LEVERAGING SERVICES TO CREATE NEW PATHWAYS

Impact Study Baseline Results from the initiative *Building Resilience in Burkina Faso*

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Executive Summary

Climate-related hazards such as drought and flooding in northern and central Burkina Faso exacerbate hunger and sickness through various interrelated pathways that involve livelihoods, food security, maternal and child care, water, sanitation and health. Climate change is projected to continue decreasing food availability, as well as threaten agricultural livelihoods of rural Burkinabè, making entire communities vulnerable to external shocks. The lack of livelihood diversity, access to adequate health, social, and financial resources, combined with heavy dependence on rain-fed agriculture, creates several barriers to building the resilience of these populations.

Freedom from Hunger[1] is addressing this challenge with the three-year initiative *Building the Resilience of Vulnerable Communities in Burkina Faso* (BRB), funded by the Margaret A. Cargill Foundation (MACF). Working through two local partners, Office de Développement des Eglises Evangéliques (ODE) and the Association Solidarité et Entraide Mutuelle au Sahel (SEMUS), the approach features the innovative use of community-based women's savings groups (SGs) as a platform for providing a multi-sectoral integrated package of agricultural, nutrition, financial services, and women's empowerment programming to help thousands of SG members overcome many of the geographic, cultural, social and economic constraints that hamper their resiliency in the face of shocks and disasters.

An impact study is helping to assess whether the project has achieved its overall purpose of increasing the resilience of vulnerable communities in disaster-affected-areas of Burkina Faso. The key question driving the impact study, as well as the overall evaluation plan, is:

> To what degree does the combination of agricultural services, financial services, nutrition education, and gender dialogues strengthen the resilience of the beneficiary individuals and households, and influence the short- and long-term outcomes in the BRB Benefits Process and Freedom from Hunger Resilience Framework?

The quasi-experimental study compares women in SGs who received the additional services to those in SGs without access to services. A total of 429 women were interviewed at the baseline; 218 for the treatment group based in the Sanguié province and 211 for the control group based in the Nayala province. The following report

[1] Please note that as of October 2016, Freedom from Hunger combined forces with the Grameen Foundation (GFUSA) and became a supporting organization of GFUSA. The BRB Project remains under Freedom from Hunger although managed by staff of both organizations.

describes the results of the baseline survey of the impact study, setting the stage for learning which outcomes have changed by the endline survey, slated for later in 2017.

To summarize, the treatment group women are about 40 years of age, in polygamous marriages, Gourounsi, Christian, illiterate, food insecure, and live on less than US$2.50/day (2005 PPP). They earn about $7 in a normal week, saving about one-third of that into the next week, giving them the ability to cover basic needs yet sometimes struggling. Little access to and low affordability of formal financial services prevents them from using them much except for the purpose of receiving remittances, yet they actively save and take loans in their SGs. Most engage in petty commerce to earn money, with half growing and selling women's crops of sesame, cowpeas and peanuts. The women actively use *zaï* and composting to manage crops, and see crops only as a way to feed the family, and not as a money-making venture. They raise pigs, along with other small animals, and only some have been able to give their livestock better food and care in the past year. Most do not invest loans in their crops. Some have home gardens, and can produce food for home consumption, though in inadequate amounts. They have fairly high knowledge of main nutrition concepts, but suffer from food insecurity and eat a poor-quality diet. Views on gender equality are quite mixed, with less than half feeling empowered in their households. Young women in the group are much like the adults though assessing themselves to be more empowered. Both young and older women engage in community groups, and would rely on them if a crisis hit their household, but less so if one hit their community. Households frequently deal with death and illness of family members, as well as loss of livestock. Household resources are strained and thus several coping mechanisms to cope with shocks are used. A little over half consider themselves resilient, and they all consider internal household communication to be an influential driver of resilience. Overall, the agriculture, financial service and nutrition results are fairly straightforward; but key empowerment and resilience indicators suggest a complex analysis to understand impact at the endline.

ODE and SEMUS have successfully launched the BRB project; it is functioning well operationally and has reached thousands of participants. It is clear from the results of the baseline impact survey that the program has potential to influence its vulnerable participants and create positive changes in several outcomes by the end of the project. Changes are expected to occur for knowledge, behavior and attitude indicators across various areas, most notably for household resiliency, savings, agricultural livelihood and financing, financial capability, ability to plan for a healthy diet, self-confidence, and household decision-making. We can see that there is a strong chance for the program to be successful and to effectively build the resilience of the women, and communities, involved.

Introduction

Burkina Faso is one of the poorest countries in Africa, with 44.5 percent of the population living on less than US$1.25 per day.[2] Climate-related hazards such as drought and flooding in northern and central Burkina Faso exacerbate hunger and sickness through various interrelated pathways that involve livelihoods, food security, maternal and child care, water, sanitation and health. Climate change is projected to continue to decrease food availability, as well as threaten agricultural livelihoods of rural Burkinabè, making the entire community vulnerable to external shocks. This can be particularly difficult for women—while the Burkina Faso Ministry of Agriculture provides some smallholder agricultural extension services to assist rural populations, female producers do not systematically benefit from those services, which are concentrated on larger population centers with male producers as their target. The lack of livelihood diversity, access to adequate health, social, and financial resources, combined with heavy dependence on rain-fed agriculture, creates several barriers to building the resilience of these populations. The challenge remains how to push the frontier of improved agricultural techniques, financial services, nutrition practices and gender equality comprehensively and cost effectively to rural communities to effectively benefit their most vulnerable members: women and youth.

Freedom from Hunger is addressing this challenge with the three-year initiative *Building the Resilience of Vulnerable Communities in Burkina Faso* (BRB), funded by the Margaret A. Cargill Foundation (MACF). Working through two local partners, Office de Développement des Eglises Evangéliques (ODE) and the Association Solidarité et Entraide Mutuelle au Sahel (SEMUS), the initiative aims to strengthen the links between resilience, agriculture, nutrition and gender equality. The approach features the innovative use of community-based women's savings groups (SGs) as a platform for providing a multi-sectoral integrated package of agricultural, nutrition, financial services, and women's empowerment programming to help thousands of SG members overcome many of the geographic, cultural, social and economic constraints that hamper their resiliency in the face of shocks and disasters. The project addresses the problems of inadequate agricultural, nutrition, and financial knowledge and practices among the target population, and the inability of agricultural extension, health, nutrition, and financial service providers to effectively reach this vulnerable population. An income-generating activity (IGA) loan as well as an agricultural loan will be offered to the women by the longstanding Freedom from Hunger partner le Réseau des Caisses Populaires du Burkina Faso, which will help the women invest in their livelihoods.

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[2] Human Development Report Office. 2015. Burkina Faso Human Development Indicators, based on the *Human Development Report 2015: Work for Human Development.* New York, NY: United Nations Development Programme. Accessed on January 5, 2017 at: http://hdr.undp.org/en/countries/profiles/BFA#.

Additionally, gender dialogues are being facilitated among SG members and their husbands as an effort to improve internal household communication and decision-making within these domains. Project objectives include

1) building linkages to services and financing for climate-smart agriculture;
2) strengthening knowledge and skills on better food-utilization and nutrition practices;
3) improving resilience to food security shocks through increased savings, assets, and improved gender equity within the household; and
4) contributing to learning on individual and community-level resiliency and disaster risk reduction through examining the impact of agriculture, nutrition and financial services delivered to SGs.

To understand whether the project has reached these objectives, and ultimately achieved its overall purpose of increasing the resilience of the communities in disaster-affected areas of Burkina Faso, the project activities include an evaluation plan. The key question driving the evaluation plan is:

> To what degree does the combination of agricultural services, financial services, nutrition education, and gender dialogues strengthen the resilience of the beneficiary individuals and households, and influence the short- and long-term outcomes in the BRB Benefits Process and Freedom from Hunger Resilience Framework?[3]

The evaluation plan encompasses a mixed-methods approach, including the following four components to answer the key question: 1) an SG member impact study; 2) a community resilience assessment; 3) a member and institutional qualitative assessment, and 4) financial- and social-indicator monitoring. The most significant activity of the plan is the impact study, which uses a quasi-experimental design with control groups to estimate the impact of the program on a sample of participants from the BRB program. The following report describes the impact study baseline results, setting the stage for the endline survey analysis later in 2017. Results from all four activities will be presented in a cumulative report at the end of the project.

In addition to these evaluation activities, grant funding acquired through the International Food Policy Research Institute (IFPRI), under the Gender, Agriculture and Assets Project, Phase 2 (GAAP2) will help us understand the role of women's empowerment in the project. The grant is being used to pilot and test a project-level Women's Empowerment Agriculture Index (pro-WEAI), with the impact study

[3] Further details on the BRB Benefits Process and the Freedom from Hunger Resilience Framework can be found in the Background section.

participants. By interviewing study participants and their husbands, the Index aims to measure empowerment in five domains of agriculture: production, resources, income, community leadership, and time usage. Results of this add-on study will be integrated into BRB evaluation findings as the timeline of the study permits.

The benefit of summarizing the baseline findings in the following paper is to gain an understanding of the women reached in the program, as well as the women in the control group, and to consider which outcomes are likely to change by the impact endline results. The paper starts with a Background section that examines industry definitions and methods of measurement of the multi-faceted concept of resilience, and further introduces the Freedom from Hunger Resilience Framework and BRB Benefits Model. A short description of conditions in Burkina Faso is provided to help contextualize the findings. Next, the Methods section describes the study design, sample, research partners, and limitations of the study. The Results section forms the bulk of the paper, summarizing findings on the key areas of the survey: demographics, income, savings, financial services, agriculture, nutrition, food security, resilience, and empowerment. A summary of the profile of the treatment and control groups can be found at the end of the Results section. The paper ends with a short conclusion, commenting on areas where change is anticipated at the endline.

Background

Resilience has become an increasingly common focus in international development work in the past few years. It is considered a relatively new focus for development practitioners, although perhaps some see it as a new lens or framework applied to relief and humanitarian development work already in progress. To initiate this work, organizations are attempting to define the concept of resilience, envision what it means to build it, and evaluate program success building it. This has led to various organizations putting forth definitions, causal frameworks and prescriptions for measurement. Because resilience is multifaceted, there is no consensus on these concepts making it difficult to make comparisons across projects. The conversation on resilience is a moving target; how it is defined and measured today may not carry into tomorrow.

In 2013, Freedom from Hunger sought insight from an emerging leader in the field of resilience to suggest a framework that could be used to inform program and evaluation design. Ultimately, Freedom from Hunger adapted a framework from TANGO International (www.tangointernational.com), which had created one built on previous disaster and livelihood frameworks (see notation at bottom of Figure 1 for reference). TANGO International has been active in industry conversations on resilience and is an active and publishing member of the Resilience Measurement Technical Working Group (RM-TWG)[4] of the World Food Programme. It is worth noting that from 2014-16, the RM-TWG published a consensus definition of resilience,[5] a set of ten resilience measurement principles,[6] a model for measurement,[7] and several other guides for conducting resilience research.[8] Freedom from Hunger has adopted the group's definition to help shape its work,[9] which states resilience as "the capacity that ensures adverse stressors and shocks do not have long-lasting adverse development

[4] The Resilience Measurement Technical Working Group, co-sponsored by the European Union and USAID, is a group of 20 leading experts in resilience measurement from government and non-government organizations, including the FAO, IFAD, Cornell University, TANGO International, Mercy Corps and others. For more information, see http://www.fsincop.net/topics/resilience-measurement/technical-working-group/en/

[5] "Resilience is the capacity that ensures adverse stressors and shocks do not have long-lasting adverse development consequences." Constas M, T Frankenberger and J Hoddinott. (January 2014). *Resilience Measurement Principles: Toward an Agenda for Measurement Design*. *Resilience Measurement Technical Working Group, Food Security Information Network. Technical Series No. 1.* Rome, Italy: World Food Programme. p 6.

[6] Ibid.

[7] Constas M, T Frankenberger, J Hoddinott, A Mock et al. (November 2014). *A Common Analytical Model for Resilience Measurement: Causal Framework and Methodological Options*. *Resilience Measurement Technical Working Group, Food Security Information Network. Technical Series No. 2.* Rome, Italy: World Food Programme.

[8] See the following for additional resources: http://www.fsincop.net/topics/resilience-measurement/outupts/en/.

