Usability Evaluation of the Poverty Stoplight Form in Armenia

Worcester Polytechnic Institute & American University of Armenia

Authors:

AUA	WPI
Arpi Manusajyan	William McDonald
Meri Sargsyan	Jacob Isaac

Advisors:

Norayr Ben Ohanian, AUA & Aaron Sakulich, WPI

Armenia D23

May 3, 2023

Abstract

The Poverty Stoplight form is an assessment tool that measures poverty from a multidimensional perspective. We evaluated the viability of the form for usage by World Vision Armenia in evaluating candidate families for their poverty intervention program. To do this we observed the form in use by WVA-associated social workers with impoverished families. After analysis of the collected usability data, we recommend the usage of a significantly abridged version of the Poverty Stoplight form to WVA.

Acknowledgments

Executive Summary

Background

Poverty in Armenia is tackled by a milieu of government-funded programs, non-governmental organizations, and social workers. One of these NGOs, World Vision Armenia, is assisting the Armenian government in developing the processes and frameworks for their government-backed community social worker program called CLASS. They employ a framework called the Graduation Program, which has demonstrated successful outcomes. However, this protocol lacks a standardized mechanism to facilitate the onboarding of families into the program, something that is currently left to the discretion of individual social workers with mixed results. We hoped to resolve this shortcoming by evaluating the efficacy of an external poverty intervention tool in this role. The tool we worked with is the field-tested Poverty Stoplight form, which is part of a poverty intervention framework developed by the Fundación Paraguaya, a Paraguayan NGO. The form was adapted by a previous WPI team to accommodate the specific conditions of Armenia, and we continue their work by validating the efficacy of the tool in actual application scenarios.

Methodology

We employed a methodology adapted from the field of usability testing. We chose this approach because it allowed us to evaluate the efficacy of the Poverty Stoplight form by observing its usage, and did not require us to wait for the results of a full Graduation Program run that could take up to two years. This timeline was important as our project was constrained to

a limited time in the field. Additionally, this approach had the advantage that it did not require us to handle the sensitive information an outcome-oriented approach would necessitate.

Our usability study considered the experience of our user, the community social worker, as they used the Poverty Stoplight form. We considered two use cases: the training of the form with social workers, and the actual implementation of the form with client families. To evaluate the efficacy of the form in both use cases, we used a combination of observational note-taking, audio recording, and user interviews. This data collection targeted the experience of the social worker and was translated and transcribed into English for analysis. During the transcription process, any personally identifying information collected from vulnerable social work clients was removed. This usability data was then processed into a series of issues with the form software's usability which was used to implement iterative improvements.

Our protocol employed an iterative framework common in usability testing. We worked with a series of social workers in "iterations" who were trained and observed using incrementally developed protocols. Once the observational iteration data was processed into a set of improvements we updated the form materials for use training the next iteration's social worker. We executed three iterations, with the final iteration producing a training protocol and form software that had been field tested and adapted for the discovered needs of the social worker.

Finally, we took the form materials and learned insights from the final testing iteration and synthesized them into a proposal to World Vision Armenia

Results

While our goal remained constant throughout the project, a major change occurred in the platform on which the Poverty Stoplight Form was implemented. Originally, we had planned to

use a mobile application developed by Poverty Stoplight. This was the path of the previous two WPI teams in 2019 and 2020. We were initially forced away from this tool due to a pernicious bug in the form's software that prevented its use. As our project unfolded and we observed more training sessions as well as interviews, we determined that a paper-based Poverty Stoplight Form was preferable to a digital copy due to the low technology access and variable technological literacy. In addition to this, there were changes to the form itself, as well as to the training process throughout the iterations.

While the form was agreed upon by social workers as well as the WVA coordinator to be functional in use, reactions to the form's contents were observed to be different. The first issue concerned the number of questions that the form had, originally 54. As a result of the lengthy nature of the form, workers voiced that both they and families would lose interest as an interview would go on, something we also observed. This would lead to a less interactive session with both parties disconnected from one another; unfortunately, this is precisely what the forms creation was hoping to prevent.

