FROM ANALYSIS TO ACTION

INTEGRATING TIME ALLOCATION IN PROGRAM MONITORING

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This whitepaper resumes lessons learned from integrating time allocation in the monitoring systems of Mercy Corps' FFP-funded South Kivu Food Security Project (FSP) in the Democratic Republic of the Congo.

The opportunity: Food security programs have an opportunity to incentivize meaningful and consistent activity participation, and by extension, improve activity outcomes, if they gain a more sophisticated understanding of participants' perceived cost and benefit of participation in program activities.

Underlying issues: The existing literature lacks a focus on sub-country program contexts, exhibits construct validity issues due to the often applied 24h recall, misses sociocultural context and makes extremely limited use of qualitative and mixed methods.

Proposed solutions: Food security programs should apply a cost-benefit framework to better understand the opportunity cost involved in attending program activities and the economic, human and social capital incentives provided by programs. Seasonality needs to be accounted for in time allocation. Factors acting upon variance in time allocation need to be explored. Programs should apply iterative mixed-methods integrated approaches.

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Does Time Allocation Matter?

Development Food Security Activities and other complex food security programs are increasingly emphasizing a need for multi-sectoral layering, sequencing and integration of program activities to maximize sustainable program impact. However, little attention has been given to the feasibility of increasing participants' exposure time to the program given their existing time allocation, or to potential trade-offs between increased activity layering and increased time poverty. No tangible frameworks exist yet for how to conceptualize time allocation in the context of development programs. Furthermore, the existing methods may not be adequate to address the needs of program teams.

Time is a limited and productive asset. As food security programs offer products (e.g. food, cash, tools or seeds) and services (e.g. coaching and training) to participants, they must be aware of the limited time during which participants may be available, the time that a given program activity and related activities such as travel may take, and the value proposition of the activity for the economic, human and social capital of participants that may motivate them to attend - and continue attending - a program activity. It is therefore paramount that food security programs use appropriate methods and metrics to understand how participants' time is allocated and how program activities interplay with participants' cost-benefit perceptions of participation.

Limitations of existing time allocation measurements for food security programs

Lack of focus on sub-country program contexts

Although there is a growing body of literature on time allocation, use and poverty, this corpus is not focused on program contexts. Data sources for time allocation analyses generally stem from modules in existing surveys such as the World Bank Living Standards Measurement Studies (LSMS), which may be conducted every 2-5 years, or national time use surveys, which may be conducted once every ten years, (Charmes, 2015).

While these studies facilitate a deeper understanding of time allocation trends over time, they are (1) insufficient to cultivate a context-specific understanding of village-level heterogeneity and (2) often lack methodological transparency. Programs using third party survey data are limited in their analysis on a geographic basis as large surveys are not conducted with the frequency and geographic focus that will help programs inform their design and implementation. National level surveys in developing contexts generally collect information in the scope of a few months, in geographic areas that may or may not provide statistically significant results in locations relevant to program implementation. Furthermore, non-response rates to time use questions are rarely published, indicating that results may not be representative (Charmes, 2015). Therefore, program teams must consider how to integrate their key questions about time use across geographies and key seasons into their regular monitoring activities, rather than rely on national level surveys.

Middle East and North Africa 9 countries 10 surveys	Sub-Saharan Africa 8 countries 10 surveys	Asia 9 countries 13 surveys	Latin America 7 countries surveys	Transition 12 countries 12 surveys
Algeria (2012)	Benin (1998)	Armenia (2004)	Colombia (2012-2013)	Albania (2010-2011)
Iran (2009)	Ethiopia (2013)	Cambodia (2004)	Costa Rica (2004)	Bulgaria (2009-2010)
Iraq(2007)	Ghana (2009)	China (2008)	Ecuador (2012)	Estonia (2009-2010)
Morocco (2011-2012)	Madagascar (2001)	India (1998-1999)	El Salvador (2010)	Hungary (1999-2000)
Oman (2007-2008)	Mali (2008)	Republic of Korea (1999) (2004) (2009)	Mexico (2002) (2009)	Latvia (2003)
Palestine (1999-2000)	Mauritius (2003)	Kyrgyzstan (2010)	Panama (2011)	Lithuania (2003)
Qatar (2012-2013)	South Africa (2000) (2010)	Mongolia (2007) (2011)	Peru (2010)	Former Yugoslav Republic of Macedonia (2014-2015)
Tunisia (2005-2006)	Tanzania (2006) (2014)	Pakistan (2007)		Moldova (2011-2012)
Turkey (2006)		Thailand (2004) (2009)		Poland (2003-2004)
				Romania (2011-2012)
				Serbia (2010-2011)
				Slovenia (2000-2001)