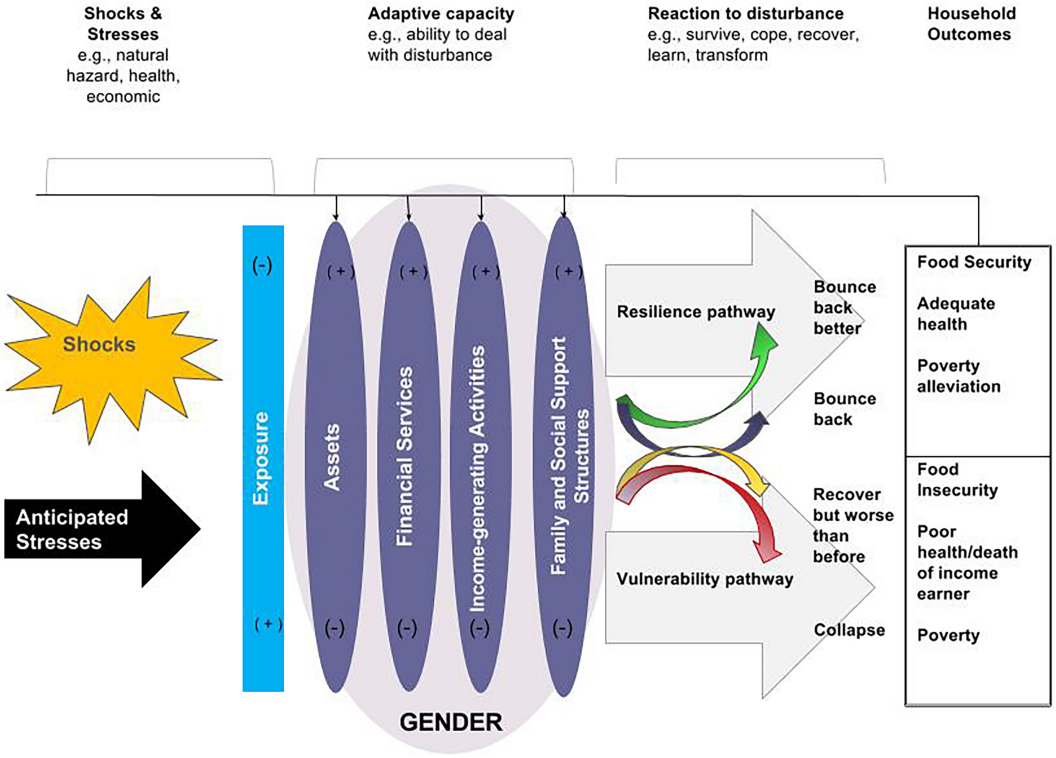
[9] Gash, M and B Gray. (March 2016). *The Role of Financial Services in Building Household Resilience in Burkina Faso*. CGAP Working Paper. Washington, D.C.: CGAP.

consequences.[10]" It is this definition that will serve as the basis for the resilience analysis for the BRB project.

As in the definition above, and in much of the resilience literature, the concept of resilience is examined as a capacity with which to respond to shocks. There are three types of resilience capacities to consider: absorptive, adaptive, and transformative.[11] The Freedom from Hunger Resilience Framework (Figure 1) centers on adaptive capacity, or "the ability to learn from experience and adjust responses to changing external conditions, yet continue operating.[12]" The components of the BRB project are designed to affect adaptive capacity—each addressing a leverage point, or where an individual or household can make an incremental change in the response to a current shock or in anticipation of a future shock. Following from left to right in Figure 1, the agricultural training and Agriculture as a Business education address sustainable livelihood strategies for women; the SG, agricultural loan, IGA loan, mobile linkage to savings account and financial education address both asset building and access to financial services; the nutrition education contributes to building the social service networks; and the gender dialogues contribute to building assets (social), enhancing women's ability to engage in livelihood strategies and accessing financial services. Building adaptive capacity of households through these leverage points could help lead a household down a path of resiliency instead of one of vulnerability. Ultimately, a resilient path can lead to better food security, adequate nutrition and improved health status and disaster risk-reduction for a household. A "gender lens" has been added to the adaptive capacities to ensure the opportunities and barriers faced specifically by women were included in the design and analysis of the resilience programming.

[10] Ibid, See note 5.
[11] von Grebner K, D Headey, T Olofinbiyi, C Béné et al. 2013. *2013 Global Hunger Index: The Challenge of Hunger: Building Resilience to Achieve Food and Nutrition Security*. Bonn, Washington, D.C. and Dublin: Welthungerlife, International Food Policy Research Institute and Concern Worldwide. p. 19. .
[12] Ibid.

Figure1. Reference Resilience Framework



Adapted from TANGO 2012. Adapted from DFID Disaster Resilience Framework (2011) , TANGO Livelihoods Framework (2007), DFID Sustainable Livelihoods Framework (1999) and CARE Household Livelihood Security Framework (2002)

Indicators suggested to measure resilience cover a broad spectrum. The RM-TWG Common Analytical Model for Resilience Measurement[13] suggests collecting data on the following areas of resilience capacity: social capital, human capital, economic resources, service infrastructure, livelihood strategies, institutions and governance, risk strategies, technology and innovation, social protection, and agroecological. The Expert Consultation on Resilience Measurement[14] suggests indicators spanning well-being and basic conditions (food security, health, assets, social capital, psychosocial measures, poverty, etc.), disturbance measures (covariate and idiosyncratic shocks), and resilience response measures by capacity level (adaptive capacity: human capital, financial services, use of assets, psychosocial, dependency, livelihood diversification). Considering the wide range of indicators against project resources, the SG member impact study baseline survey included questions relevant to specific components of the BRB project as well as some that contribute to understanding household resilience in a more general sense. Direct indicators on resilience collect information on shocks

[13] Ibid. See note 7.

[14] Frankenberger, T and S Nelson (February 2013). *Summary of the Expert Consultation on Resilience Measurement for Food Security.* Organized by the FAO and WFP; supported by USAID and the European Commission; in partnership with the Food Security Information Network.

experienced by a household, immediate use of coping mechanisms, self-perception of and definitions of resilience. Other questions collected a variety of information related to such adaptive capacity leverage points as financial services used; income; savings; agricultural techniques and training; crops; livestock; nutrition knowledge and practices; food security and dietary diversity; decision-making; individual empowerment; and social capital. Demographic and poverty-level indicators give context to the findings as well. Results for all of the questions will contribute to assessing the resilience of the participants and determining change over time. Considering the complex nature of the concept, a variety techniques will be used to analyze the resilience of participants as well as contribute to the larger questions of the measurement of resilience in the MACF learning agenda.

As referenced earlier, in addition to assessing the project outcomes against the Resilience Framework, the evaluation activities will assess how the outcomes compare to the the BRB Benefits Process. This framework in Figure 2, similar to a logframe and setting the stage for a theory of change, outlines the characteristics of the delivery mechanism, project inputs, expected intermediate outcomes and longer-term impacts (aimed for but ultimately unable to measure within the time frame of the program). The activities in the evaluation plan will collecti data on these intermediate outcomes and interpret the results in order to answer the key question of the plan. The impact study collects data on the majority of the intermediate outcomes, however, some are collected or explored in more depth in the community resilience assessment and the member and institutional qualitative assessment. As mentioned earlier, results from all activities will be triangulated and together contribute to the analysis on how well the project achieved its purpose.

Figure 2. *Building Resilience in Burkina Faso* Benefits Process for Target Beneficiaries

Overall Project Goal: The purpose of the project is to increase the resilience of vulnerable communities in disaster-affected areas of Burkina Faso through a multi-sectoral integrated program using community-based women's savings groups as a sustainable platform for improving livelihoods and nutrition knowledge, linkages to services and access to finance.

Characteristics of the delivery mechanism	Program inputs —>	Intermediate Outcomes —>	Longer-term Impacts
NGOs working in disaster-prone areas have delivered integrated services to savings groups through partnerships, and incorporated service models into their approach	Savings Groups	• Improved household resilience to shocks • Increased savings	• Increase the resilience of vulnerable communities • Improved food security • Increased economic and civic engagement
	Agricultural Training Services+Agriculture as a Business Education	• Increased capacity to engage in agricultural livelihoods • Improved awareness of agricultural services and resources • Better business development skills for agriculture as a business	• Systematic inclusion of women in private and public agricultural-related skills training
	Agricultural Production loan + IGA loan + Mobile linkage to savings accounts + Financial Education	• Increased knowledge of and access to agricultural financing • Increased financial capability	• Increased investment in agricultural activities
	Nutrition Education	• Increased nutrition knowledge and skills • Increased ability to achieve a healthy diet during the lean season	• More strategic planning for improved household nutrition, year-round
	Gender Dialogues	• Improved household dialogue and joint decision-making on financial services, nutrition, and agricultural activities • Improved self-confidence overall	• Improved gender equity in household use of financial services, nutrition and agricultural activities

Context: Burkina Faso

Drought in Burkina Faso, as with most of the countries in the Sahel, is an ever-present crisis.[15] They occur approximately every three years, wreaking havoc on crop production and livestock breeding. Due to chronic challenges of drought and consequential food crises, food and nutrition security are persistent challenges faced by vulnerable populations.[16] Rainfall is the key determinant of how households make a living: it determines how land is used, the degree to which households depend on livestock, and other nonagricultural sources of income. The rainy season, which is alternatively known as the hungry season, starts in June and lasts until September or October when harvest begins; the dry season is from approximately November through May, with the second hungry season occurring from March to May due to severe drought.

Very little reliable rain falls in the north; consequently, households that rely on agriculture alone are financially vulnerable.[17] In the northeastern zones of Burkina Faso, where the impact study takes place, households allocated most of their land to growing millet, sorghum and cowpeas. Livestock herding is quite important, as is gold mining and labor migration for households too poor to own substantial herds. In addition, strong cultural and familial ties between households in this part of Burkina Faso and other areas inside and outside of the country lead to high levels of remittances.

Very few households in Burkina Faso have access to formal financial services (Table 1). The World Bank Global Findex Database 2014[18] estimated that approximately 14 percent of the total adult population held an account at a formal financial institution; and only 9 percent of the poorest were likely to have an account. Eighteen percent were estimated to participate in savings clubs or to save informally with a person outside of the family. Low access to formal financial services, as well as challenges resulting from persistent drought, are reflected in the results of the baseline survey.

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[15] Hesse C, S Anderson, L Cotula, J Skinner, et al. 2013. *Building Climate Resilience in the Sahel.* International Institute for Environment and Development. Available at: http://pubs.iied.org/pdfs/G03650.pdf

[16] Situation update: The Sahel crisis. (April 2014). http://www.fao.org/fileadmin/user_upload/emergencies/docs/SITUATION%20UPDATE%20Sahel%20April%202014.pdf (Accessed Oct. 9, 2015)

[17] Dixon S and J Holt. 2010. *Livelihood Zoning and Profiling Report: Burkina Faso*. United States Agency for International Development Famine Early Warning Systems Network (FEWSNET). Washington, DC.

[18] Demirguc-Kunt A, L Klapper, D Singer and P Van Oudheusden. 2014. *The Global Findex Database 2014: Measuring Financial Inclusion Around the World*. http://datatopics.worldbank.org/financialinclusion/country/burkina-faso (Accessed January 3, 2017).

Table 1. World Bank Global Findex 2014 Figures for Burkina Faso

FINDEX Indicators	Measures in 2014
Percentage of adults with an account at a formal financial institution	14.4%
Percentage of women with an account at a formal financial institution	12.6%
Poorest quintile of adults with an account at a formal financial institution	8.9%
Percentage of adults using mobile money	3.1%
Percentage of adults saving at a financial institution	8.7%
Percentage of adults using a savings club or person outside the family	18%
Percentage of adults who took a loan from a formal financial institution	5%

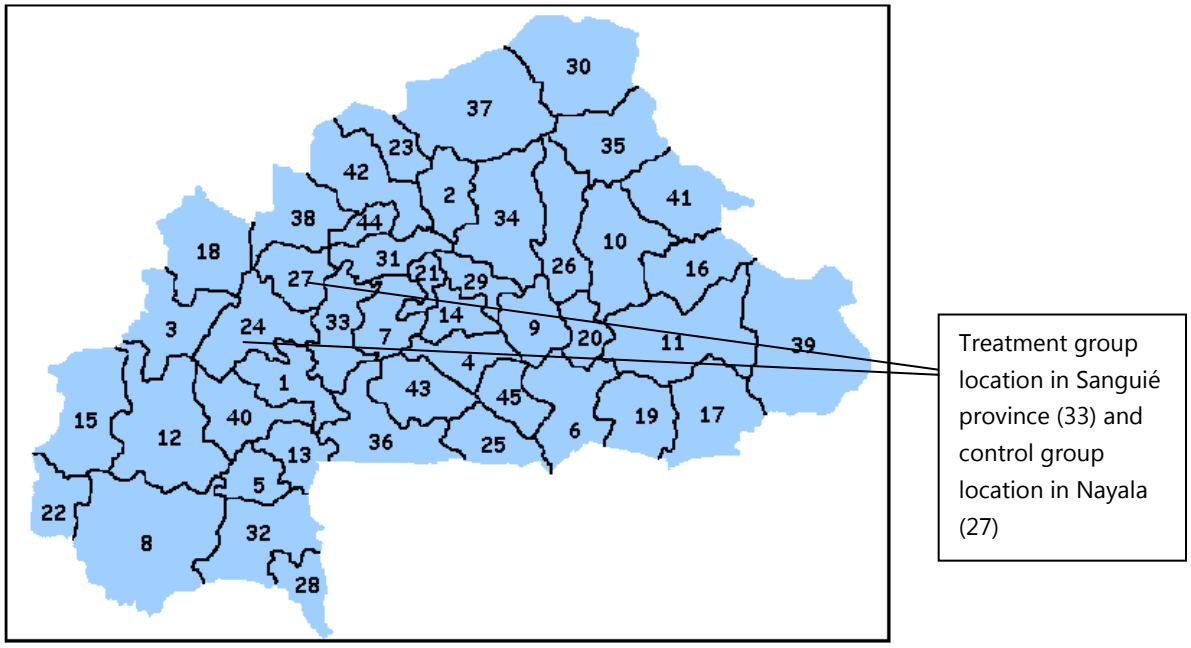
Methods

Research Partners

Freedom from Hunger partner ODE participated in this impact research. ODE recently became a Freedom from Hunger partner and implements *Saving for Change*, a methodology for self-managed savings and lending groups integrated with simple trainings in health, business, and money management. *Saving for Change* brings basic financial services to areas that are typically beyond the reach of microfinance institutions and, in doing so, creates sustainable, cohesive groups that tackle social issues facing their members and their communities. *Saving for Change* was jointly developed by Freedom from Hunger, Oxfam America and Strømme Foundation.