Another aspect of the form that generated a negative response from social workers was that they believed many questions to be too similar to one another and thus repetitive, once again contributing to a tedious and consequently apathetic use of the form. The social workers also believed that because of the rather blunt nature of some of the questions, the families were likely to answer untruthfully. As an example, a question concerning sexual assault was worded "Is sexual violence common in your family?" Because there was often more than one family member present due to social and physical constraints, and this question was extremely personal, the probability that this question is answered honestly is much lower when compared to other questions. Aside from this, the workers also mentioned that some questions were not applicable

to Armenian poverty conditions, like the existing government support of conflict-relocated families and numerous COVID-related developments. The intersection of these phenomena meant that the form was evaluated poorly in terms of usability for the social workers, and also exhibited difficulties from the families' perspectives. Additionally, it is unclear how much value was provided to the implementing organization from the higher dimension poverty data produced by this additional effort due to the accuracy concerns, so it exhibits usability issues in that regard as well.

Conclusions & Recommendations

Our combined analysis indicated that the Poverty Stoplight form, as executed in our final iteration, did not serve as an effective tool to accommodate the use case we evaluated it for: serving as a first-contact evaluation to test candidacy for a poverty intervention program in WVA's social work. Because of this, we do not recommend the usage of the fully featured tool for WVA's use case. Additionally, we can extend the majority of this analysis to any organization considering the Poverty Stoplight tool for usage in the capacity of first-contact evaluation.

There are multiple modifications which could be made to the tool, to varying degrees of severity, which could potentially respond to these usability blockers. The first major modification to the form usage would be to use additional time to train social workers in the form. The second modification we considered was to invest more time in rewriting the criteria questions. The third was to pare down the form's criteria set, resulting in a much shorter document. Of these options, we believe the third is the most reasonable for the realities of WVA's situation.

Thus, our final recommendation is that WVA should use the Poverty Stoplight form, but guide the individual community level offices select which of the questions are most applicable for their use case.

Authorship

Components of report sections were authored individually, and contributions are reported below. For all sections, these delineations were equitable enough to not require identification of a primary author. The editing process was fully collaborative, with each member of the team editing and reviewing all sections.

Abstract: Jake, William

Executive Summary: Jake, William

Introduction: Arpi, Meri, William

Background: Arpi, Jake, Meri, William

Methodology: Jake, William

Results: Jake, William

Conclusions & Recommendations: Jake, William

Table of Contents

Introduction

As in most countries, the state of poverty reduction programs in Armenia is an intricate dance between state-supported programs, government workers, internationally funded non-governmental organizations (NGOs), and local initiatives. As all of these actors operate independently, the quality of poverty intervention measures can vary considerably across different implementations, even if they are under the same organizational umbrella.

The sponsor of this project, World Vision Armenia (WVA), is a relatively established actor in this space. It is a non-governmental organization working with the most vulnerable communities and families to help them overcome poverty, injustice, and inequality. The organization has implemented the CLASS (Community Level Access to Social Services) program to strengthen Armenia's social protection system by deploying integrated community-based social workers, thereby enhancing the well-being of the most vulnerable children and their families across ten regions and the capital Yerevan. The initiative's mandate is to establish a team of community-based social workers within local governance and to assist the communities in understanding and addressing their social issues.

Their current methodological framework is called the Graduation Approach. The Graduation Approach is a comprehensive program designed to help vulnerable households in Armenia achieve long-term self-sufficiency and economic stability. The program focuses on supporting families living in extreme poverty and facing multiple challenges, such as limited access to essential services, lack of education, and inadequate healthcare. In the program, community social workers work within a framework to "graduate" families from poverty as measured against a set of "pillar" metrics. The Graduation Approach lacks a standardized

mechanism to onboard families, so World Vision Armenia currently looks to other field tested poverty intervention programs. Specifically, they consider the Poverty Stoplight methodology which has been utilized internationally and involves a meticulously designed and tested self-assessment form.

The Poverty Stoplight form is designed under a multidimensional interpretation of poverty and supports families in identifying the intricacies of their situation against several characteristic dimensions of poverty. WVA engaged an IQP team in 2019 to tweak the standard metrics for usage in Armenia to accommodate varied cultural elements. Through this project, we aim to further that work by integrating the tailored Poverty Stoplight form into the intake portion of the CLASS social workers' process. We will then evaluate the Stoplight form's usability, efficacy, and process outcomes and finally make recommendations to both WVA and the Armenian Government about its potential implementation.