Figure 1: National time–use surveys: list of countries and surveys (years) by region Adapted from: "Time Use Across the World: Findings of a World Compilation of Time Use Surveys" Charmes, J. 2015. UNDP Human Development Report Office

Construct validity trade-offs of 24h recalls

Time allocation surveys, including in countries with majority-rural populations, commonly apply a 24-hour recall to provide a snapshot of an individual's time allocation. The same is the case for the time allocation module in the survey used to calculate the Women's Empowerment in Agriculture (WEIA) Index (Malapit et al., 2015), an index that is receiving increasing attention in the food security program evaluation community.

This approach is understandable as the level of detail needed for comprehensive analyses of all activities in daily life is too complex to be collected using a longer recall period. However, when it comes to analyzing time allocation for agricultural activities, this approach is at best problematic since it does not consider seasonality. Analyses from Mercy Corps DRC DFSA *South Kivu Food Security Project (FSP)* (Bratz and Scialfa, April 2020) show that hours per week tending to crops and fields can vary as much as 20% between the seeding and harvesting periods. Importantly, seasonal variations in workloads were not consistent between groups: For instance, women with a partner would work more hours per week during harvest, while women without a partner would work fewer hours per week during harvest. Consequently, time allocation surveys conducted with rural communities risk seasonal bias if they are not intentional about collecting information around specific agricultural seasons. Additionally, if repeated measures are not collected throughout the different parts of a season (land preparation/tillage, seeding, weeding/maintenance, harvest) the data cannot account for seasonal variation, which is paramount for time allocation-sensitive food security program design. As such, a 24h recall approach creates substantial construct validity issues that limit the usefulness of the data for

programs looking to account for agricultural workloads. Reports that utilize the 24 hour method, but are not able to consider seasonality due to data limitations include, but are not limited to: Rubin (1990), Admassie and Bedi (2003), Wooden and Bardasi (2009), Zacharias et al. (2018), Orkoh et al (2020), Gammage (2010), Fontana & Natali (2008), Dammert (2008), Shirajee et al. (2010).

Lack of sociocultural contextualization

Nation-wide time-allocation surveys often lack the necessary depth of analysis to understand why certain participant groups allocate their time in a certain way and how their time allocation interacts with broader economic, social and cultural dynamics.

While the time allocation literature has made big strides in defining time allocation and time poverty (Bardasi and Wodon, 2006), more effort will need to be put into the sociocultural context that may influence time dynamics. One factor acting upon time allocation that was identified during focus group discussions in the FSP program was the engagement of program participants in reciprocate agriculture and caregiving help relationships. Although time investments into helping others in their fields may appear costly in the short run, they can help strengthen social bonds between program participants. Previous Mercy Corps research has highlighted the importance of social connections as a resilience capacity that may improve wellbeing outcomes during times of crisis (Humphrey, 2019). While FSP could confirm no association between reciprocate agriculture and caregiving help and social bonding using data from the program's Seasonal Farmer-based Recurrent Monitoring Survey (SFB-RMS), Focus Group Discussion (FGD) data could show that non-partnered women rely substantially more than married women or married men on reciprocate help, and that they spent substantially less time on harvest than other groups (Bratz and Scialfa, April 2020). The data does not yet allow for definite conclusions as too many confounding variables are at play. It does however highlight the need to contextualize time allocation concepts to local practices.

