Madagascar Secondary Data Analysis Proposed Program Description
Updated: May 19, 2023

Purpose and Objectives:
The purpose of the Secondary Data Analysis (SDA) of resilience, food and nutrition security, and poverty study is to use secondary data to inform the targeting and design strategy for multi-year resilience food and nutrition security programming in Madagascar.

The study will use the Demographic and Health Surveys (DHS) Standard 2021 survey datasets for Madagascar (DHS program website) to identify the characteristics of children and households who are vulnerable to food insecurity. In addition, the study will identify associated correlates or predictors of poverty, stunting, and wasting in sub-national areas, statistically valid at the level of each province (names of up to two target provinces will be provided when available). Please see Annexes A and B in the DHS 2021 Madagascar Final Report for a discussion on the sampling strategy employed to support this degree of statistical validity.

Budget:
The type of funding for this work assignment will be provided when available. The anticipated budget range for this assignment is $50,000 to $100,000.

Background:
USAID's Resilience Focus Countries represent a significant and ongoing caseload of humanitarian need to the United States Agency for International Development (USAID) Bureau for Humanitarian Assistance (BHA). Poverty, droughts, natural disasters, conflict, and economic crises have historically been large drivers of food insecurity. BHA's activities seek to mitigate this caseload through resilience programming that targets households and communities vulnerable to food insecurity, poverty, malnutrition, and disasters. Poverty and food security - key focus areas of BHA programming - are complex problems with myriad direct and indirect drivers that span many sectors and contextual factors. To potentially narrow the scope and improve the focus of such programming, there is a need at the design stage to identify populations and sectors to prioritize and interventions to consider. To address this need, this study will utilize the publicly available DHS 2021 datasets for Madagascar to build regression models and correlations consisting of key poverty and food security indicators (e.g., wealth quintile, household assets, livelihoods, dietary diversity, stunting) and other variables that have a theoretical, data-driven, or hypothesis-driven rationale for their influence on key poverty outcomes. The models will help identify characteristics of the people and households most in need of intervention. Results from these analyses will inform and refine appropriate targeting and household selection criteria and strategies for an upcoming Resilience and Food Security Activity (RFSA). Further, these results will assist with understanding the factors most strongly associated with key poverty variables, which may also inform recommendations for improving the effectiveness of intervention strategies.

BHA will publicly post the final report summarizing results from the correlation and regression analysis alongside the associated procurement documents (e.g., the Desk Review and Market Study, the Political Economy Analysis, and the Request for Application) so that potential RFSA applicants can use the results to better inform their understanding of context and key demographic profile and sectoral themes relevant to poverty, food security, and resilience in target geographies[1] of the targeted countries. More broadly, we expect the results from this study will contribute to the BHA and USAID goals of improving the quality and impact of poverty reduction, food security, and resilience programming in these countries, saving lives, and reducing the need for humanitarian assistance.

Research Questions:

1. What are the demographic and other characteristics of households and individuals with (1) high levels of poverty and (2) low levels of food access and dietary diversity for each of the targeted provinces?

   The demographics of interest should include, but not be limited to: household size, household composition/type, household dependency ratio, household and individual age distribution; and individual and maternal age for nutrition indicators. See below for a list of the key indicators used to define specific populations of interest:

   - **Poverty** - Indicators of interest include wealth score/ wealth quintile, economic well-being, household possessions, savings, other assets (e.g., land, agriculture, and livestock for income generation), amenities (e.g., electricity, home materials), occupational, livelihood, and other income sources, work habits, and economic characteristics, access to credit, access to resources and services (e.g., healthcare, WASH), mean depth of poverty and prevalence of poverty. Populations of interest include households, women, or men who rank in the lowest quintile of the measurement.

   - **Food access and dietary diversity** – The indicators of interest include minimum acceptable diet, dietary diversity, meal frequency, height for weight (i.e., stunting), and agriculture, livestock, and other sources of food consumption at home. Populations of interest include households, women, or men who rank in the lowest quintile of the measurement as well as children between the ages of 6 and 59 months that are categorized with a height for weight z-score of -2 or less.

   The research team will at their discretion select the specific variables within each of the two overarching categories listed above to include in regression models. The overarching categories of characteristics listed above are provided as a general guide with the expectation that decisions about the variables to include in analyses will be made based on relevant theory and background literature, as available. Because some of these populations and variables may be understudied and thus literature may be lacking, characteristics may also be selected based on hypothesized relations between variables.

2. How do the demographic and other characteristics of households and individuals with high levels of poverty, low levels of food access, high food insecurity, and high levels of chronic

[1] For illustrative purposes, these are referred to as 'provinces' in the subsequent research questions.

malnutrition vary geographically across each of the targeted provinces? The populations, indicators, and demographic characteristics of interest are the same as described in question 1.