Background

Armenia had a poverty rate of 27% in 2020, according to the Asian Development Bank (ADB, 2022). The National Statistical Service (NSS) of Armenia determines poverty based on consumption (expense) rather than income level, with three categories of poverty: poor, very poor, and extremely poor. A person is considered "poor" if their monthly consumption is less than 41,698 AMD ($107 in 2023 dollars), "very poor" if their consumption is less than 34,234 AMD ($86), and "extremely poor" if their consumption is less than 24,109 AMD ($61) (Gevorgyan, 2018). The highest level of extreme poverty was found in Gegharkunik and Shirak regions at 5.8% and 5.2%, respectively (Statistical Committee of the Republic of Armenia, 2022).

In 2015, before the COVID-19 pandemic, the average monthly expenditure per capita was 42,867 AMD ($108), which is less than the cost of the minimum consumer basket, a cost-of-living measurement, at 54,414 AMD ($137) per month. This means that many people living just above the poverty level are unable to obtain their minimum needs (Gevorgyan, 2018).

In 2021, subjective perceptions of living standards in Armenia were 2.8 times lower than objective poverty measurements (9.5% and 26.5%, respectively) based on surveys. Only 0.6% of households assessed themselves as extremely poor, which is three times lower than the level of extreme poverty measured by using consumption per adult equivalent (1.5%) (Statistical Committee of the Republic of Armenia, 2022). Almost one-fifth of Armenians faced poverty as measured by the United Nations Multidimensional Poverty Index (MPI) in 2021, with disparities between urban and rural areas. The national rate of poverty fell significantly from 41.2% in 2010 to 23.6% in 2018. The MPI showed a slight decrease in the national poverty rate between 2020

(19.1%) and 2021 (18.7%). However, rural areas and non-Yerevan cities saw slight increases in the MPI while only Yerevan improved its living conditions. Rural populations had the highest incidence of multidimensional poverty (23.5%), while Yerevan had the lowest MPI (14.4%).

In 2021, the poverty rate in rural communities was higher than the national average (33% compared to 26.5%), and land ownership played an important role in reducing rural poverty. Landless households had a poverty rate of 38.1% in rural communities, while landowners had rates between 23.1% and 25.9%. There were also gendered differences in child poverty rates in 2021, with high levels observed in Shirak (56.5%) and Tavush (46.9%) regions and a relatively low level in the Syunik region (4.2%).

Additionally, despite increases in important economic and development metrics, Armenia has seen downturns in some critical sectors of inclusive development. Armenia experienced a 10.6% gain in growth and development indicators during the last five years, mainly in GDP per capita and employment. At the same time, according to the World Economic Forum's Inclusive Growth and Development 2017 Armenia national key performance indicator findings, wealth disparity has increased by 10.2%, with small advances in median income (0.8%) and net income inequality (-0.6%). In sum, Armenia's recent economic growth has been unevenly distributed.

The government of Armenia has attempted to address these issues through policy measures. The Armenian government has taken note of issues concerning underdevelopment outside of Yerevan and has stated specifically that the government must maintain "cultural, recreational, agricultural, and industrial centers outside Yerevan" as well as emphasizing the importance of electronic literacy in these areas as an aid to self-sufficiency (Sargsyan, 2008). Newer documents state that a new system for assessing social security will be put into action, but remains vague on what this means in terms of specificities. (Programme of the Government of

the Republic of Armenia 2021-2026, 2021) Since 2017, the Armenian Ministry of Labor and Social Affairs, the governmental branch responsible for Armenian social work, has worked with local NGOs to improve their social service framework.

One of these NGOs is World Vision Armenia (WVA). WVA is a non-governmental organization that is part of World Vision International, a global humanitarian organization dedicated to working with children, families, and communities to overcome poverty and injustice. WVA operates in Armenia and focuses on providing support and assistance to vulnerable children and families, particularly in the areas of education, health, livelihoods, and child protection. The organization also engages in emergency response efforts, such as providing aid and assistance to communities affected by natural disasters or conflict. WVA is committed to improving the lives of children and families in Armenia and promoting sustainable development in the country (WVA, n.d.).