The impact study included members from ODE's SGs who live in Central-Western Burkina Faso. The treatment group was formed using participants from SGs in the Godyr and Didyr communes in the Sanguié province, and the control group was formed using participants from SGs in the Yé and Gossina communes of the Nayala province. A map of these provinces is provided in Figure 3.

Figure 3. Location of the Impact Study: Sanguié and Nayala Provinces, Burkina Faso[19]



Freedom from Hunger staff oversaw the study and survey designs and implementation, and data analysis. ODE identified treatment and control villages from which to select the participants, and their staff closely coordinated with both Freedom from Hunger and research firm staff throughout the data-collection. Freedom from Hunger hired the local Burkinabe research firm Lessokon Sarl to pilot-test the survey, collect the data, and enter the data. Lessokon worked closely with ODE headquarters, field staff and Freedom from Hunger staff to sample the villages and randomly select respondents. Consultant Dr. Benjamin Crookston, assistant professor at Brigham Young University, created the study design and sampling framework, and conducted the data analysis.

Study Design

The study consists of a pre- and post-test design (baseline and endline) with treatment groups in the program area and control groups in a nonprogram area. The impact study design compares women in SGs who received the additional services (treatment) to women in comparable SGs who did not receive additional services (control), making the key purpose of the study to understand the impact of the additional services rather than the entire combination of services vs. no services. The researchers prioritized this design to add to the literature on the SGs plus additional development services (sometimes

[19] Provinces of Burkina Faso. *Wikipedia*. http://en.wikipedia.org/wiki/Provinces_of_Burkina_Faso. (Accessed December 9, 2016).

known as SG+ programming). With much of the existing literature documenting the impact of SGs as a standalone project, little exists on the impact of SG+ programming, although there is a lot of innovation in the area. The design allows us to suggest that changes found in the treatment group are attributable to the additional services and not to the SGs.

Since some of the program components were new for ODE to implement, Freedom from Hunger and ODE selected a pilot area to first test project components. After the operational aspects of the components were solidified, the components would then be rolled out to other geographic areas of the project. This pilot area was the basis for the selection of 20 treatment villages. The corresponding 20 control villages were selected based on the following criteria: 1) presence of ODE-formed SGs that were not receiving the BRB services; 2) proximity to the treatment villages; and 3) likeness to the treatment villages in terms of livelihoods and economic prosperity.

Sample

Power calculations based on expected levels of changes in a few key indicators determined 400 participants in the study, split evenly between treatment and control, was adequate to detect modest statistical differences between groups. Since the program is delivered at the village level, the design aimed for a minimum of 40 villages overall to allow for clustering and to account for intra-cluster correlation. To leave room for potential study attrition, the sample size was increased by 10 percent to 440; 220 for treatment and 220 for control. The goal was to interview approximately 11 households per village. Ultimately 218 women were interviewed as part of the treatment group and 211 for the control group, for 429 total. To select participants, ODE provided a list of all groups in each of the selected villages, with the number of women per group (individual names of women were not available). A randomly generated list of 11 numbers (representing women) per village dictated which groups to select and which women to ask to participate. Each village designated three alternates as well. Surveyor teams traveled separately to treatment and control groups to finalize selection of women and conduct interviews. Surveys lasted for approximately two hours and were conducted in March 2016.

Study Strengths and Limitations

This report outlines the results from the baseline survey, conducted before delivery of the first additional service—the nutrition education. Baseline surveys are typically conducted before the beginning of a program to establish benchmarks for knowledge and behaviors that are expected to change after engagement in the program. These baseline results will acquaint us with the program participants and similar non-participants or control group. We will see results for several indicators and be able to

gauge whether we expect their levels to change or remain the same by end of the program.

The baseline survey included indicators on concepts expected to be addressed or affected by the program components. Changes or alterations to program components that occurred after the baseline may have affected the relevancy of some included or excluded indicators. The endline survey will attempt to accommodate any alterations that occurred during the lifetime of the program.

The endline outcomes will be evaluated using a difference-in-difference analysis (or double difference). We will first look at the difference between the baseline and endline outcomes for the treatment group and then those for the control group; and second, compare the difference between the two. Table 2 provides a matrix of the analysis.

Table 2. Difference-in-Difference Analysis Matrix

	Baseline	Endline	Difference
Treatment Group	a	b	a – b
Control Group	c	d	c – d
Difference in Difference			b – d

This analysis will show the difference between the outcomes for the two groups with special consideration for any differences that existed between them at the starting point.

This type of analysis mitigates some comparison problems at the endline. Other comparison techniques such as propensity score matching and regression analysis will be considered as well.

The difference-in-difference analysis is especially meaningful if treatment and control groups differ on any outcomes at the baseline, as they do in the case of this study. **While there are almost always differences on some indicators that could not have been predicted when selecting villages or participants for the groups, the differences are more extensive than anticipated for these two groups.** As the Results section describes, there are several differences regarding demographics; income, savings and financial services; agricultural livelihoods; nutrition and food security; gender empowerment; and resilience. Overall, the control group appears to be better-off than the treatment group.

Although the control group parameters were selected carefully, the number of villages that met the selection criteria of having ODE SGs—nonparticipation in the BRB program as well as similarity in economic stats—was limited. Several government and NGO-sponsored agriculture training and agricultural programs exist in rural villages. More specifically, the research teams later discovered that 1) the NGO CRS has worked

with some local NGOs in the control area to form SGs with agricultural interventions; 2) there are several government agricultural programs in the Nayala province; 3) the Millenium Challenge Corporation has projects in the area; 4) other NGOs such as CAREME SUISSE, S.O.S. SAHEL, ETAT and REPAM have been active as well.

The differences make a clean comparison difficult. For some indicators, the difference between baseline and endline results for the treatment group may be larger than the difference for the control group allowing us to more easily suggest attribution of impact to the program. For others, even if there are changes for the treatment group, the change may not be larger than what is seen for the control group, potentially as a result of services and programs available to the control group through other institutions. Hence, we will not be able to easily suggest that the treatment group change is from the program (since it might have occurred as a result of other locally available programs). In the latter cases, while we can show that change occurred, we will not be able to suggest it was due to the program. At this point, we cannot predict which indicators will be most impacted by baseline differences between groups. In summary, it may be challenging to see change and attribute differences to the study intervention.

Statistical tests were run on the results to understand when differences in treatment and control group were unlikely due to chance. The tests provided p-values, a number that would let us know whether there is a strong chance that the difference between the treatment and control group result is significant. If the p-value is below 0.05, there is a strong chance that the results are different and not due to chance; if the p-value is below 0.01, there is an even stronger chance that the results are different. In the tables in the Results section, asterisks in the control column note the p-value. One asterisk (*) indicates the p-value is below 0.05, and two asterisks (**) note the p-value is below 0.01. In other words, there is a strong chance that the control group is different from the treatment group if there is one asterisk and an even stronger chance the control group is different if there are two asterisks. If there are no asterisks, it is likely that there is no real difference between the two groups, even if the percentages are slightly different (note: statistical significance is influenced greatly by sample size).

Although this study design has treatment and control groups, **results cannot establish a causal link between the provision of a savings group and additional services program and the subsequent changes in member knowledge, attitudes and especially behavior.** The program was not randomly assigned to villages and thus the villages likely include differences that are unmeasured and may contribute to the outcomes reported[20]. The study design did not control for the bias of self-selection of participants who join SGs or who engage in community

[20] A randomized controlled design was not considered for this evaluation because BRB started as a pilot project that needed to solidify operations before testing on a larger scale.

agricultural, nutrition, or gender-dialogue programs. Thus, the results may not be appropriately generalized to women who do not participate in savings programs or community programs. Furthermore, the information captured in the survey was reported by participants without outside verification.

Although these considerations pose limitations on interpreting results, the study will nevertheless greatly help us further understand program and nonprogram participants and suggested impact. Ultimately, the results will make it easier to understand the Benefits Process (the basis for a theory of change) for participants and suggest others the program could serve.

Results & Analysis

Results are presented as statistics compiled in tables, along with a narrative, and include a comparison to significant control group differences. Results from the 429 surveys are presented as one column of treatment group results, and another column of control group results (with "n" equaling the number of respondents who answered the question), and p-values noted by asterisks if there is a high level of confidence that the results from one group differ from the other (at the 0.05 and 0.01 levels). Analysis of the treatment group results are emphasized, with commentary on the control group at the end of the topical sections. The end of each topical section includes a short summary of key findings. The Results section as a whole ends with a summary of characteristics of women from both the treatment and the control groups.

Demographics

Table 3 outlines demographic indicators to provide context on the women surveyed. All 429 participants in the study are women and in SGs formed by ODE. The average age is about 40 years, with the majority in polygamous marriages. Household size ranges from 4 to 35 people, with an average of 14 people per household. This wide range reflects a variety of household compositions, both monogamous and polygamous. It is clear that the target population is quite vulnerable—most of the women are illiterate, few have ever attended school, and most are food-insecure (food security results are examined in greater length later in the Results section). Note that some statistics on younger women in the program sample are examined at the end of the Results section to highlight characteristics of this target group.

Ethnic group and religion vary for both the treatment and control group. The treatment group is mostly Gourounsi (86%) with some Mossi (12%), whereas the control group is mostly Mossi (56%), with a mixture of Gourounsi (16%) and Dioula (18%). The dominant religion of the treatment group is Christian (73%) with some Muslims (23%), and the control group is mostly Muslim (61%) with some Christians (36%). These ethnic

and religious differences help explain differences in livelihood choices as well as some cultural practices. More importantly, though, is to understand that most of the Mossi of the control group are considered "immigrants" in the areas where they reside in the Nayala province. These immigrants are known for being more economically active, and as multiple findings across the survey show, they are better-off overall compared to treatment group members. There are a few other small differences clearly related to culture, such as the more of the treatment group engaging in *dolo* production (local beer) and fewer of the control group raising pigs, but the most significant difference related to ethnicity in this particular case centers on economic status. The contrast between the two groups also emphasizes the vulnerability of the treatment participants.

Table 3. Key Demographics

Indicator	Treatment (n=218)	Control (n=211)
Average age	40.9 years	39.7 years
Percentage in a monogamous marriage	21%	36%**
Percentage in a polygamous marriage, 1st wife	30%	32%
Percentage in a polygamous marriage, 2nd or 3rd wife	38%	25%**
Widowed	10%	8%
Average household size	14.1 people	12.5 people**
Percentage who are illiterate	77%	84%
Percentage who attended school ever	17%	15%
Percentage who are food-insecure	81%	67%**
Percentage from Gourounsi ethnic group	86%	16%**
Percentage from Mossi ethnic group	12%	56%**
Percentage from Dioula ethnic group	0%	18%**
Percentage from Samo ethnic group	0%	10%**
Percentage who are Muslim	23%	61%**
Percentage who are Christian	73%	36%**

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Using the Progress out of Poverty Index (PPI),[21] Figure 4 illustrates the following treatment group results:

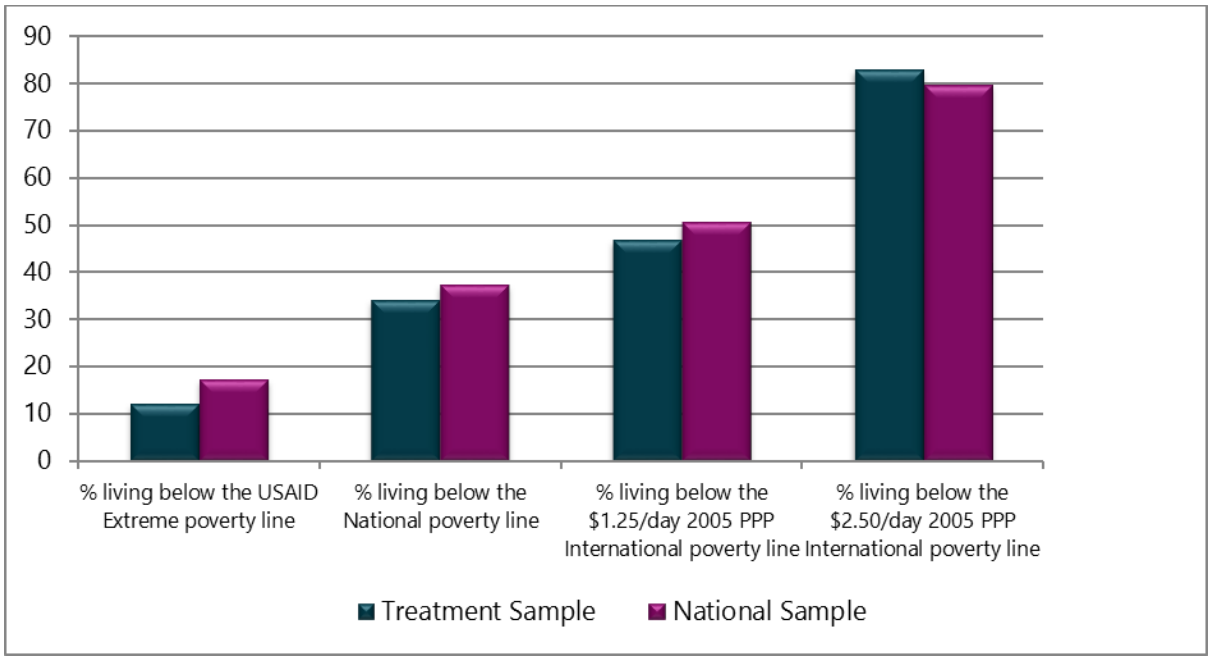
- 12 percent live below the USAID extreme poverty line, (EPL—estimated at CFA 153 per person per day based on 2003 measures), which represents the median expenditure of people (not households) below the national poverty line.
- 34 percent are estimated to live below the national poverty line (NPL—estimated at CFA 226 per person per day in 2003 measures).