3. How do the demographic and other characteristics of households and individuals (as described in question 1) with high levels of poverty, low levels of food access, high food insecurity, and high levels of chronic malnutrition for each of the targeted provinces compare to household and individuals for those indicators that are not target populations (by quintile or that are above -2 z score for chronic malnutrition)? The populations and indicators of interest are the same as described in question 1.

4. Based on results of statistical inference modeling (e.g., OLS, logistic, multivariate, etc.), what characteristics are significantly associated with high levels of poverty, low levels of food access, high food insecurity, and high levels of chronic malnutrition in each of the targeted provinces? What additional insights can these results provide, beyond the current state of the literature and beyond the specific research questions provided above, to better understand the associations between potential predictors (characteristics) and the outcomes (key indicators)? The populations and indicators of interest are the same as described in question 1.

Data Source:
The DHS 2021 datasets for Madagascar are publicly available via registration and request through the DHS program website.

Research Methods:
- A review of the literature will be conducted.
- Data extraction and cleaning of the relevant DHS 2021 datasets containing the key variables (listed above), variables selected from the overarching categories (also listed above), and additional variables deemed appropriate for inclusion based on hypothesized relations between variables in the opinion of the research team. In addition, based on results from the initial regression models, additional regression models may be created for further exploration, which may necessitate the inclusion of additional variables in addition to those listed above.
- Data analysis using appropriate methods. BHA is open to input from the data analyst(s) on appropriate methods, but the following general methods are anticipated:
    - Regression modeling in R, Stata, or another software that is generally available and would lend itself to repeating this process and code in the future. The data analyst will be expected to work with BHA technical representatives to specify these models.
- A narrative description of the results of data analyses. The narrative description will specifically address each of the research questions and expand upon the results listed in regression tables.
- Data visualizations using graphs, charts, etc (with the end product being cleared for public release with RFA)
- Collaborative spatial mapping of the data, indicators, etc.
- An executive summary will provide a high-level written narrative description of the entire report.
- The report will include a list of references consulted and relevant annexes/appendices listing tables of statistical test results and supplemental descriptions of research or statistical methodologies as appropriate. Separate annexes will contain results for each of the targeted provinces.

Deliverables and Schedule:

Deliverables	Submission/Delivery Date
Deliverable 1: Workplan	June 16, 2023
Deliverable 2: SDA Report Outline	July 14, 2023
Deliverable 3: Annotated Bibliography (one annotated bibliography will be submitted for all studies)	July 28, 2023
Deliverable 4: Data Cleaning and Analysis Plan	July 21, 2023
Deliverable 5: Presentation of Initial Findings and Data Visualization	August 18, 2023
Deliverable 6: Draft Data Analysis Report	**September 8, 2023**
Deliverable 7: Final, cleaned data file(s), in English, and coding language	**October 13, 2023**
Deliverable 8: Final SDA Data Analysis Report	**October 13, 2023**
Deliverables (all):	Final deliverables must be completed and submitted to USAID no later than **December 29, 2023.**

Workplan

- The work plan will describe the planned strategies, methodologies, activities, timelines, and resources associated with completing the development of the deliverables, including but not limited to sub-contracting or staffing (if applicable), data collection, analysis, and report writing.
- As part of the work plan, the selected applicant will be asked to develop, in a 2-page written brief, an overview of the research team's ethical framework for the project. The ethical framework overview should acknowledge authorship guidelines and state there is no concurrent research projects using USAID funds, in addition to the following:

    1. **Scientific methodology:** Researchers should adhere to rigorous scientific methodology in designing, conducting, and analyzing their research. This includes using appropriate controls, minimizing biases and confounding factors, and using valid and reliable measures to collect and analyze data. Researchers should also be transparent in reporting their methods and results, and make their data and materials available for critique and replication by others.
    2. **Informed consent:** Participants are informed about the purpose, procedures, and risks

involved in the study, and provide their voluntary consent to participate.

3. **Privacy and confidentiality:** Measures taken to protect the privacy and confidentiality of the participants, such as using anonymous or pseudonymous data collection methods and securing data storage and transfer.
4. **Respect for research participants:** Participants are treated with respect and dignity and their rights and welfare are protected. This includes ensuring that vulnerable populations are not exploited and that participants have the option to withdraw from the study at any time.
5. **Justice:** Researchers should ensure that the burdens of the research on participants are balanced fairly with the anticipated benefits of the research. Populations are not exploited or subject to unfair selection criteria.
6. **Scientific integrity:** Researchers adhere to high standards of scientific conduct, including honesty, transparency, and accurate reporting of data. This includes disclosing any conflicts of interest and ensuring that the research is not influenced by financial or other interests.
7. **Responsible conduct:** Researchers follow applicable laws, regulations, and ethical standards in conducting research, and seek approval from relevant research ethics committees or institutional review boards.
8. **Plan for author contributions and standards for authorship:** Researchers have a plan for author contributions to ensure that all anticipated authors have a substantial role in the research that is in alignment with Section 6 "Meeting Standards for Authorship" of the USAID Scientific Research Policy.