During the Second Nagorno-Karabakh War in 2020, WVA responded by providing emergency humanitarian assistance to affected families, particularly those who were displaced and had fled to safer areas. WVA distributed essential items such as hygiene kits, blankets, mattresses, and food packages to thousands of families in need. They also provided psychosocial support to children and families affected by the conflict, including trauma counseling and other mental health services. Additionally, they worked with local partners and other aid organizations to coordinate their response and ensure that assistance reached those who needed it most. They also advocated for the protection of children and other vulnerable groups affected by the conflict and raised awareness of the ongoing humanitarian crisis in Nagorno-Karabakh (WVA, n.d.).

One of WVA's major initiatives is the CLASS program. This project, funded by the United States Agency for International Development (USAID), works with other Armenian

NGOs to "support Armenia in strengthening its social protection system through effective community-based social work and improving the lives of the most vulnerable children and their families in ten regions and in Yerevan" (CLASS, 2021). A major component of the program, described as its first objective, is working with the government of Armenia to develop and legislate the role of Community Social Workers (CSWs) in local governments. Since 2017, this project has introduced CSWs into 62 communities across Armenia and is intended to continue supporting them through 2024, an extension from the original 2020 end date. The CLASS department of WVA is specifically responsible for the development and sponsorship of this project, as it will be directly assisting the project's goals by improving CSW's efficacy.

As part of CLASS, WVA promotes its chosen poverty-reduction system known as the Graduation Approach to community social workers. It is a pragmatic approach to address poverty and vulnerability by providing a comprehensive set of interventions and support to households living in extreme poverty while promoting self-employment. The application of this process takes place over 12-24 months and is centered around four main pillars: livelihood promotion, social promotion, financial inclusion, and social empowerment. At the end of the program, families "graduate" if they meet certain thresholds on metrics associated with the four pillars. To facilitate improvement, the Graduation Approach employs five core elements of intervention: consumption support, savings, asset transfer, technical skills training, and regular skills coaching. (Ultra Poor Graduation Field Handbook, 2019). In Armenia, this often takes the form of vocational training and greenhouse proliferation. The Graduation Approach is prescriptive with its comprehensive framework and timeline of interventions but has minimal guidelines for how a social worker should work to understand a family's poverty situation while the family is being selected. Under the Graduation Program, and therefore the CLASS program,

that first stage of familial information gathering is left to the discretion of the individual social worker.

A different poverty intervention program that can offer a methodology for onboarding its clients is the Poverty Stoplight program. The Poverty Stoplight is many things, including a poverty reduction methodology, a specific technology used in that methodology, a set of metrics underlying that technology, and a thesis about the nature of poverty. That thesis – as articulated by program architect Dr. Martin Burt in his book Who Owns Poverty – is that the mechanism by which poverty ought to most effectively be approached is by "giv[ing] poverty back to poor people". The critical analysis underlying the thesis is that contemporary approaches to poverty reduction are designed such that the actors of that reduction are policymakers of the "global north" (Militzer, 19). A key component of that framing is that the metrics by which poverty is assessed are designed for utilization by that exclusive class of policymakers and tailored toward their needs. These needs include externalities like program justification, public perception of projects, and layperson comprehension – all things that do not directly mitigate the conditions or symptoms of poverty for the impoverished. This dynamic means that poverty metrics tend to collapse the multidimensional nature of poverty into reductionist singular values, and that the methods and mechanism of these metrics are devised using complicated internal signifiers that are out of reach of tractable interpretation for the impoverished. In short, "the way we define poverty makes it too complex to solve".

The downstream effect of this obfuscation, in the interpretation of the Poverty Stoplight theory, is that the impoverished have little to no agency in the actions taken towards their economic liberation. Burt describes how contemporary poverty reduction efforts rarely consult the populations they are intending to support, relying either on high-level census information or

surface-level groundwork. The theory of Poverty Stoplight is that the actors best positioned to interface with poverty are the ones who live in it, and a robust poverty reduction methodology will find success by empowering the poor to resolve the problems of their own, uniquely personal poverty.