[21] This survey was developed using a national poverty survey conducted in 2003. Therefore, the benchmarks provided here are provided by Mark Schreiner in the documentation for the Burkina Faso PPI survey and may not relate to latest poverty measurements found by the World Bank or others. Please see the PPI documentation at http://progressoutofpoverty.org/country/burkina-faso

- 47 percent live below the $1.25/day 2005 PPP international poverty line (IPL—estimated at CFA 288 per person per day in 2003 measures).
- 83 percent live below the $2.50/day 2005 PPP international poverty line (IPL—estimated at CFA 577 per person per day in 2003 measures).

All poverty rates are slightly lower among the study population compared to the national averages, with the exception of the $2.50/day IPL rate, which is slightly higher. The outcomes for the control group are similar to those of the treatment group, with 14 percent estimated to fall below the extreme poverty line, 37 percent at the NPL, 49 percent at the $1.25/day IPL, and 84 percent at the $2.50/day IPL. The only result that is statistically likely to be significantly different than the treatment group is those falling under the NPL, with a little more (3%) of the control group likely falling under this line. Changes in poverty status as related to these lines are unlikely a result of the program.

Figure 4. Poverty Status and National Benchmarks



Demographics Key Findings

- All 429 participants in the study are women. The average age is about 40 years, with the majority in polygamous marriages and living in large households. It is clear that the target population is quite vulnerable—most of the women are illiterate, few have ever attended school, and most are food-insecure.
- The treatment group is mostly of the Gourounsi ethnic group and identify as Christian; the control group is mostly Mossi and Muslim.
- Poverty levels are high with 83 percent of households living under the $2.50/day international poverty line and 34 percent (of all households) living below the National Poverty Line.

Income and Savings

Although simple income and savings estimates can be tricky for study participants to recall accurately, they are nevertheless useful measures in trying to understand whether the livelihoods components of the BRB project have been influential. Basic income and savings estimates reported by study participants are fairly low, with averages at levels expected from the poverty-level results. Table 4 outlines the results. Seventy-eight percent of the treatment group reported having cash income in the past week, with slightly fewer women reporting that they personally received cash income (68%). One-third of the women claimed that their household had an increase in income as compared to one year prior. Self-reported income that women earn in a week, on average, ranges from approximately FCFA[22] 2,424 in a bad week to 4,370 in a normal week and 7,638 in a good week. The average for income for the week prior to the survey was FCFA 5,716, falling in between the averages for a normal week and a good week.

Results for savings followed the same pattern as income. Reported savings for a week, on average, ranges from FCFA 578 in a bad week to 1,388 in a normal week and 2,804 in a good week. Savings for the week prior to the survey was reported at FCFA 1,923, falling in between a normal week and a good week. Comparing savings estimates to income estimates, the treatment group saved about 34 percent of income last week, with 24 percent in a bad week, 32 percent in a normal week, and 37 percent in a good week. The program strives to increase the income and savings of participants, although it could be challenging to capture this at the endline.

Although over half (61%) of the treatment group said they felt capable or somewhat capable of meeting their financial needs in the past month, 39 percent felt incapable of meeting these needs. Asked more specifically about their ability to meet *basic* needs, 83 percent said that it was "easy" or "manageable" to meet their basic needs, with 16 percent reporting that it was very difficult. The findings suggest that while most of the respondents can cover more than their basic needs, a notable amount struggle to do so. It is hoped that that by the endline survey, more participants will feel capable of meeting their needs over time.

[22] As of December 12, 2016, the exchange rate for US$1=FCFA 621 (Central African Franc).

For the control participants, income results followed a similar trend, with the average amounts for normal and good weeks being higher than those of the treatment group. The control group saved at similar rates to income as the treatment, but in a higher proportion during a good week. More of them also felt capable or somewhat capable of meeting financial obligations in the past month. These results suggest that the control group is financially wealthier.

Table 4. Income and Savings Estimates and Financial Attitudes

Indicator	Treatment (n=218)	Control (n=211)
Percentage of households that received cash income in the past week	78%	88%**
Percentage of women who received cash income in the past week (FCFA)	68%	75%
Percentage of households that have had an increase in income as compared to 1 year ago	33%	18%**
Income Estimates		
Average amount woman earned last week (FCFA)	5,716	7,350
Average amount woman earns in a good week	7,658	12,068**
Average amount woman earned in a normal week	4,370	5,667*
Average amount woman earned in a bad week	2,424	2,784
Savings Estimates		
Average amount woman saved last week (FCFA)	1,923	2,200
Average amount woman saves in a good week	2,804	6,177*
Average amount woman saves in a normal week	1,388	1,802*
Average amount woman saves in a bad week	578	696
Percentage who felt capable or somewhat capable of meeting financial obligations in the past month	61%	72%*
Percentage who said it was "manageable" or "easy" for household to meet basic needs	83%	84%

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Income and Savings Key Findings

- Income and savings estimations reported by study participants are fairly low overall, as expected, with averages falling at about the same level of the poverty estimates.
- Self-reported income that treatment women earn in a week, on average, ranges from approximately FCFA23 2,424 (bad week) to 4,370 (normal week) to 7,638 (good week). The average for income estimates for the week prior to the survey is FCFA 5,716.
- Comparing savings estimates to income estimates, the treatment group saved about 34% of their income last week. In a bad week, they saved about 24% of income; in a normal week, they saved 32%, and in a good week, they saved 37%.
- The findings suggest that while most of the respondents can cover more than their basic needs, a notable number struggle to do so.

[23] As of December 12, 2016, the exchange rate for US$1=FCFA 621 (Central African Franc).

Use of Financial Services

Respondents reported using both informal and formal financial services, as expected. See Table 5 for results. Questions regarding informal financial services focused exclusively on SG membership. As required to participate in the study, all participants are members of an SG. Treatment group members were in an SG for an average of 27.8 months (ranging from 1-60 months), with approximately 28 percent in an SG for 12 months or less, and had distributed funds on average twice.

Participants reported little use of formal financial services, likely due to limited access and potentially limited affordability. Only 6 percent of the treatment group (the woman or a household member) are members of a savings and credit group at a microfinance institution (MFI), only 10 percent have a formal savings account, only 6 percent have an agricultural loan and none have agricultural insurance. RCPB and FINACOM (a local MFI managed by ODE) are the financial institutions used most by those with formal services in the treatment group. For mobile money and payment services, many (62%) receive remittances but only some have contact with mobile money systems. If there is contact with mobile money, it is mostly through receiving remittances via Airtel Money, the biggest mobile operator in Burkina. However, about half of participants who receive remittances get them through hand-to-hand transport. It is not clear whether the women and their households receive mobile money remittances directly, with only 2 percent claiming that they have individual mobile money wallets—it is possible they receive funds through the mobile wallet of another household member. Other contact with mobile money comes via their SG being linked with a mobile wallet, which is likely due to the BRB program being in an area where Freedom from Hunger previously had an SG-mobile wallet linkage program. Remittances are received usually once or twice a year, and average about FCFA 40,000. Very few participants report receiving government payments. Use of formal financial services should rise by the endline with both the expansion of the SG mobile-wallet linkage program as well as the link to both the agricultural and IGA loans.

The control group, on average, has less experience with SGs, yet a higher use of formal financial services. The average time in their current SG is 16.3 months, ranging from 1-48 months, but with 43 percent in a group 12 months or less. The average number of distribution of funds is only once. These differences could matter for the endline outcomes since members tend to become savvy in managing their individual and group funds after the first distribution,[24] and it is assumed that members experience greater

[24] Gash, M, M Maxwell, V Arredondo, B Brown, et al. (January 2013). *Saving for Change Impact Stories Follow-Up Research Report.* Davis, CA: Freedom from Hunger. Pp. 6-10.

impact the longer they are in the group.[25] Mature groups could benefit more, or in a different way, from services than young groups—something to keep in mind for the endline analysis. The control group reports a higher use of formal financial services, with 25 percent as members of an MFI and 17 percent with an agricultural loan (agricultural loans will be examined further in the agricultural financing section). A higher use of formal financial services is another indication that the control group is likely better-off. The treatment and control group are on par with each other in terms of mobile money and payments, with the exception of the treatment group reporting more of their SGs are linked with a mobile wallet, due to the SG-linkage program.

Table 5. Use of Financial Services & Mobile Money

Indicator	Treatment (n=218)	Control (n=211)
Member of an SG	100%	100%
Average time in an SG	27.8 mo.	16.3** mo.
Average number of times group distributed funds	2	1**
Member of savings group and has credit at an MFI (or household member)	6%	25%**
Member has a formal savings account (or household member)	10%	14%
Member has an agricultural loan (or household member)	6%	17%**
Member has agricultural insurance (or household member)	0%	2%
SG is linked with mobile wallet	17%	0.5%**
Has individual mobile wallet	2%	1%
Receives government payments	1%	3%
Receives remittances	62%	53%
	(n=134)	*(n=112)*
Receives remittances by hand-to-hand transporter	49%	37%
Receives remittances by Airtel Money	38%	37%
Receives remittances once every 6 months	30%	29%
Receives remittances once a year	62%	68%
Average amount received	40,800	43,000

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Financial Services Key Findings

- All study participants are in SGs formed by ODE, with the treatment group in SGs for an average of over two years.
- Treatment participants reported very little use of formal financial services, likely due to limited access and potentially limited affordability.
- Control group participants report a higher use of formal services, with 25% as members of an MFI and 17% with an agricultural loan, emphasizing the need of the treatment group to have access to more financial services.
- Regarding mobile money and payment services, many (62%) receive remittances but only some have contact with mobile money. If there is contact with mobile money, it is mostly via receiving remittances. Almost no participants have individual mobile wallets.

[25] Gash, M and K Odell. (September 2013). *The Evidence-Based Story of Savings Groups: A Synthesis of Seven Randomized Control Trials*. Washington, D.C. The SEEP Network.

Income Generation and Access to Land

The most common IGA reported by the treatment group is petty commerce, with livestock fattening as a close second. Livestock fattening is often seen as a reliable IGA because livestock is seen as both a business (selling such products as eggs and milk, or selling the animal after it has been fattened) or as emergency savings—an asset to be sold in a time of need since the livestock market is open year long.[26] A little less than half (46%) of women grow and sell the common "women's crops" of sesame, cowpeas and/or groundnuts (peanuts). This percentage will likely increase by endline. Some produce and sell the local beer, *dolo,* or vegetables. Most households find it easy or manageable to invest in a current IGA, and only a few have started a new economic activity in the past year, usually petty commerce. Table 6 outlines the results, and shows that more of the control group work in women's crops, an indication that the group is more agriculturally oriented. More have also started a new economic activity in the past year, which may or may not be a sign that they are more prosperous.

Table 6. Income Generation

Indicator	Treatment (n=218)	Control (n=211)
Income-generating activities:		
petty commerce	90%	77%**
livestock fattening	84%	85%
growing and selling sesame, cowpeas and/or groundnuts	46%	68%**
producing and selling *dolo*	39%	18%**
gardening and selling vegetables	32%	39%
Who find it manageable or easy for HH to invest in current IGA	85%	83%
Have started a new economic activity in the past year	12%	24%**
If yes, the activity was:	*(n=27)*	*(n=51)*
petty commerce	85%	43%**
gardening and selling vegetables	11%	27%
other	4%	17%

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Basically all of the respondents, or their households, reported having access to land for growing food or otherwise generating income, see Table 7. On average, women have access to about 1 hectare compared to the average of 4 hectares for the household. This finding falls in line with the custom in Burkina for men to typically be in charge of growing sorghum and millet on the larger plots of land for the main household income, and women growing women's crops or home garden vegetables on a smaller area of land. Women lack ownership of the land they have access to as female ownership of land is prohibited in Burkina Faso. For the most recent growing season, the majority of

[26] Gash, M and B Gray. (March 2016). *The Role of Financial Services in Building Household Resilience in Burkina Faso.* CGAP Working Paper. Washington, D.C.: CGAP. p.14.

respondents reported not being able to increase the amount that was produced at harvest compared to the prior year, citing flooding as the main reason. As mentioned in the Background section, drought and flooding (due to land too dry to absorb quick rains) are the major natural disasters that this population faces. In addition, women reported poor-quality soil as a key reason for not being able to increase yields. In light of these challenges, the program aims to increase the number of those who were able to increase what was produced in the prior year. The most salient difference between groups is that the control group households have access to larger plots of land—again indicating they are wealthier. Another difference are reasons for not increasing harvest, with more in the control group saying it was due to less rain and fewer of them saying it was due to poor soil, although it is not clear how important that difference is yet.