Limited use of qualitative and mixed methods

As mentioned above, most time allocation literature is based on nation-wide quantitative surveys. Comparatively little research on time allocation has been conducted at the micro, village level. While village-level studies may not be representative to yield generalizable quantitative results about time allocation in other villages, they can contribute to an improved understanding of economic, social and cultural determinants of time allocation patterns. Only one study (Zaman 1995) includes qualitative inquiry geared towards an improved understanding of the factors acting upon time allocation using informal and unstructured interviews.

FSP's Approach to Integrating Time Allocation into Monitoring

Mercy Corps' Food for Peace (FFP) funded Development Food Security Activity, FSP-Enyanya (FSP), in the province of South Kivu in the Eastern Democratic Republic of the Congo (DRC), has worked on developing potential best practices for the methodology, metrics and use of time allocation analysis in program monitoring, design and adaptation. While the program was excited to discuss potential trade-offs between activity layering, sequencing and integration, and participant time allocation following the program's mid-term evaluation, a literature review made it clear that commonly used methodologies and metrics to measure time poverty were not appropriate in the program context. FSP thus built on pre-existing qualitative and quantitative data

collection flows in the program to inquire both into what methodology and metrics might be the most appropriate to answer questions about time allocation and program participants, and into the subject matter of examining this potential trade-off. Subject-matter results are reported separately in the *FSP Resilience Learning Brief #01: Gendered Workloads of Farmers in South Kivu* (Bratz and Scialfa, April 2020).

Iterative mixed-methods integrated design

FSP has developed an iterative mixed-methods integrated design (Caracelli and Greene, 1997) to examine dynamic time allocation among program participants, heterogeneity in time allocation, factors acting upon time allocation and appropriate metrics to examine time allocation.

The quantitative component of FSP's approach is integrated into the program's Seasonal Farmer-based Recurrent Monitoring Survey (SFB-RMS), a survey collecting three panel data rounds from participant farmers over the course of a year. Data collection is conducted in March at the time of seeding in season B, four weeks after harvesting season A production, and in September at the time of seeding in season A, four weeks after harvesting season B production. The SFB-RMS includes reciprocate agriculture and caregiving help questions, questions around participants' attitude towards their time investment with FSP, and a time allocation module based on a 24h recall, which has been adapted from the Women's Empowerment in Agriculture Index (WEIA) questionnaire and contextualized for the socio-cultural context in South Kivu. The SFB-RMS also includes the index of social capital and the sub-index of social bonding, a required-if-applicable (RiA) USAID/Food For Peace indicator (M36).

The qualitative component of FSP's approach is based on semi-structured FGDs. The FGDs include a mixed-methods module on typical start and end work hours per day, work days per week, and work weeks per agricultural period, for the four agricultural periods of land preparation/tillage, seeding/planting, maintenance/weeding, and harvest (see figure below). This quantitative component is collected using a seasonal workload chart written on a flip chart from every FGD participant prior to the start of the qualitative time allocation component of the FGD. The rest of the FGD module is qualitative and aimed at bolstering understanding of time allocation dynamics as well as family, reciprocate, and paid agriculture help relationships. Both the FGD facilitator and the note taker write up summaries, surprises, free thoughts and contextualizing comments after each FGD and submit these for data storage and analysis together with the FGD notes.

Village	Prepare land					Seed/Plant					Maintain/weed					Harvest				
Group	person 1	person 2	person 3	person 4	person 5	person 1	person 2	person 3	person 4	person 5	person 1	person 2	person 3	person 4	person 5	person 1	person 2	person 3	person 4	person 5
5am		Hill	Hill		Hill		Hill	Hill		Hill		Hill	Hill		Hill		Hill	Hill		Hill
6am																				
7am																				
8am																				
9am																				
10am																				
11am																				
12 noon																				
1pm																				
2pm																				
3pm																				
4pm																				
5pm																				
6pm																				
7pm																				
8pm																				
9pm																				
Days/wk	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	2	4	3	4
Weeks	4	4	4	2	9	4	6	2	3	4	4	3	3	4	2	2	3	2	2	1

Figure 2: Example of a seasonal workload chart transcribed into Excel.