The Poverty Stoplight program presents two interlocking components: a self-assessment metric supported by a distributed form, and a methodology to enable action taken from that form. The self-assessment form is valuable for our uses, as it serves as a robust and field-tested technology for initial conversations between social workers and clients. In the Poverty Stoplight methodology, the form technology is distributed to impoverished families who take it on paper, a tablet, or mobile phone with the aid of a social worker. In the form, families assess themselves against over 50 indicators grouped into six categories. Each indicator is presented on a three-point scale from red to yellow to green, corresponding to extreme poverty, poverty, and non-poverty. This scale is the "stoplight" from which the program draws its name (What is Poverty Stoplight, 23). This form's questions and metrics are tailored for each location in which it is to be used, as the program recognizes that there is no universal basis for evaluating poverty. Beyond the form, the Poverty Stoplight program uses an integrated program of recommendations and mentorship sessions to support the families on their path of intervention. The post-form component of the program, however, is redundant with the entrenched WVA Graduation Program and has no bearing on the methodology of our project.

Evidence of the efficacy of the program has been compiled by the Fundación Paraguaya, the social enterprise that developed the Poverty Stoplight. Based on research with their microfinance recipients, they found that the Poverty Stoplight increased self-reported estimations of a participants' agency. A case study with the "Cerrito Initiative", a Fundación Paraguaya

implementation of the Poverty Stoplight, found that the Poverty Stoplight dimension metrics were improved by engagement with the program, and that distributed integration of local programs was critical for this: "…in Cerrito there are hundreds of services available, but they are not efficiently coordinated" (Burt, 19b). Moreover, an analysis of specific interpretations of agency in the Cerrito Initiative implementation found that the Poverty Stoplight program increased perceptions of self-agency in participating families (Téllez et al.). An additional implementation study in Argentina found success in terms of Poverty Stoplight's metrics as well as in perceived impact (Cosentino, 19).

WVA looks to the successes of Poverty Stoplight and hopes to supplement its own Graduation Approach with the Poverty Stoplight form. This form, a tool designed to evaluate poverty situations, is theoretically positioned to serve as a plug-and-play addition to their protocol in the capacity of first-contact family evaluation. A standardized framework for this meeting is valuable, as it would allow them to accommodate the disparate skill levels of the social workers they support through CLASS.

Methodology

We evaluated the integration of the Poverty Stoplight poverty assessment form into World Vision Armenia's Graduation program. A 2019 IQP team adapted the PSL form to local cultural expectations and a 2020 IQP team refined materials to aid in the form's implementation (Cunniff et. al, 2019, Tocci et. al, 2020). This project built upon the prior work by validating that the PSL tool is helpful for the social workers who would use it by performing an iterative usability study. Our goal was broken down into four objectives:

1. Train and facilitate the usage of the PSL form with community social workers.
2. Develop an understanding of the usability of the form based on social workers' experiences.
3. Iteratively improve the PSL form training protocols and form software by repeating the previous objectives while implementing changes.
4. Present recommendations to WVA and the Armenian social work community alongside implementation materials.

Our methods varied based on the objective, as elaborated on further in this chapter. However, a strong emphasis was put on notation and documentation of PSL form implementation sessions, as well as keeping constant communication with WVA and social workers with whom we were collaborating. The methodology employed was derived from best practices in the field of usability study. These usability techniques allowed us to evaluate the

efficacy of the PSL form without the out-of-scope time requirements needed for an outcome-oriented study.

Objective 1: Train and facilitate the usage of the PSL form with community social workers.

Our initial objective was to train social workers in the usage of the Poverty Stoplight form and oversee its implementation in a pilot study. We were connected with Armenian CLASS community social workers through the social-work coordinator at WVA. We instructed these social workers in the usage of the Poverty Stoplight form through one-on-one training sessions conducted in Armenian. The training sessions were scheduled for directly before the form implementation sessions due to considerable scheduling constraints from the associated community-based social work office. Training sessions consisted of a high-level explanation of the form's usage and intent, an example facilitation of a few of the form's questions, and a guided opportunity for the social worker to review all of the indicators before usage. We had hoped to supplement these sessions with materials developed by the 2020 IQP team, but it was the opinion of this team and our sponsor that the provided resources were not helpful for this use-case due to their brevity and lack of specific implementation details.