Table 7. Access to Land for Agricultural Use

Indicator	Treatment (n=218)	Control (n=211)
Household has access to land for growing crops	99%	100%
	(n=181)	(n=167)
Average of estimated amount of land that household has access to for growing food and generating income (hectares)	4	5**
	(n=196)	(n=190)
Average of estimated amount of land that female respondent has access to for growing food and generating income (hectares)	0.9	0.9
For the past growing season, was able to increase amount produced at harvest as compared to the prior year?	(n=218)	(n=211)
Yes	9%	9%
About the same as the prior year	4%	2%
Not able to increase it	87%	89%
Was not able to increase it because…	(n=190)	(n=187)
Less rain (than prior year/normal)	0.5%	14%**
Land was suffering/poor soil quality	22%	6%**
Too much rain/flooding	88%	77%**
No fertilizer	5%	2%

Income Generation and Access to Land Key Findings

- For IGAs, the treatment group mostly engages in petty commerce, with about one-half growing and selling women's crops of sesame, cowpeas and/or groundnuts (peanuts).
- On average, treatment women have access to 1 hectare for growing crops as compared to the average of 4 hectares for the household; they access this land, but do not own it.
- For the most recent growing season, the majority of respondents reported not being able to increase what was produced at harvest compared to the prior year, citing flooding as the main reason.

Techniques and Training for Growing Crops

To understand the influence of the agricultural training of the BRB project, study participants were asked which techniques they or their households use for growing

crops, as well as what training they or their households had recently received. Table 8 shows the results per technique, as well as other related indicators. Many in the treatment group noted using composting and *zaï*,[27] with some using fertilizer and a few using pit construction.[28] Only a few used improved seeds, farmer-managed natural regeneration[29] (FMNR), or mulch. Most of the treatment group sees growing crops as a way to only feed the family, with 13 percent seeing it as both a way to feed the family and engage in a business. The Agriculture as a Business education module component of BRB aims to get women to think of growing crops as a business in addition to feeding the family—therefore bringing in more income to the household. Some of the treatment group reported receiving training in the past 12 months on how to manage crops, with about half of those receiving it from ODE (via another program) and half from agricultural extension workers.

The control group reports using different agricultural techniques than the treatment group, as well as having a different view on agriculture as a business. Many cite using fertilizer and pit construction, and only some use composting and zaï. Only one-third use improved seeds, but this is many more than in the treatment group. As with the treatment group, few use FMNR or mulch. Many more control group women see growing crops as both a business and a way to feed the family than treatment women.

Table 8. Techniques and Training for Growing Crops

Indicator	Treatment (n=218)	Control (n=211)
She or someone in her household uses the following techniques when growing crops:		
Composting	67%	21%**
Zaï	58%	27%**
Fertilizer	48%	76%**
Pit construction	16%	66%**
Improved seeds	4%	32%**
Farmer managed natural regeneration	3%	1%
Mulch	2%	1%
See growing crops as a business only	0%	2%**
See growing crops as a way to feed the family only	87%	57%**
See growing crops as both	13%	41%**
Percentage who received education or training in past 12 months on how to manage crops	18%	32%**

[27] A farming technique using pits dug to capture rainfall and hold compost as a way of improving soil fertility and ultimately increasing crop yields.

[28] A farming technique using large holes dug hold to hold organic matter as it decomposes. The resulting compost is then put into zaï holes. Pit construction is considered expensive and labor intensive; it is one of a variety of ways farmers use to create compost.

[29] FMNR is a land restoration technique using trees and shrubs that have been re-grown throughout crop fields in order to help improve the land, including restoring soil fertility and preventing erosion.

Indicator	Treatment (n=218)	Control (n=211)
Received training from:	*(n=39)*	*(n=68)*
ODE	45%	56%
Agricultural extension workers	49%	44%

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Techniques and Training for Raising Livestock

The baseline results illustrate how prevalent livestock rearing is for these rural women and their households. All of the respondents in the study engage in livestock rearing, with the majority (78%) of treatment women reporting that they own at least both a large and a small animal.[30] Almost all women or their household members raise chickens or other poultry, as well as goats or sheep (small ruminants). Many treatment households raise pigs and donkeys, and about half raise cattle. Regarding women who personally engage in raising livestock, the numbers are lower, with only some of the treatment group raising poultry or small ruminants, and many (77%) raising pigs. About half of the treatment group raised fewer animals this year than last, with a little less than half (42%) raising more, and some (18%) raising the same. About half said that they were able to give better food and general care to animals as compared to the prior year, with about one-third saying better and one-third saying worse. For those who said yes, most used new knowledge and techniques; for those who did not, most said there was more death and illness of animals and others cited poor health. The BRB project aims to influence the outcomes of the number of women raising livestock as well as the two indicators on care and nutrition for livestock. As for seeing livestock rearing as a business, the clear majority only sees it as a business, and few see it as feeding the family or both. Additionally, a few women in the treatment group reported receiving training on livestock in the past year from agricultural extension workers or ODE. See Table 9 for results.

With livestock often being an indicator of wealth, there are some salient differences with the control group. Many more of the control group raises cattle, and more own at least one large and one small animal. Fewer control households engage in livestock rearing themselves, but more control women say they do than treatment. For those women who personally raise livestock, fewer raise pigs than treatment women, but more raise small ruminants. Similar proportions of the control group were able to raise more animals, and with better food and care, as the treatment group, although more of the control group said that the care for animals was worse this year, citing illness, death, lower-quality food and less food as problems. A few more of the control group see raising

[30] Since self-reported counting of livestock can be challenging to measure with the wide fluctuations in the numbers of animals throughout the year (especially with small animals), the simple indicator of "does your household own at least one large animal and one small animal" was used in the survey.

livestock as a business only, and more received livestock training in the past year, mostly from ODE.

Table 9. Techniques and Training for Raising Livestock

Indicator	Treatment (n=218)	Control (n=211)
Household owns at least 1 large animal and 1 small for livestock	78%	87%*
Household engages in livestock fattening and raising:		
Chickens or other poultry	99%	98%
Goats or sheep (small ruminants)	91%	92%
Pigs	80%	32%**
Donkeys	74%	70%
Cattle	47%	70%**
Percentage who personally engage in livestock fattening and raising:		
Chickens or other poultry	24%	32%
Goats or sheep	19%	41%**
Pigs	77%	31%**
She does not engage in livestock fattening	9%	23%**
Was your household able to raise and fatten more, the same or fewer animals compared to the prior year?		
More	42%	34%
Same	8%	9%
Fewer	50%	57%
Was your household able to give animals better food and general care compared to the prior year?		
Better	31%	24%
Same	49%	34%
Worse	29%	42%**
If yes, why?	(n=67)	(n=50)
Had more money or better access to buying young animals	19%	24%
Used new knowledge or techniques to feed, house and care for animals' health	85%	74%
If no, why?	(n=151)	(n=161)
More illness and death of animals	71%	52%**
Lower-quality food/less food to give them	29%	44%**
Animals were unhealthy in general	43%	9%**
See raising & fattening of livestock as a business only	87%	92%*
See raising & fattening of livestock for only feeding family	5%	1%*
See raising and fattening of livestock as both	8%	7%*
Received education or training in past 12 months on how to manage livestock	6%	26%**
Received training from:	(n=12)	(n=54)
ODE	33%	79%**
Ag extension workers	50%	15%

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Techniques and Training for Crops and Livestock Key Findings

- Many in the treatment group noted using composting and zaï, with some using fertilizer and a few using pit construction, and only a few using improved seeds.
- Most of the treatment group sees growing crops as a way to only feed the family, with 13% seeing it as both a way to feed the family and engage in a business.
- All of the households in the study engage in livestock rearing, including poultry, small ruminants, pigs, donkeys and cattle. Treatment women concentrate on pigs, poultry and small ruminants; their husbands oversee the cattle.
- Some of the treatment group raised more animals this year than last, and about one-third were able to give the animals better food and general care to animals compared to the prior year. The BRB project hopes to influence both of these results.

Agricultural Financing

A variety of indicators collected data on both formal and informal financing for agricultural activities. Regarding insurance, none of the respondents report having agricultural insurance (such as crop or index insurance). In terms of agricultural loans from a formal financial institution, only 6 percent of the treatment group reports having one. Of those 12 women, half have a loan from RCPB, and the other half from FINACOM. Respondents were asked a second time about agricultural loans, this time about using the loan to benefit crops, and not specifying whether they were formal loans or not. The result was higher, with 13 percent saying someone in their household had an agricultural loan. Additionally, about the same percentage of women (14%) reported that they personally used a loan to invest in their own crops (presumably referring to the aforementioned agricultural loan). Most say they used the money to pay for labor to help with the crops, about half bought seeds and fertilizer, and one-fifth bought equipment with it.

In addition to formal loans, a small number of women used savings and loans from their SG to invest in agriculture. Seven percent of women said they used their savings from the SG for agricultural IGAs, and the same number said they used it for livestock. As for loans, a few more (10%) use them for agricultural IGAs, but only 1 percent said they used loans for livestock. Table 10 shows that the treatment women are more likely to use SG savings and loans for health expenses, children's education, general household expenses, and nonagricultural IGAs. It is clear that between formal and informal loans, treatment group women do not invest much financially in agricultural activities.

The control group is more likely to invest in agriculture than the treatment group. More of the control households have formal agricultural loans, and more women invest informal SG loans in agricultural activities and livestock. Agricultural financing is a key area for expected change at endline—partially because women will be offered a tailored agricultural loan from RCPB, and also because project activities emphasize devoting resources to agriculture.

Table 10. Agricultural Financing Indicators

Indicator	Treatment (n=218)	Control (n=211)
She or household members has agricultural insurance	0%	2%
She or household member has a formal agricultural loan	6%	17%**
Household member has an agricultural loan used to help benefit household's crops	13%	31%**
She personally uses agricultural loan to invest in own crops	14%	16%
If you have an agricultural loan, for what do you use it?	(n=30)	(n=33)
To pay for labor to help with the crops	77%	36%**
To buy seeds and fertilizer	57%	94%**
To buy equipment	20%	9%
Purpose for savings in SG	(n=218)	(n=211)
Livestock	7%	36%**
Agricultural IGAs	7%	14%*
Health expenses	15%	9%
Children's education	28%	30%
General household expenses	28%	24%
Nonagricultural IGA	61%	67%
Percentage have ever taken a loan from SG	71%	58%**
Purpose for last loan in SG	(n=154)	(n=123)
Livestock	1%	15%**
Agricultural IGAs	10%	23%**
Health expenses	12%	4%*
Children's education	10%	6%
General household expenses	18%	13%
Nonagricultural IGA	77%	62%**

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Agricultural Financing Key Findings

- Few women in the treatment group report having an agricultural loan from a formal financial institution; and few women use savings or loans from their SG to invest in crops or livestock.
- Rates for financially investing in agricultural activities for the control group are low, although higher than the treatment group. This suggests the treatment group women need more access to and assistance with investing in agricultural activities.

Nutrition

The BRB project includes two modules on nutrition education. The first module provides a basic nutrition overview and discusses the primary food groups and what they do for the body. The module also includes information about hygiene, the importance of breastfeeding and how to treat diarrhea. The second module, to be delivered in early 2017, focuses on strategies for maintaining a healthy diet during the lean season, including the importance of household vegetable gardens, drying and storing greens and vegetables and saving money for better nutrition during the lean

season. Pertinent nutrition indicators include those on household food production, food management strategies used, recognizing signs of malnutrition, and dietary diversity (as a proxy for quality of diet). Findings on food security and dietary diversity follow the nutrition results as they are related to the access, availability and utilization of food. The nutrition section includes several indicators expected to be influenced by the BRB project components. Table 11 shows that over half (59%) of the treatment group report that they can produce food for home consumption, though in inadequate amounts. Thirty-five percent can produce enough for home consumption, and a small group (6%) can produce a surplus. These answers likely refer to both home garden food production, which refers to a small area of land devoted to growing food only for feeding the family, as well as production of sorghum and millet, which may not be considered part of the home garden but is part of the family food stocks (typically much is sold for income).. Thirty-seven percent of the treatment group report having a home garden for home food consumption, with most growing sorrel, about half growing onions, and some growing tomatoes, okra and black-eyed peas (alternatively known as cowpeas)[31].