At a minimum, the ethical framework will align with:

1. USAID Scientific Research Policy, with special attention to Section 3. Quality standards; Section 4. Ethical Standards; and Section 6 subsection "Meeting Standards for Authorship"[2]
2. USAID BHA Emergency Application Guidelines Common Requirements Section 12.5 "Code of Conduct and Protection from Sexual Exploitation and Abuse and Section 12.6 "Accountability to Affected Populations" (Sections 12.5 and 12.6 are available here)
3. Declaration of Helsinki Ethical Principles for Research Involving Human Subjects

USAID highly recommends that applicants consider the following resources when constructing their ethical framework:

1. Doing Global Science: A Guide to Responsible Conduct in the Global Research Enterprise" (2016) by the InterAcademy Partnership (IAP) (a free PDF is available)
2. USAID Gender Equality and Women's Empowerment Policy

In addition, the research team will include references to their own institution-specific policies, procedures, and/or practices in place that ensure technical quality, and research standards.

SDA Report Outline

- The SDA report outline will be drafted by the awardee team and reviewed by the USAID/BHA design team, and finalized based on mutual agreement/feedback received, or later upon mutual agreement of the awardee team and USAID. The exact report outline will reflect the USAID

[2] If these resources are updated, the research team should use the latest available version. USAID will make a best effort to provide the latest version as it becomes available.

design team's core research questions for a given work assignment.

Background Literature Review/Annotated Bibliography

- The background literature review will provide the secondary sources that the awardee reviewed and considered for the development of the SDA.

Data Cleaning and Analysis Plan

- This plan will describe the planned strategies, principles, steps, resources and timelines associated with cleaning and analyzing the dataset.

Presentation of Initial Findings and Data Visualization

- This includes a briefing to USAID on initial findings prior to report writing. This gives USAID the opportunity to provide feedback on the research to inform the final report. The briefing will occur at a mutually agreeable time and location. The briefing must include a slide deck presentation and data visualization of initial findings.

Draft Data Analysis Report

- One stand-alone report not to exceed 35 pages with the following structure:
    - Executive Summary - A two-page summary of significant findings and considerations relevant to the activity design.
    - Background Literature Review - A narrative background section containing citations of the peer-reviewed scientific and relevant literature will describe the nature and context of the key variables, target populations, and their known and unknown relations to the characteristics being examined.
    - Methodology - A description and presentation of the evaluation questions, objectives, statistical analysis strategy, limitations, etc.
    - Results
    - Annexes - A separate Annex for each province containing a compilation of figures, tables, maps, etc., with an accompanying narrative addressing the aforementioned research questions, organized by research question or unit of analysis (i.e., indicator).

Final, cleaned data file(s), in English, and coding language

- Final, cleaned data file(s) and a codebook or data dictionary that describes each variable in the dataset, including descriptions, methodology used for calculations, ranges, type of variable (e.g., binary, string, categorical), and any other relevant information needed to use the dataset for subsequent analyses.

Final Data Analysis Report

- Revised version of the previously described data analysis report, which incorporates feedback provided by USAID/BHA.

All Deliverables

- All reports/deliverables submitted to USAID should maintain quality standards (e.g. writing, research methodology, Scientific Research Ethics [see Request for Concept Notes], etc.). Specific standards of quality will be provided to the research team. Deliverables lacking in quality will not be accepted for review.
- During the review process, USAID will provide feedback as outlined in the timeline. USAID

reserves the right to request a teleconference to review the draft or provide additional context. The revision process for plans, outlines, reports, and materials will continue until approval is provided.

- All reports/deliverables must follow USAID-approved branding and marking guidelines.

Example Reports from Prior Secondary Data Analysis Projects

BHA has provided the following example reports of similar data analysis projects:

1. For the Zimbabwe portfolio in 2020. Below is a link to the Food Security Analyses based on the 2015 DHS survey for Masvingo: https://www.rtachesn.org/resources/zimbabwe-market-and-food-security-analysis/

   Note that the particular goal for the analysis was different in this context, but many elements of the report structure are similar. In addition, note that the Madagascar program description requires repetitions of the same analyses for each of the provinces.

2. For the Democratic Republic of Congo (DRC) portfolio in 2022. Below is a link to the Secondary Data Analysis based on the 2018 UNICEF Multiple Indicator Cluster Survey for DRC: https://laserpulse.org/publication/poverty-and-malnutrition-in-the-democratic-republic-of-the-congo-secondary-data-analysis-findings-from-the-provinces-of-tanganyika-kasai-and-kasai-central/