We then facilitated the usage of the forms with families that WVA had identified as possible candidates for the Graduation program. Our goal was to be hands-off in our support of the form's implementation by the CLASS social worker, ideally only shadowing sessions to collect the information according to the protocol described in Objective 2, but we also served as a resource if the social worker or family had any major points of confusion. For a given iteration

of the form we facilitated the implementation of the form with two to five families, a sample size which usability meta-research indicates is adequate for this class of inquiry (Bastien, 2010).

Objective 2: Develop an understanding of the usability of the form based on social workers' subjective experiences.

To accomplish this objective, we observed the Poverty Stoplight form in usage during implementation sessions with a protocol developed from usability best practices (Lazar et al., 2014). This protocol involved a standardized notation framework included in Appendix 1 and a semi-structured post-usage interview included in Appendix 2. The notation framework determined the type of data collected in the training and implementation sessions, with a mixture of qualitative fields and quantitative metrics. Sessions were observed by group-members fluent in Armenian for the purposes of capturing complete usage information. In most cases, interaction guidelines from our social work coordinator prescribed that only a single member of our team was present during the sessions to minimize impact upon the sensitive environment.

Data collection followed careful ethics controls, with all subjects of data collection, social workers and families, being presented with a consent script in either English or Armenian before any data were collected. As our usability analysis techniques did not require the consideration of personally identifying information (PII) from the families, we were careful to prevent any retention of those data. Our notation framework had no fields which involved PII, and our post-usage interviews only examined the experience of the social worker. Furthermore, our analysis did not require any of the actual results of the PSL forms, which were only processed to provide survey results to WVA, so those data were never cataloged for usage in our analysis. These ethical controls were especially critical as the populations we worked with were

vulnerable due to poverty and war-inflicted trauma, as well as inclusive of children as part of the family unit.

Objective 3: Iteratively improve the PSL form training protocols and form software

This objective concerned how we intended to process the information collected while working with a single iteration of our form to develop changes to the training protocols and form software for usage in the next iteration. This iterative process is a common feature of usability study and played a key role in our research (Maramba et al., 2019).

The data we collected were the results of our standardized notation framework (Appendix 1). This prescriptive method of note-taking served as a mechanism to maintain consistency in the metrics we collected between implementation sessions in a single iteration, as well as between sessions across successive iterations of our form. In addition to the data collected from the notation framework, we also considered the results of our post-usage semi-structured interviews with the social workers who used the form. These interviews were carried out either remotely or in person after the end of an iteration once all implementation sessions were completed and the social worker was available for contact.

Quantitative metrics played a critical role in validating our conclusions with concrete analysis and allowed for precise consideration of usability factors (Lazar et al., 2014). The specific metrics can be found on the notation framework in Appendix 1, but they fall generally into two categories: counting metrics and timeline metrics. The counting metrics, like the number of skipped questions during an implementation session, allowed us to evaluate the number of times certain processes were executed. This was especially helpful to understand the number of times a process, like a form question being answered, deviated from our expectations.

Timeline metrics are in the form of question numbers that we recorded time-of-reading for during the execution of the form. Consideration of timeline metrics allowed us to understand how the flow of the form implementation process changed over the course of the form, between form implementation sessions, and between form iterations.

Once quantitative measures were considered, we processed the more qualitative results of the cohort data collection through interviews and process notes. The approach here was two-fold: considering the subjective experience of the social worker and considering the form implementation as a process external to the social worker. For example, in the first perspective, we might have interpreted a moment of frustration as a negative emotional experience associated with how the social worker felt. But, through the second lens, it would be a break in the sequence of the form. We separate these as they correspond with sets of issues best responded to by different types of process modifications. This analysis produces a set of common experiential and procedural anomalies, which was to be further considered. The final step of this processing was to synthesize these anomalies into a list of issues to respond to before the cohort protocol's next iteration.

We then followed a basic brainstorming process to develop solutions to the identified issues with the form implementation experience, resulting in a list of changes to the training protocol document and form software (Wilson, 2013). We were able to revise our form three times during our project's execution, for a total of three iterations and a final revision.

Objective 4: Present recommendations to WVA and the Armenian social work community alongside implementation materials.