Many (62%), but not all, know the basics of a balanced diet; protein, starch and vegetables. For key strategies that the household uses to stay healthy during the lean season, many households report using more than one strategy, with some use as many as three. Many said they ate a healthy diet, some put aside food (early) to eat during the lean season, some saved money in advance, some put aside livestock to sell, a few eat nutritious foods in the home garden, and a few save money for health expenses incurred during this period. Regarding malnutrition knowledge, almost all of the treatment group knew at least one sign of malnutrition (being thin and easily seeing bones), with fewer knowing the other signs such as low energy and swollen belly, arms and legs.

The control group differs in a few noteworthy ways. First, more of them can produce enough food for home consumption, or have a surplus of food. Fewer of them, however, say they have a home garden, meaning that in the previous question they likely concentrated on the sorghum and millet production. They grow different food, and prioritize strategies for staying healthy during the lean season a bit differently, with more of them putting aside livestock or saving money for health expenses.

Table 11. Nutrition

Indicator	Treatment (n=218)	Control (n=211)
Household's ability to produce food		
Able to produce, but not enough for home consumption	59%	59%
Able to produce enough for home consumption	35%	63%**

[31] This result of 37% may be low because families use the term "home garden" differently. Some see it as a separate plot of land and others combine it with the aggregate household crops. Outcomes at the endline will focus on all of the food grown by a family, whether for home consumption or income.

Indicator	Treatment (n=218)	Control (n=211)
Able to produce surplus	6%	14%**
Unable to produce	0%	0%
Have a home garden for growing food for the household to consume	37%	16%**
Produce grown	(n=80)	(n=33)
Sorrel	71%	33%**
Onions	51%	67%
Tomatoes	26%	76%**
Okra	25%	33%
Black-eyed peas	20%	21%
Know what constitutes a balanced diet		
Answered protein, starch and veggie/fruit	62%	62%
Answered protein, starch, veggie/fruit, oil and/or sugar	12%	5%**
Key strategies household uses to stay healthy during the lean season	(n=218)	(n=211)
Eat grains along with vegetables, fruit and protein when possible	67%	30%**
Set aside food to eat during lean season	57%	52%
Save money in advance to pay for food during the lean season	35%	42%
Put aside livestock to sell during this time	14%	34%**
Eat nutritious foods from home garden	9%	10%
Save money for health expenses during this time	6%	18%**
Those who named 3 of the 6 key strategies above	21%	15%
4 of the 6	3%	6%
5 of the 6	0.5%	1%
Know signs of malnutrition		
Being very thin and easily seeing bones	90%	93%
Tired, low energy	39%	45%
Swollen belly or arms and legs	36%	19%**
Dull eyes	10%	10%
Those who named at least 3 of 4 signs of malnutrition	9%	4%*

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Food Security

Food security was measured using a short, one-question food-security scale that asks the respondent to best describe the food consumed in the past year, with four possible answers touching on the amount and type of food consumed. A second question, similar in nature, referenced food consumed by the children in the household. Results for treatment group women and their children are similar, as seen in Table 12, with very low levels of food security (or high levels of insecurity) for both. Although food security often fluctuates from month to month, it was quite low in March when this survey was conducted despite being before the hot season of May (known for low water supplies), and well before the more significant lean season before the October harvest. A closer analysis of the responses, however, show that most of the answers given were “enough but not always nutritious food,” indicating that lack of food was not the cause of the food

insecurity as much as lack of nutritious foods. The survey included a few questions about number of meals eaten to deepen our understanding about food access. The treatment group mostly ate three meals on a typical day in a good month, and two meals in a bad (lean) month. With food security being closely tied to the time of year, it is difficult to say whether it will be possible to capture a change in food security at the endline.

The control group results show that they are, on average, more food secure than the treatment group, although the overall percentage of food security is still rather low. They ate a similar number of meals, with a few more three-meal days during a good month. Having more of the control group rate as food-secure is another indication that they are better off than the treatment group.

Table 12. Food Security Rates

Indicator	Treatment (n=218)	Control (n=211)
Food secure (women)	19%	33%**
Food insecure (women) (three answers combined below)	81%	67%**
Food insecure with no hunger	75%	57%**
Food insecure with moderate hunger	6%	10%
Food insecure with severe hunger	0%	0%
Children's food security	23%	35%**
Children's Food insecurity (three answers combined below)	81%	65%**
Food insecure with no hunger	74%	55%**
Food insecure with moderate hunger	4%	10%**
Food insecure with severe hunger	0%	0%
Number of meals household eats on a typical day in a good month		
One	0%	0%
Two	30%	22%
Three or more	69%	76%*
Number of meals household eats on a typical day in a bad month		
One	12%	7%
Two	73%	73%
Three or more	15%	20%

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Dietary Diversity

As a way to understand nutrition practices of participants and detect change in diets possibly influenced by the BRB project, the impact survey included a dietary diversity questionnaire[32] developed by the Food and Agriculture Organization of the United

[32] Kennedy, G, T Ballard and M Dop. 2013. *Guidelines for Measuring Household and Individual Dietary Diversity*. Nutrition and Consumer Protection Division, Food and Agriculture Organization of the United Nations: Rome, Italy.

Nations (FAO). As stated by the FAO, dietary diversity is a qualitative measure of food consumption that reflects household access to a variety of foods, and can act as a proxy for nutrient adequacy of the diet of individuals.[33] It is largely recognized as being a key dimension of diet quality. Female participants were asked to answer the questionnaire in reference to their individual diet, as well as to the diet of their children.

Baseline results for the treatment group show that out of a possible range of 0-9, the mean score for women was 3.55, reflecting low diversity in food consumed, or poor nutrient adequacy and thus a poor-quality diet. As a point of comparison, a study on women's dietary diversity in rural Northeastern Burkina Faso in 2003 reported a similar 3.4 mean score for rural women for the same time of the year.[34] The results, exhibited in Table 13, show that the day prior to the survey, all women ate starch, most had fruits and other vegetables, and some had dark green vegetables. Very few ate meat or eggs, and only about one-fourth ate legumes. Results for children resulted in a mean score of 3.04, indicating that the mothers ate a more diverse diet the prior day than their children. Results for children show lower consumption estimates for most of the food groups, except for meat and fish, which is higher. This trend potentially reflects the practice of mothers giving children protein sources before they eat them.

There were almost no differences with the control group on dietary diversity, except a higher consumption of dark greens for both mothers and children. These baseline results for both treatment and control provide a solid point of reference against which to compare scores at the endline, with hopes that the project can influence intake of diverse and nutritious foods.

Table 13. Dietary Diversity

Indicator	Treatment (n=218)	Control (n=211)
Mean WDDS Score for women (0-9)	3.55	3.62
Mean CDDS Score for children (0-9)	3.04	2.99
Those women who ate this type of food the day prior		
Starch	100%	100%
Fruits and other vegetables	86%	84%
Dark green	59%	70%*
Legumes	23%	22%
Meat and fish	9%	13%
Eggs	4%	6%
Milk and dairy	11%	11%
Those whose children ate this type of food the day prior (all children)		

[33] Ibid, p.5.

[34] Savy, M, Y Martin-Prevel, P Traissac, S Eymard-Duvernay et al. Dietary diversity scores and nutritional status of women change during the seasonal food shortage in Rural Burkina Faso, *The Journal of Nutrition* 136, no. 10 (October 1, 2006): 2625–32.

Indicator	Treatment (n=218)	Control (n=211)
Starch	87%	82%
Fruits and other vegetables	74%	70%
Dark green	47%	58%*
Legumes	23%	18%
Meat and fish	54%	48%
Eggs	4%	7%
Milk and dairy	11%	8%

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Nutrition, Food Security and Dietary Diversity Key Findings

- About 60 percent of women say they can produce food for consumption, though in inadequate amounts.
- Many in the treatment group know the basics of a balanced diet, can identify signs of malnutrition, and use key strategies to stay healthy during the lean season, however, improvements can be made.
- Food-security levels are quite low, across both treatment and control groups, with most participants reporting they "ate enough but not always nutritious food."
- Low dietary diversity scores show that women and their children likely have poor nutrient adequacy and thus poor diet quality overall.
- The baseline results for both treatment and control provide a solid point of reference against which to compare scores at the endline, with hopes that the project can influence intake of diverse and nutritious foods.

Women's Empowerment

Regarding women's empowerment, indicators in the baseline survey addressed the following domains: decision-making, attitudes toward gender roles, gender-based violence (GBV), mobility, and individual empowerment (or self-perception). As mentioned in the Background section, data from the pro-WEAI will shed further light on empowerment results and potential changes over time. For now, the baseline results of the impact study indicators give us an intriguing first glance.

Decision-making indicators touched on three topics: agricultural activity, financial services, and coping with a recent shock. Results in Table 14 show that for the treatment group, decision-making influence falls more with husbands overall for agriculture and financial services, but about one-third of the time both husband and wife have equal influence. More women said that she alone has more influence for financial service decisions than agricultural decisions. Regarding how to cope with a shock in the past month, joint decision-making prevailed, with 41 percent reporting that was the case. Although men have more control overall, women have a significant influence in these areas. Control group differences are discussed at the end of this section. We may see a change in these results after the gender dialogues.

Table 14. Decision-Making

Indicator	Treatment (n=218)	Control (n=211)
Regarding agricultural activity-related decisions		
Believe she has more influence	19%	28%*
Believe she and her husband have about the same influence	35%	17%**
Believe her husband has more influence	46%	55%
Regarding financial service-related decisions		
Believe she has more influence	27%	28%
Believe she and her husband have about the same influence	27%	22%
Believe her husband has more influence	45%	49%
Made final decision on how to cope with recent shock (re: shock in past month)		
She did	13%	15%**
Joint decision with husband	41%	23%**
Husband	34%	52%**

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

The results on attitudes toward gender roles are mixed. Table 15 shows most of the treatment group believes there is a divide between what is "men's work" and what is "women's work" and that the two should not be confused. However, about half think that "if a woman works outside the home, her husband should help with childcare and household chores," which would constitute men doing 'women's work.' Additionally, 64 percent believe that most household decisions should be made by the man—which is not entirely in line with the previous indicators on decision-making where there was a strong showing of joint decision-making, both in practice and in theory. It is unclear why these conflicts exist, but they are important to remember when assessing empowerment. Additionally, with only three indicators, it is difficult to project the consensus in gender roles, but it is clear that not all of the women think the same way—there is potential for movement. The results from the pro-WEAI will shed more light on the issue.

Table 15. Attitudes toward Gender Roles

Indicator	Treatment (n=218)	Control (n=211)
Agree or strongly agree that "there is men's work and women's work and the one shouldn't ever do the work of the other"	72%	59%**
Agree or strongly agree that "if a woman works outside the home, her husband should help with childcare and household chores"	52%	69%**
Agree or strongly agree that most household decisions should be made by the man	64%	75%*

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

As the results on Table 16 show, there is a strong cultural practice in rural Burkina Faso for women to ask for permission to leave their homes, mostly in order to leave the village. There is more flexibility to leave home if it is related to agricultural activities, but the number of women who must still seek permission is high, at 78 percent (for the treatment group). The GBV indicators paint a painful picture. Almost half of the women were afraid of their husbands sometimes or most of the time in the past 12 months, and 38 percent of the treatment group believe that a woman must tolerate violence to maintain family stability. Although these results are serious, the BRB project does not specifically address them, and thus movement is not expected in these areas. Nevertheless, these rates are alarmingly high, and highlight an area of these women's lives that needs great improvement.

Table 16. Mobility and GBV Indicators

Indicator	Treatment (n=218)	Control (n=211)
Cannot leave home without seeking permission	97%	96%
Cannot leave for home for agricultural-related activities without seeking permission	78%	72%
In the last 12 months, were you ever afraid of your husband or partner?		
Most of the time	10%	9%
Sometimes	38%	53%**
Never	52%	39%**
Agree or strongly agree that a woman must tolerate violence to maintain stability in the family	38%	74%**

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

The empowerment indicators show in Table 17 that individually or when around other women, the treatment group women claim to have high levels of confidence, but the story changes when men enter the picture. The treatment women report a high level of self-worth, of satisfaction with themselves, their ability to bargain with a supplier, and feeling comfortable speaking out at a meeting of other women. There is a fair amount of confidence in leadership skills, at least in reference to engagement with her SG. The picture changes when men are involved, however. If men are in the same meeting with women, the number who feel confident enough to speak out drops by half, from 76 to 35 percent. About one-half (45%) would consider themselves empowered in their households, but only 23 percent consider themselves empowered in their communities. Overall, the treatment group women are not entirely empowered nor disempowered; they report a high level of self-esteem and some decision-making power, but traditional gender roles, gender norms, and GBV seem to be holding them back.

The control group differs in terms of women's empowerment/gender equity in a few significant ways. For decision-making, more control group women reported they had more influence on agricultural decisions, and more said their husband made the decision on how to cope with the shock. For attitudes toward gender roles, more agreed

that if a woman worked outside the home, men should help with the household—although more women said that men should make most household decisions. For mobility, results are the same, but for GBV, the difference is stark. More women said that they were afraid of their husbands sometimes or most of the time (62%) compared to the treatment group (48%). Those who agree that a woman must tolerate violence to maintain stability was shockingly different—74 percent of the control group agreed compared to 38 percent of the treatment group. For individual empowerment, more feel empowered (66% vs 45% of the treatment group), more feel confident bargaining with a supplier, more are confident about leadership skills, and more are satisfied with the life she leads. The results are complicated; in certain ways, one could argue that the control group is more empowered than the treatment group; however, with many more women tolerating GBV, it is difficult to see that they are more empowered. The results point to the complex nature of empowerment, showing that, for example, confidence in leadership skills and tolerance of GBV are not mutually exclusive. Although this project does not aim to address GBV, considering the extent to which it occurs, the different aspects of empowerment deepens our understanding of where the program has, and can have, impact.

