZOI ROUND 1 SURVEY

The following table provides step-by-step instructions for calculating final sample sizes for the combined, dual purpose P2-ZOI Endline/P3-ZOI Round 1 Survey.

Step no.	Step	Example with 3,200 cap	Example without 3,200 cap
1	Calculate the P3-ZOI Round 1 sample size using the guidance in Section 7.1, capping the sample size at 2,200 households when needed.	P3-ZOI n=2,200	P3-ZOI n=2,200
2	Calculate the P2-ZOI Endline sample size using the guidance in Section 7.2, capping the sample size at 2,200 households when needed.	P2-ZOI n=2,200	P2-ZOI n=2,200
3	Determine the proportion of the P2-ZOI population and the proportion of the P3-ZOI population in the overlap area of the two ZOIs.	Proportion of P2-ZOI population in P2-P3 overlap: 60% Proportion of P3-ZOI population in P2-P3 overlap: 50%	Proportion of P2-ZOI population in P2-P3 overlap: 70% Proportion of P3-ZOI population in P2-P3 overlap: 60%
4	Divide the P2-ZOI sample size between overlap and non-overlap areas using proportional allocation.	P2-ZOI non-overlap = 2,200*0.4 = 880 P2-ZOI overlap = 2,200*0.6 = 1,320	P2-ZOI non-overlap = 2,200*0.3 = 660 P2-ZOI overlap = 2,200*0.7 = 1,540
5	Divide the P3-ZOI sample between overlap and non-overlap areas using proportional allocation.	P3-ZOI non-overlap = 2,200*0.5 = 1,100 P3-ZOI overlap = 2,200*0.5 = 1,100	P3-ZOI non-overlap = 2,200*0.4 = 880 P3-ZOI overlap = 2,200*0.6 = 1,320
6	Sum the sample in the P2-ZOI non-overlap and P3-ZOI non-overlap areas and add the largest of the sample sizes calculated for the P2-ZOI or P3-ZOI overlap. If the sum of these sample sizes is 3,200 households or less, **skip to step 10**. If the total overall sample size is greater than 3,200 households, cap the sample size at 3,200 households and **continue to step 7** to determine final sample sizes for the P2-ZOI and P3-ZOI.	880 + 1,320 + 1,100 = **3,300** **Total overall sample size = 3,200 (capped)**	660 + 1,540 + 880 = **3,080** **Total overall sample size = 3,080**

Step no.	Step	Example with 3,200 cap	Example without 3,200 cap
7	Subtract 3,200 from the total sample size to determine the overage between the overall sample size and the 3,200 cap.	3,300 - 3,200 = 100 Cap overage = 100	
8	If the P2-ZOI overlap sample is greater than the P3-ZOI overlap sample, **continue to step 9.** If the P2-ZOI overlap sample is less than or equal to the P3-ZOI overlap sample, subtract the overage calculated in step 7 from the P2-ZOI non-overlap and **skip to step 10.**	P2 non-overlap = 880 P2 overlap = 1,320 P3 overlap = 1,100 1,320 > 1,100 - continue to step 9	
9	Subtract the overage calculated in step 7 from the P2-ZOI sample size, proportional to the population in the P2-ZOI non-overlap and P2-ZOI and P3-ZOI overlap.	P2 non-overlap = 880 - (100*0.4) = 840 P2 overlap = 1,320 - (100*0.6) = 1,260	
10	Sum the P2-ZOI non-overlap sample and the largest sample of the P2-ZOI and P3-ZOI overlap to determine the final P2-ZOI Endline sample size.	Final P2-ZOI Endline sample size = 840 + 1,260 = **2,100**	Final P2-ZOI Endline sample size = 660 + 1,540 = **2,200**
11	Sum the P3-ZOI non-overlap sample and the largest sample of the P2-ZOI and P3-ZOI overlap to determine the final P3-ZOI Round 1 sample size.	Final P3-ZOI Round 1 sample size = 1,260 + 1,100 = **2,360**	Final P3-ZOI Round 1 sample size = 1,540 + 880 = **2,420**
12	Sum the P2-ZOI non-overlap sample, the largest sample calculated for the P2-ZOI and P3-ZOI overlap, and the P3-ZOI non-overlap sample to confirm the final overall sample size for the dual purpose survey.	P2 non-overlap = 840 P2-P3 overlap = 1,260 P3 non-overlap = 1,100 Final overall P2-ZOI Endline/ P3-ZOI Round 1 sample size = 840 + 1,260 + 1,100 = **3,200**	P2 non-overlap = 660 P2-P3 overlap = 1,540 P3 non-overlap = 880 Final overall P2-ZOI Endline/ P3-ZOI Round 1 sample size = 660+ 1,540 + 880 = **3,080**