Our final objective was to present recommendations to World Vision Armenia as well as the wider social work community based on findings. The proposal took the form of a presentation and accompanying implementation materials, which outlined the specific recommendations based on the results of our project, as well as the backing data and analysis that supported those recommendations. The overall purpose of this was to give WVA a structured outline on how the form was to be used as well as how to transfer learning material for when the CLASS program eventually hands off training of the community social workers to municipality governments. The implementation materials comprised the necessary materials to distribute and implement the usage of the Poverty Stoplight form as developed after our final iteration.

Results

The purpose of this project was to determine the usability of the Poverty Stoplight form that the previous WPI team tailored for Armenian conditions in 2019, as well as to develop a training process that would become more refined the more we worked with social workers. While these goals remained constant throughout the project, a major change occurred in the platform on which the Poverty Stoplight Form was implemented. Originally, we had planned to use a mobile application that could be used on Samsung tablets. This was the intention of the previous two WPI teams in 2019 and 2020. Unfortunately, the Armenian language version of the form that the 2020 team had used was inoperable due to a bug, and the Poverty Stoplight organization was unable to resolve this blocker in time due to organizational inertia. Additionally, as our project unfolded and we observed more training sessions as well as interviews, we determined that a paper-based Poverty Stoplight Form was preferable to a digital copy due to the low technology access among social workers and variable technology literacy amongst interviewees. To produce a sturdy and reusable form artifact, we printed the form criteria in color with additional details on the back of the page. These pages were laminated and spiral bound into a form packet. During execution, an erasable marker was used to mark the laminated pages so the pages could be erased and the form reused. Other than this, there were minor changes to the form itself, as well as to the training process, being detailed further in the chapter. To clarify, this chapter will detail the raw data from our work as well as immediate changes and considerations we made. Recommendations as well as a stronger analysis will be covered in our next chapter.

Each day working in the field will have its own section in this chapter, three in total. We will discuss what we (either all members, or only AUA students) saw as the form was being used by social workers. This includes social workers and families' demeanors, what questions were skipped, how long an interview lasted, as well as the overall flow of an interview. A brief summary will be written for all the uses of the form in one day. After which we will discuss the social workers' feedback after using the form as well as the takeaways from each trip out. Takeaways include any changes to the form and/or training process that we made, and how a social worker's experience had us change our understanding of the project.

Trip 1 3/31: Talin

Our first day out in the field took place on Friday, 3/31; we touched base with social workers from World Vision Armenia in the town of Talin about one hour outside of Yerevan. As we met, AUA student team members gave a brief summary of what the Poverty Stoplight form was to social workers; the form was passed around social workers so that they could gauge the type of questions they would be asking. There were multiple factors we made sure to bring up in this initial training session. Because this form contains over 50 questions, it was important for social workers to understand that it is ok to give a general summary for questions or to move on from any that a family is having difficulty with answering. This training took place between 20 and 30 minutes, after which we visited three villages: Irind, Nor Artik and Zovasar. In each of these villages, social workers used the physical Poverty Stoplight form. Only in Nor Artik did all members of the team observe the interview with a family member; in Irind and Zovasar only one AUA student accompanied the social worker as neither WPI student member could speak

Armenian and also because of sensitivity regarding two men in the room with war affected

people were being interviewed

For our first meeting, in Irind, one AUA student accompanied the social worker and the

social work coordinator, who would be present for all of our sessions. The interviewee was a

widow, and her children would periodically enter the interview theater. The interview lasted 19

minutes, meaning each question took an average of less than half a minute to answer; one

question, #16[1], was skipped due to sensitivity reasons. Observations suggested that while the

questions could be answered quickly, the length of the form as well as questions for which social

workers found self-evident answers led to the social worker losing interest towards the end of the

form. This applied for all uses of the form on this day out. As for the positive aspects of this

meeting, the family and interviewer were both in high spirits, and the data collection process was

functional from start to finish.

As previously stated, the meeting in Nor Artik was the only interview conducted on this

trip in which all four members of the team were present, as the family had invited all in. This

interview lasted, like the previous one, 19 minutes. Three questions were skipped as they dealt

with matters that were either considered sensitive (#16[2]), difficult to answer (#22[3]), or

self-evident (#42[4]). Other than this, the interview went smoothly; a key part being a more

interactive and open-ended interview: The social worker made sure not to just read off monotone

yes-or-no questions, but instead provided open-ended scenarios and in turn got more in-depth

answers from the family. From here the worker was able to choose a color and confirm with the

---

[1] "Sexual Health". The green criterion is: "My family members know how to use contraceptives and avoid STDs. Mature women visit a gynecologist."