FSP uses mixed-methods iteration between the FGD and survey rounds to dynamically adjust its measurement methods and question items regarding appropriate time allocation metrics and factors acting upon variance in time allocation dynamics. Both methods are used for complementation and triangulation to explore potential hypotheses through inductive and abductive reasoning using FGD data, and deductive reasoning using survey data. In addition, question items in each qualitative and quantitative module are adjusted based on the emergence of new hypotheses about appropriate time allocation metrics and factors acting upon time allocation, as well as the falsification or non-falsification of emerging hypotheses.

Variance and representative sampling

FSP applies variance sampling for FGDs and representative sampling for surveys. In the September 2019 round of the farmer-based FGDs, FSP monitoring, evaluation and learning (MEL) and program teams conducted FGDs with three homogenous groups: female participants who have domestic partners, female participants who do not have domestic partners, and husbands of participants. 18 focus groups were conducted, stratified by the three health zones targeted by FSP, to reach at least 80% thematic saturation per demographic group and health zone. The interview site selection was based on six factors to maximize variance: principal livelihood strategies, access to main roads, proximity to the provincial capital Bukavu, topography, religious orientation (as a proxy for food taboos) and the presence of large enterprises. Six villages were selected for participation with the target of five participants per group. This resulted in a target sample size of 90 participants (3 groups x 6 villages x 5 participants). The actual sample included 86 individuals.

The SFB-RMS sampling methodology was based on a two-stage cluster sampling design with a systematic selection of respondents according to the probability-proportionate-to-the-size (PPS) method, adjusting for non-response rates and finite population correction. The SFB-RMS and the FGDs targeted the same villages.

Mixed-methods analysis

The qualitative FGD data was analyzed using qualitative comparative analysis by demographic group and interview site. Analysis categories were confirmed based on an exploratory analysis of the summary notes from FGD facilitators and note takers. Seasonal workload charts from the FGDs were transcribed into Excel tables and transformed into an unpivoted flat file where every participant represents a case with one observation per seasonal period and start hours, hours, work hours per day, days per week, weeks per period, hours per week and hours per period as fields. Averages were calculated for each group (e.g. female participants with domestic partners, female participants without domestic partners, and husbands of participants). Although this information was not representative of the entire sample frame as the sampling strategy was exploration and not confirmation-oriented, it provided teams with a greater depth of information with which to supplement understanding of time trends across groups and geographies. The qualitative data was documented using interview notes in a Word document and, where consent for audio recording is given, enriched with material from the audio file. Quantitative data was analyzed using survey-weighted descriptive and linear regression operations.

Results

Results have been produced in the *FSP Resilience Learning Brief #01: Gendered Workloads of Farmers in South Kivu* (Bratz and Scialfa, April 2020). The resilience learning brief explored four questions through iterative quantitative and qualitative analysis: (1) How much time do partnered and non-partnered female and male farmers in the intervention zone spend working in the field? (2) What types of workload help do non-partnered and partnered female and male farmers receive? (3) What, if any, relationship is there between reciprocate help and social bonding? (4) What evidence, if any, is there to suggest that FSP activities could be a time burden for FSP participants?

The brief uncovered that agricultural workloads in the intervention zone are extremely heterogeneous. Gender dynamics appear to play a key role in workloads but are complemented by a wealth of other factors such as seasonality, reciprocal agriculture help, topography, field sizes, crop types, and proximity to economic zones. Non-partnered women are more prone to relying on reciprocate help, partially balancing a lack of support from family members. No relationship between reciprocate help and the bonding sub-index of social capital can be confirmed, however, the construct underlying social bonding is much larger than the index itself. Non-partnered women appear to be more time-impoverished than other groups and are more likely to skip program activities sometimes, but do not skip more often.

The brief cannot confirm that participants might perceive the time spent on program activities as too high. However, it also found that FSP should: avoid conducting time-intensive activities in the seeding period, consult with participants to identify the most suitable timing for activities, and explore household and community-level opportunities to reduce women's time spend on caretaking, food preparation and household chores. The MEL and research community should review appropriate time allocation metrics, account for seasonality in time allocation, and examine contextual factors influencing heterogeneity in time allocation.