Table 17. Individual Empowerment

Indicator	Treatment (n=218)	Control (n=211)
Feels empowered as a woman in her household	45%	66%**
Feels empowered as a woman in her community	23%	25%
Says she is very or fairly comfortable bargaining with a supplier to get a lower price on something	72%	90%**
Feels very or somewhat comfortable speaking out at a meeting of other women to talk about some common issue	76%	75%
Feels very or somewhat comfortable speaking out at a meeting of other women and men to talk about some common issue	35%	33%
Agrees with statement "I am more confident in my leadership skills" (asked in regards to her savings group)	66%	78%**
Agrees or strongly agrees with the statement "I feel that I'm a person of worth, at least on an equal plane with others"	99%	96%
Agrees or strongly agrees with the statement "On the whole, I am satisfied with myself"	99%	97%
Says she is fairly or very satisfied with the life she leads	71%	88%**

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Women's Empowerment Key Findings

- Results for women's empowerment indicators show mixed opinions on decision-making, attitudes toward gender roles, and individual empowerment; although women's influence is strong, men's influence prevails.
- Results for mobility and GBV are clear, yet unfortunately reflect a very challenging environment for women.
- The results point to the complex nature of empowerment, showing that, for example, confidence in leadership skills and tolerance of GBV are not mutually exclusive.
- Overall, the treatment group women are not entirely empowered nor disempowered; they report a high level of self-esteem and some decision-making power, but traditional gender roles, gender norms, and GBV seem to be holding them back.

Social Capital

Indicators in the survey explore social capital in two ways; one set of questions asked about group membership and reliance on groups, the other set asked about engagement with a group we know the women are active in—their SG. The group membership questions showed that outside of SG membership, most in the treatment group are in a farmer's trade group or women's economic livelihood group as well as a women's association (not necessarily connected with livelihoods), with some in church groups, and a few in garden groups and/or *tontines*, see Table 18. When asked whether she would rely on this group if a large crisis hit her household, almost all (93%) answered yes. Group reliance lessens if a crisis hits her community, however, with 67 percent saying they would go to the groups (any mentioned) for help, and 72 percent specifically going to her SG. It is not known exactly why group reliance lessens in the event of a community crisis, although the aforementioned Freedom from Hunger study on resilience in Burkina Faso[35] showed that women were less likely to go to an SG when a crisis hits a community because everyone in the SG would be in need of assistance and the group funds will be unable to support all of the requests for help.

The control group results differ from the treatment group in two main ways—group membership composition, and reliance on groups in a crisis. Control group women seem to be more active in community groups, with higher rates of membership in community garden groups, tontines and baptism or wedding groups. They are much more likely to rely on these groups if a crisis hit their community, and much more likely to rely on their SG. This is a useful finding since current resilience research[36] shows that one of the key capacities for a household's ability to recover from a shock is bonding social capital (bonds within and between community members). If the control group is more likely to rely on groups than the treatment group, then the control group could potentially be more resilient than the treatment group. At this point, it is not clear why treatment

[35] Ibid, See note 9., p. 29.
[36] Frankenberger, T. "Uncovering the Pathways to Resilience in Ethiopia." Presentation by USAID, TOPS, and FSNetwork. Washington, D.C. October 28, 2016.

groups are less likely to reach out to these groups if a crisis hit the community—the Community Resilience Assessment could shed light on the issue in the near future.

Table 18. Reliance on Groups

Indicator	Treatment (n=218)	Control (n=211)
Group membership		
SG	100%	100%
Farmer trader's group/women's economic livelihood group	82%	87%
Women's association	70%	70%
Church group	39%	30%*
Community garden groups	10%	31%**
Tontine	8%	21%**
Village banking group	3%	6%
Baptism or wedding group	1%	20%**
If a large crisis were to strike your household, would you go to these groups just mentioned for help?	93%	96%
If a crisis were to strike your community, would you go to these groups just mentioned for help?	67%	93%**
If a crisis were to strike your community, would you go to your savings group for help?	72%	94%**

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Regarding engagement with the SG, many women in the treatment group say they have learned new knowledge from members and engage in collective activities with fellow members. Most of the treatment group women report learning new knowledge on agricultural and nutrition practices from their group, and most engage in collective activities such as providing collective labor in the fields (usually paid). A few help the community get additional agricultural resources, help with issues related to natural disaster-created shocks, help with childcare or clean areas of the community. About one-fourth engage in "other" collective activities, such as additional activities to earn money, assisting with other IGAs, masonry, nutrition discussions, and helping others with roughcasting homes and buildings.[37] When asked how being a member of the SG affected their agricultural activities, the majority said they had gained knowledge on agricultural activities through an exchange of ideas with other members. Some have received training on growing better crops, and some have taken a loan or used savings to support their crops. It is clear that agricultural activities play a part in their savings group engagement, and that they engage with other members to participate in activities and exchange ideas.

[37] Roughcasting is the covering the outside or inside walls of homes and buildings in a community with mud or cement, often in a decorative manner. It is an activity typically reserved for women.

Many of the control group results are similar to those of the treatment, with a few small differences, including cleaning the community playing a larger role in collective activities, and fewer exchanging ideas or having received training on crops. Table 19 exhibits the results.

Table 19. Savings Group Engagement

Indicator	Treatment (n=218)	Control (n=211)
Learned new knowledge from members of her savings group about productive agricultural practices	80%	89%**
Learned new knowledge from members of her savings group about nutrition practices	73%	77%
Engagedin collective activities with her savings group	88%	82%
Provided labor in the fields	94%	92%
Helped the community get additional resources for agricultural activities	17%	10%
Helped the community with issues related to shocks, such as droughts, floods and other natural disasters	9%	0%**
Helped other members with childcare	7%	0%**
Cleaned areas in the community	5%	39%**
Other	25%	17%**
How has being a member of this SG affected your agricultural activities (crops)?		
Exchanged ideas about those activities with other members	78%	60%**
Group members or leaders have given her training on better techniques to grow crops	38%	20%**
Have taken a loan to support those activities	28%	24%
Used savings for agricultural inputs	22%	26%

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Social Capital and Engagement with Savings Groups Key Findings

- Outside of SG membership, most women in the treatment group engage in other community groups, such as farmer's trade group or women's economic livelihood group, women's associations, church groups, garden groups and/or *tontines*.
- Almost all of the treatment women would rely on this group if a large crisis hit her household, however, group reliance lessens if a crisis hits her community.
- Most of the treatment group say they have gained new knowledge on agriculture and nutrition through exchanges with other SG members, and often participate in collective activities such as providing labor in the fields with these same women.

Resilience

The Resilience section of the survey asked participants about recent shocks, coping mechanisms, and perceptions regarding resilience. See Table 20 for results. When asked for an example of a shock that the household experienced in the past month, the most common shocks reported by the treatment group was death of a family member, followed by illness of a child, illness of the respondent, lost livestock, and then "other"

(including events such as death of a non-family member, lack of food, and family misunderstandings). When asked how they responded to the event, the most common mechanisms, in descending order, included using personal or household savings; selling small livestock; borrowing from an SG; borrowing from family, friends, or neighbors; working harder; and selling grain. A few used a other methods, such as delaying repayments and reducing food consumption, but these were not used often.

Frequencies for mechanisms used clearly show that households used more than one mechanism to cope; it was calculated that 74 percent of the treatment households used more than 1 mechanism, and on average, 2.7 mechanisms were used per shock. Thus if one mechanism is inadequate to cover the cost of the shock, then the household patches together money from a variety of sources to cover the cost. Some shocks are more costly and naturally may need more mechanisms to cover the cost. It is not surprising that the treatment group uses multiple mechanisms, but it is striking to see the number of mechanisms used. The shocks that required the most mechanisms, in descending order, are home repair (average of 5.7 mechanisms); loss of livestock (3.5); crop failure (3.3); death of a family member (3.3); illness of woman or family member (2.8); and illness of child (2.7). Having to use a large number of mechanisms is an indication that the treatment group struggles to cover costs of shocks. It should be noted that many of these results on shocks and coping mechanisms are consistent with findings from the previous Freedom from Hunger resilience research in Burkina Faso.[38]

Some key resilience results for the control group suggest that they may be better able to cope with shocks than the treatment group. First, fewer control households (58%) used multiple mechanisms at to cope with a shock than treatment group (74%), implying that the mechanisms used were more effective. Second, the average number of mechanisms used per shock was markedly lower, again implying that the ones used were more effective. The biggest difference concerns coping mechanisms used, with the control group borrowing less than the treatment group. It is not known whether borrowing is considered negative or positive here; the previously mentioned research in Burkina Faso[39] showed that study participants considered borrowing from an SG, family or friends, or a financial institution, a positive coping mechanism. Although the control group uses borrowing less, it is not clear what they use instead—unless savings is the preferred and most effective mechanism for them. Home repair, death of a family member and illness in the family used the most mechanisms, compared to home repair, livestock loss and crop failure for the treatment group. The most common shock reported in the past month was illness of the respondent, then illness of a child and death of a family member, and the most common coping mechanisms used after savings

[38] Ibid. See note 9.
[39] Ibid. See note 9, pp. 23-24.

were selling small livestock, and then selling grain. Notably, not as many relied on SG for coping.

Table 20. Shocks and Coping Mechanisms

Indicator	Treatment (n=218)	Control (n=211)
Example of a shock that incurred in past month		
Death of family member	37%	18%**
Illness of child	30%	32%
Illness of respondent	29%	39%*
Lost livestock	18%	7%**
Other	13%	11%
How did you respond to the event?		
Used personal or household savings	92%	90%
Sold small livestock	67%	36%**
Borrowed money from an SG	35%	3%**
Borrowed money from family, friends or neighbors	24%	8%**
Worked harder	23%	9%**
Sold grain	11%	16%
Delayed repayments	9%	6%
Reduced food consumption	5%	4%
Sold large livestock	2%	3%
Made purchases on credit	1%	4%
Borrow from a financial institution	0.5%	0%
Households who used multiple mechanisms simultaneously to manage shocks (calculated)	74%	58%**
Average number of coping mechanisms used for specific shocks:	2.7	1.8**
Home repair cost	5.7	2.4
Loss of livestock	3.5	1.5**
Crop failure	3.3	1.8
Death of a family member	3.3	2**
Participant or other family member is sick (non-child)	2.8	1.9**
Child is sick	2.7	2.1*

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Since self-perception of resilience by household proved to be an intriguing topic in prior Freedom from Hunger research,[40] special indicators on the self-perception of resilience are included in this study. When asked how the treatment group defines resilience, or what makes one household more resilient than another, the most common answers, in descending order, included good internal household communication; savings; assets; diversifying IGAs; good health; profitable IGAs; using other financial services such as

[40] Gray B, M Gash, B Crookston, and V Aleotti. 2016. *How Do You Know "Resilience" When You See It? Characteristics of Self-perceived Household Resilience among Rural Households in Burkina Faso*. Consultative Group to Assist the Poor: Washington, DC.

credit; and being frugal. When asked whether they consider their households to be resilient, 58 percent said yes, 39 percent said sometimes or it depends, and 3 percent said no. Fifty-six percent said they think their household would be better protected from a major shock this year as compared to one year ago, but about one-third would feel less protected. For those who felt they would be more protected, the majority said it was because they have better internal household communication. This is an unexpected finding that could be an insight into the importance of gender dialogues in the households. The women also cited having more savings and/or that they have better or more diversified IGAs, more community support, and better health as reasons for feeling more protected. For those who felt less protected, it was because they had less savings, IGAs were suffering, they had worse internal household communication, or less community support. Only a few mentioned they were less protected because their health was worse.

Regarding community resilience, 49 percent of the treatment group felt their community was better protected than a year ago, almost entirely due to more community solidarity and communication. About one-third felt less protected, because of a bad harvest, having little to eat, and little income from IGAs. Almost no one reported receiving government assistance, either. Views on resiliency, and feeling protected, are key areas to watch in the endline results.

One result worth mentioning that is similar for the treatment and control groups is that about the same proportion consider their household to be resilient. A key difference, however, was that fewer of the control group thought their household would be better protected from a major shock compared to a year ago (27% control group vs. 56% of the treatment group); the majority felt less protected. They felt that way mostly from worsened internal household communication, and somewhat from less savings and income. Furthermore, many in the control group felt their community was less protected than a year ago due to a bad harvest and having little to eat. It is surprising to see these results considering that several indicators point toward the control group being better off, where you might expect them to feel more protected. This finding exemplifies the complexity of resilience, suggesting that other "soft" indicators such as household communication could matter as much or even more than savings or assets.