Lessons Learned from Integrating Time Allocation into Program Monitoring

The FSP program expects to continue adjusting the methodological approach to measure time allocation, underlying factors, and the interaction between time allocation and program activities through mixed-methods iteration. However, four lessons learned can already be pulled from FSP's experience to improve the incorporation of participant time allocation into program monitoring, design and adaptive management.

Lesson 1: Apply a cost-benefit framework to examine if participants perceive activities as worth their time

In simple economic terms, participants choose to engage with food security programs based on their own personal cost/benefit analysis. If participation is not expected to be of benefit, it is unlikely they will commit to the program. If, on the other hand, the program is determined to be beneficial, the individual may choose to participate. Even then, the level of commitment may vary.

An initial corroboration of our analyses with field experiences of program teams suggest that the most important cost consideration for participants' active and continued participation in program activities is the opportunity cost stemming from their time investment. Simply put, a participant who attends a program activity can not engage in a productive or income-generating activity, spend time with the family, engage in leisure activities or meet with other community members outside of project activities at the same time. Participants may value the opportunity cost of engagement with program activities differently based on a range of factors such as their gender, age, socio-economic status, family obligations and geographic location among others. We found similar concerns in the literature. For example, focus group participants explaining women's participation in coffee associations in Mexico noted that women without children were able to engage in leadership positions while those with competing domestic responsibilities felt unable to fully engage with professional organizations (Lyon et al., 2016).

If program activity participation creates an opportunity cost for participants, what benefits are worth the cost of time? The analysis conducted in FSP has found no definite answers, however, three broad categories of benefits could be identified through corroboration with program teams. Perhaps not surprisingly, the most commonly quoted category of participation in the FSP context is economic benefit. Economic benefits may come in various forms, such as food assistance from participation in Food For Asset (FFA) activities or seeds and tools from participation in Farmer Field Schools (FFS), but even in forms not actively intended by the program, such as potential savings from transport reimbursements or meals during trainings conducted by FSP. However, benefits are not limited to economic ones. Human capital gains, such as improved life and business skills, literacy skills or knowledge about agricultural techniques, acts as another central motivator for participants to attend activities. Lastly, social capital gains can act as a motivator. For instance, a woman who participates in a Local Development Committee (LDC) and does not gain immediate financial benefit from this activity reported feeling more appreciated by her husband and other community members since she became involved in community decision-making, according to field observations from program teams in 2019. Note that like with time allocation, the perceived value of any type of capital gain through a program activity may vary. For instance, a person who struggles to bring food on the table may value economic capital gains higher than social capital gains.

In brief, FSP's experience shows that in a program context, relationships between program activities and time allocation and time poverty should not be examined as a stand-alone subject, but in relation to the comprehensive cost-benefit perceptions of participants. Attitude question items are an extremely important complement to better understand these perceptions in addition to a simple computation of time allocation, and qualitative data is key to understanding what factors play a role in participants' perception of opportunity cost through time allocation and of the benefit of activity participation. Programs that require consistent participation from the same participants and low activity drop-out rates will need to apply a cost-benefit framework to understand what participants perceive consistent participation as worth their time, why that is, and how they can stay motivated to participate.

Lesson 2: When working in rural contexts, consider seasonality in time allocation measurements

FGD time allocation data showed that workloads tending to crops and fields vary substantially throughout the four periods of a season (land preparation/tillage, seeding/planting, maintenance/weeding, harvest). Against this backdrop, when it comes to time allocation tending to agricultural activities, data collection needs to account for seasonality.

While multiple options are possible to operationalize seasonality, some may be costlier than others. Arguably the most rigorous method - panel surveys collecting repeated time allocation measures from the same participants throughout all periods of all seasons of a year using a 24h recall - would incur substantial survey costs that may exceed the anticipated benefit for program adaptation and marginal impact. An alternative can be data collection through FGDs or key informant interviews (KII) using a large-enough sample to confirm general tendencies, which is not based on a 24h recall but on generalized work hours established through consensus. The benefit of this approach is that data on all seasonal periods can be collected within one collection round, and corroborated on the spot to mitigate against recall bias.

Lesson 3: Seek to understand determinants of heterogeneity in time allocation

The FGDs conducted by FSP uncover extreme variance in time allocation not only between demographic and geographic groups, but also within groups. Multiple additional factors acting upon heterogeneity in time allocation could be identified as potentially promising in the agricultural programming context of FSP, such as topography, plot sizes, crop types, crop diversity and reciprocate agriculture and caregiving help. So far, FSP has not yet succeeded in confirming factors other than gender, seasonality and potentially reciprocate caregiving and agriculture help that help to explain the uncovered heterogeneity. The existing literature, and even the initial work of FSP on time allocation, illustrates that factors acting upon time allocation should not be treated as an afterthought, but as an integral component of the analysis questions and design.

Lesson 4: Use an iterative mixed-methods integrated design to obtain valid time allocation metrics

FSP applied an iterative and integrated mixed methods approach where FGDs and survey data were used to triangulate and complement findings, and to adjust one method based on analysis findings from data collected through the other method. This dynamic approach enabled FSP to falsify or strengthen emerging hypotheses

about factors acting upon time allocation. In doing so, FSP found that time allocation for caregiving activities remains stable throughout all seasonal periods, while time allocation for agricultural activities varies vastly based on seasonality. By exploring quantitative measures in FGDs, FSP was hence able to problematize commonly used time allocation metrics that could lead to erroneous or even biased results and program recommendations.

FSP's experience illustrates why a mixed-methods iterative and integrated approach helps not only to increase the depth of time allocation analysis, but also to uncover and check epistemological assumptions, and to improve upon existing methodologies and metrics.

Conclusion

Food security programs have an opportunity to improve attendance and active participation in program activities if they gain a more sophisticated understanding of participants' perceived cost and benefit of participation in program activities. To do so, they will need to revisit existing methodologies and metrics used to analyze time allocation and factors acting upon variance in time allocation dynamics.

Time allocation dynamics are highly heterogeneous and context-specific. More substantial effort needs to be put into understanding these dynamics at the program level. Existing quantitative measurement methodologies and 24h recall metrics for time allocation may be appropriate for daily activities, but are inappropriate in rural development contexts where agricultural workloads are influenced by seasonality. Similarly, an improved understanding needs to be established in food security programs about what contextual factors may influence time allocation dynamics. To that extent, qualitative and mixed methods need to play a bigger role in the analysis of time allocation.

Four important lessons learned have emerged from FSP's evolving experience in incorporating participant time allocation analysis into existing monitoring systems. First, food security programs working to understand how program activities interact with participant time allocation dynamics should consider applying a cost-benefit framework. This approach may help to understand what opportunity costs are involved when participants attend program activities instead of going about their daily life, and what economic, human, and social capital gains participants expect from participation. In applying a cost-benefit framework, programs have a chance to better understand how to incentivize meaningful and consistent participation by activity participants. Second, food security programs examining time allocation associated with agricultural workloads should account for seasonal variability in their data collection and analysis. This can be done through (expensive) quantitative panel data collection, or through confirmatory FGD data collection. Third, food security programs should seek to understand factors that influence why different participants and participant groups allocate time differently. FSP has identified a range of potential factors applicable to agricultural program contexts, but more work needs to be done to confirm these and identify other factors. Fourth, food security programs should apply iterative and integrated mixed methods to further strengthen the knowledge base about appropriate time allocation metrics, and to falsify or strengthen emerging hypotheses around factors acting upon participant time allocation.

By applying these lessons learned, food security programs have the potential to better understand what motivates participants to consistently attend program activities, how time is allocated, and why. A deeper understanding of these questions will help programs to better incentivize meaningful and consistent participation, and by extension, improve activity outcomes. In addition, programs may be able to embed

complementary program activities that reduce the time-burden or improve the participation benefit perceived by time-poor participants so that they are more willing and able to participate in program activities.

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CONTACT

ARNO BRATZ
DFSA MEL Manager | Mercy Corps DRC
abratz@mercycorps.org

CARLY OLENICK
MEL Advisor | Mercy Corps Global
colenick@mercycorps.org

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45 SW Ankeny Street
Portland, Oregon 97204
888.842.0842
mercycorps.org