Table 21. Perception of Resilience

Indicator	Treatment (n=218)	Control (n=211)
What allows a household to be more resilient than another?		
Have good internal household communication	63%	57%
Savings	46%	32%**
Wealth level/assets	39%	55%**
Diversifying IGAs	34%	10%**
Have good health	24%	18%

Indicator	Treatment (n=218)	Control (n=211)
Profitable IGAs	21%	23%
Use other financial services like credit	12%	15%
Are not wasteful	8%	10%
Considers household to be resilient in terms of ability to cope with shocks in general	58%	52%
No, not resilient	3%	9%
Sometimes/it depends	39%	39%
Think their household would be better protected from a major shock this year as compared to 1 year ago	56%	27%**
Would handle it the same way	14%	9%**
Would be less protected	30%	64%**
For those who feel better protected, they feel that way because…	(n=122)	(n= 57)
Have better internal household communication	78%	47%**
They have more savings or more money	46%	21%**
They have better IGAs or more diversified IGAs	46%	37%
Have more community support	18%	25%
Health is better	16%	28%
For those who feel less protected, they feel that way because…	(n=66)	(n=134)
They have less savings or less money	50%	26%**
IGAs are suffering	49%	19%**
Have worse internal household communication	32%	71%**
Have less community support	14%	5%*
Health is worse	5%	16%*
Think their community would be better protected from a major shock this year as compared to 1 year ago	49%	12%**
Would handle it the same way	16%	5%**
Would be less protected	35%	83%**
For those who feel better protected, they feel that way because	(n=107)	(n=25)
Have more assistance from the government	1%	0%
Have good crops or good IGAs for income	1%	12%
There is more community solidarity and communication	100%	84%**
Have a good harvest & have enough to eat	0%	8%
For those who feel less protected, they feel that way because	(n=76)	(n=175)
Have a bad harvest & do not have enough to eat	82%	96%**
Have poor crops or not income from IGAs	49%	13%**
There is less community solidarity and communication	13%	1%**
Have less assistance from the government	12%	3%*

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Resilience Key Findings

- The most common shocks experienced by the treatment group in the past month included (in descending order): death of a family member; illness of a child; illness of the respondent; lost livestock; and "other" (including events such as death of a non-family member, lack of food, and family misunderstandings).
- The most common mechanisms used to respond to that event included (in descending order): using personal or household savings; selling small livestock; borrowing from an SG; borrowing from family; friends; or neighbors; working harder; and selling grain.
- Seventy-four percent of the treatment households used more than 1 mechanism to cope with the stated shock, using 2.7 mechanisms per shock on average.
- Fifty-eight percent of the treatment group considers their household to be resilient.
- Internal household communication plays a strong role in resilience. Factors contributing to resilience included good internal household communication; savings; assets; diversified IGAs; good health; profitable IGAs; using other financial services such as credit; and being frugal.
- Regarding community resilience, 49 percent of the treatment group feel that their community is better protected than a year ago, almost entirely due to more community solidarity and communication. Those who feel less protected feel this way because of a bad harvest, having little to eat, and little income from IGAs.

Youth

One of the objectives of the BRB project is that "members of at least 1,000 rural women's and youth savings groups have increased access to knowledge and linkages to services for productive climate-change resilient agriculture," with a second that says "at least 80,000 women and youth have improved resilience." Since young women are included as part of the target group for the project, the analysis considers a handful of indicators from this sub-group as a way to learn how different or similar they are to the adult participants, and anticipate ways they might benefit differently than the adult participants. Control group comparisons are considered, yet challenging due to the small youth sample sizes, which makes it difficult to have higher levels of confidence in differences. The analysis of endline data will dig further into any differences with the aggregate group (and potentially the control group) for specific indicators of interest.

Youth, or the young women in this program, have been defined as between the ages of 0-25. Out of the 218 women in the treatment group, 11 percent or 23 of them fall into this category. All 23 are between 15 and 25 years of age (control group members are between 19 and 25 years of age), with the average age at 22. Most are married, with almost half in monogamous marriages, about one-fourth a second or third wife in a polygamous marriage, and about one-fourth not married. Most have children, who are on average about one and a half years old. Most are illiterate, and only some have gone to school, though twice as many than in the aggregate group of treatment women (35% vs. 17%). The most striking difference between the treatment and control is that all control youth are married, which may be attributed to a higher average age, and an older range for ages, starting at 19 years of age instead of 15 years.

Table 22. Youth Demographics

Indicator	Treatment (n=23)	Control (n=24)
Average age (0-25 years)	21.5yrs	22.1yrs
Married in monogamous marriage	44%	67%
Polygamous marriage, 1st wife	4%	9%
Polygamous marriage, 2nd or 3rd wife	26%	29%
Single	22%	0%*
Have children	73%	96%*
Average number of children	1.4	2
Illiterate	83%	75%
Who ever attended school	35%	33%

Youth SG members have been in SGs an average 20 months, and have similar savings goals as the aggregate group, although more for general household expenses and less than for nonagricultural IGAs and children's education, see Table 23. Very few are participating in formal financial services, and none report having and individual mobile money account. Fewer youth seem to have a formal savings account than the aggregate group (10% aggregate; 4% youth). The amount of income and savings received last week and in a normal week are a little lower to the amounts for the aggregate treatment group. Control group estimates vary, but the only indicator that proves to be statistically different is the higher number of control group members saving for livestock. This finding is in line with the assumption that the control group is more agriculturally oriented.

Table 23. Youth Income, Savings and Use of Financial Services

Indicator	Treatment (n=23)	Control (n=24)
Average time in an SG (months)	20 months	18 months
What saving for		
general HH expenses	61%	33%
nonagricultural IGA	43%	58%
health expenses	17%	8%
children's education	13%	25%
livestock	9%	42%*
agricultural expenses	2%	13%
Has own individual mobile money account	0%	0%
She or household member is in group at an MFI	0%	8%
Has a formal savings account	4%	21%
Received income in the past week (averages, in FCFA):	*(n=16)*	*(n=20)*
Earned last week	5,112	5,545
Normal week	4,150	5,329
Saved last week	1,119	2,303
Saved in normal week	1,026	1,441

For the agricultural, nutrition, and women's empowerment indicators, there are similarities for some topics, and differences for others, see Table 24. Findings for agricultural techniques used by the treatment youth follow similar trends of the aggregate group; many use *zaï* and composting and concentrate on raising pigs. About the same number of youth as the aggregate group see growing crops as a way to only feed the family, and consider their households as resilient. Regarding nutrition indicators, many are the same except more youth identified three out of four signs of malnutrition (i.e., on average they knew more signs). The most striking difference appears in self-reporting whether they are empowered, with 78 percent of treatment youth reporting they feel empowered, compared to only 45 percent of the aggregate group. Fewer feel empowered in their community—9 percent of youth and 23 percent of the aggregate group. More youth say that most household decisions should be made by the man (83% vs. 64% of the aggregate group). Youth control group differences mostly follow similar trends of the treatment aggregate group vs. the control aggregate group, although one main difference is that overall the youth control group reports lower rates of empowerment in the household than the aggregate group. Many of the trends are the same with the aggregate group, but a few are different for both treatment and control, and will be looked at more closely in the endline analysis.

Table 24. Youth Agricultural Training, Nutrition, and Empowerment

Indicator	Treatment (n=23)	Control (n=24)
Agricultural techniques used:		
Zaï	70%	42%
Composting	70%	13%**
Fertilizer	30%	79%
Pit construction	13%	66%**
Improved seeds	4%	16%
See growing crops as a business	0%	4%
See growing crops only to feed the family	91%	71%
See as both	9%	25%
Raise livestock		
Chickens or other poultry	9%	21%
Goats or sheep	13%	42%*
Pigs	70%	21%**
Does not engage in livestock fattening	22%	21%
Considers household to be resilient	61%	42%
Knows 3 main ingredients for a balanced diet (starch, protein and vegetables)	61%	67%
Key strategies household uses for lean season		
Eat grains along with vegetables, fruit and protein when possible	70%	29%**
Set aside food to eat during lean season	48%	63%
Save money in advance to pay for food during the lean season	30%	29%
Save money for health expenses during this time	0%	17%
Said at least 3 of the 6	13%	13%

Indicator	Treatment (n=23)	Control (n=24)
Knows signs of malnutrition		
Being very thin and easily seeing bones	96%	92%
Tired, low energy	57%	46%
Swollen belly or arms and legs	13%	8%
Dull eyes	48%	13%*
Those who named at least 3 of 4 signs of malnutrition	26%	4%*
Feels empowered in her household	78%	42%*
Feels empowered in her community	9%	17%
Agrees or strongly agrees she has access to the resources and services she needs to improve her agricultural productivity	78%	62%
Agree or strongly agree that most household decisions should be made by the man	83%	71%

One asterisk (*) signifies a p-values of <.05 and two asterisks (**) indicate a p-value of less than <.01.

Youth Key Findings

- 11 percent of the treatment group are youth, falling between ages 15 and 25 years. Most are married, have children, cannot read, few have ever gone to school.
- Findings on a variety of indicators for youth are similar to those of the aggregate group—use of financial services, agricultural techniques, nutrition knowledge—although levels of income and savings for the treatment youth are lower than that of the aggregate group, as expected.
- One striking difference with the treatment youth and the aggregate group is that many more feel empowered in their household (78% of youth compared to 45% of the aggregate group).

Summary Profiles of the Treatment and Control Groups

To better understand the long list of results yielded from this impact study baseline, the following provides a summary description of the treatment group and control groups. These synopses should help us better grasp both who is being reached by the BRB program as well as where the group stands on key indicators where change is expected. Additionally, the description tells us how the control group differs, and should be used as a reference point for understanding treatment group endline results. Note that the descriptions are based on majority results to simplify understanding.

The treatment group women are about 40 years of age, in polygamous marriages, Gourounsi, Christian, illiterate, food-insecure, and live on less than $2.50/day (2,005 PPP). They earn about $7 in a normal week, saving about one-third of that into the next week, giving them the ability to cover basic needs yet sometimes struggling. Little access to and low affordability of formal financial services prevent their usage except as a venue for receiving remittances, yet they actively save and take loans in their SGs. Most engage in petty commerce to earn money, with half growing and selling the women's crops of sesame, cowpeas and peanuts. The women actively use *zaï* and composting to manage crops, and see crops only as a way to feed the family, instead of as a money-making venture. They raise pigs, along with other small animals, and only some have been able

to give their livestock better food and care in the past year. Most do not invest loans in their crops. The women and their households can produce food for home consumption, though in inadequate amounts. They have fairly high knowledge of main nutrition concepts, but suffer from food insecurity and eat a poor-quality diet. Views on gender equality are quite mixed, with less than half feeling empowered in their households. Young women in the group are much like the adults, although view themselves as more empowered. The women engage in community groups, and would rely on them if a crisis hit their household, but less if one hit their community. Households frequently deal with death and illness of family members as well as lost livestock. Households are constrained and use several mechanisms to cope with shocks. A little over half consider themselves resilient, and they all consider internal household communication to be an influential driver of resilience. Overall, the agriculture, financial service, and nutrition results are fairly straightforward; but key empowerment and resilience indicators suggest a complex analysis to understand impact at endline.

The control group women though quite similar to the treatment group women differ in some key areas. Whereas many demographic indicators are similar to the treatment group, the control group is more food-secure, ethnically most are Mossi with some Gourounsi and Dioula, and most are Muslim, with some Christian. They are "immigrants" from surrounding areas and are considered economically active, which explains many other indicators that suggest they are better-off financially. Their average income and savings levels are higher, more of them use formal financial services, more raise cattle, and more have recently started a new economic activity. They are more agriculturally oriented—more invest in agriculture, use fertilizer and improved seeds to increase crop yields, produce enough food for home consumption or have a surplus, and see growing crops as a business and a way to feed the family. In terms of nutrition, they are similar but use different strategies for staying healthy during the lean season, and more eat dark green vegetables. Regarding empowerment, more say they are empowered in their households, but many more are afraid of their husbands, and say that a woman must tolerate violence for a stable household. And lastly, in terms of resilience, they could be better equipped to cope with shocks given that they use fewer coping mechanisms, fewer borrow from others, and they are willing to rely on groups if a community crisis hits. About the same number of households consider themselves to be resilient in the treatment group, but many think both their household and their communities would be *less* protected from a shock than a year ago. All in all, agriculture, financial service and nutrition results are fairly straightforward; but key empowerment and resilience indicators suggest a complex analysis to come at endline.

Conclusion

ODE and SEMUS have successfully launched the BRB project, as it is functioning well operationally and has reached thousands of participants. It is clear from the results of the baseline impact survey that the program has potential to influence its vulnerable participants and create positive changes in several outcomes by the end of the project. Detecting changes will require skillful analysis considering the differences with the control group, but a variety of analysis techniques will be applied to learn from the findings. Changes are expected to occur for knowledge, behavior and attitude indicators across various areas, most notably for household resiliency, savings, agricultural livelihood and financing, financial capability, ability to plan for a healthy diet, self-confidence, and household decision-making. Although we expect the impact study endline to provide meaningful outcomes, we will continue to learn about this program and its effects on beneficiaries through the Community Resilience Assessment and the Member and Institutional Qualitative Assessment. All of the findings together will tell us which groups this program works well for, and in what ways. At this point, given the findings from the baseline and the corresponding structure of our interventions, we can see that there is a strong chance for the program to be successful and effectively build the resilience of the women, and communities, involved.