[2] See footnote 1.

[3] "Electrical Access". The green criterion is: "Our apartment has a kitchen with a ventilation system and all necessary kitchen equipment to prepare and preserve food for all family members.

[4] "School Supplies". The green criterion is: "In my family, children have necessary clothes, stationery, books and other necessary accessories."

family that this was the color that described their situation the best. Once again, towards the end, it was noticeable that the interviewer was finding the form to be cumbersome. She frequently broke out of the form's flow to engage in an unstructured interview, and expressed minor un-spoken frustration upon returning to it. However, the family was again open to answering questions, and was quite welcoming.

Our last interview for the day took place in Zovasar. As with the first meeting this only involved one AUA student accompanying the social worker while other team members waited outside. The interview lasted 17 minutes, and one question was skipped: #22[5]. This interview differed from the previous two as there was no confusion surrounding any of the questions, and no questions were marked as taking considerable time. The interviewer proceeded with the same method of question asking they had been using all day. Once again, the interviewee was welcoming, but she continued to deviate from the form to conduct her own parallel interview alongside the form.

Interviews conducted with social workers were meant to be casual and semi-structured. During the interview, which was carried out remotely after the fact, the social worker said that while the form as a concept was good, there were questions she believed to be unrelated to an Armenian context, as well as questions she believed repeated each other although she didn't identify any specific questions. In terms of usability, the worker gave the form a seven out of ten.

From what we observed in the social worker's interviewing style, we determined that not much, if anything, was necessary to be changed with the training process at this point. However, in the case of the Stoplight form, we agreed that question #16[6] should be scrapped from further interviews. Because most of the people WVA works with are war-affected women and widows,

---

[5] See footnote 1.
[6] See footnote 1.

this question was considered by the social worker as intrusive or insensitive. In terms of how our understanding of the project shifted, we believe that the physical version of the form is preferable to the digital version. This was initially a forced decision due to the issue of the Armenian Poverty Stoplight form not being able to choose a gender due to bugs, meaning that it was impossible to even begin the digital copy, as choosing a gender is mandatory. However, usability analysis demonstrated that the physical artifact was a better choice external to the technical issues. Issues regarding battery life and service for a tablet are mitigated by a paper version so workers will not have to factor in whether or not a form will be cut out mid-session. In areas with low access to electricity, making sure a tablet, phone, or other electronic device doesn't lose battery over the course of a long day of form executions would be a challenge. Additionally, low cell signal service would also inhibit the web version of the form to be used in many parts of the countryside, limiting the devices available for usage. Aside from this, a physical form is easier to train with when compared to an application, which might not be suited for workers who aren't technologically literate. It was also easy to use with families who might have less experience with digital questionnaires or touchscreen devices.

Trip 2 4/13: Azatan

Our second day in the field took place on Tuesday, 13th of April. We met with social workers at the municipality building in the town of Akhuryan, just east of the city of Gyumri. In total, we met with six families, all in the village of Azatan. The training procedure that took place was the same as the one on 3/31. This included a brief summary on what the form was and the form being passed around.

Our first interview in Azatan took place with a group of approximately a dozen people living in one home, with the majority of the questions being answered by an older woman. This interview also involved all members of the team being present in the room as the form was being used. The family was open to answering the questions and was in good spirits. The interview lasted 19 minutes, and of the 55 questions, only question #6[7] was skipped. Possibly the biggest issue, and the one that was seen again and again with the interviews on this day, was that the social worker expressed confusion while reading the form's questions and filled out the form on their own rather than showing the form to the family. We believe that the question that was skipped was skipped due to the social worker not understanding what it was asking, even though it had been reviewed prior to use, instead of any family-specific blocker.

The second interview took place with a family of three. This interview lasted 15 minutes, with only 3 questions, #29[8], #53[9], & #55[10], being skipped. We again saw the social worker having trouble trying to formulate questions and they expressed both confusion and a low confidence in the execution; both team members and the family reacted to this. They also seemed to be guessing what the questions were asking, at one point getting confused and skipping the question altogether. Much of the interview was conducted by the social work coordinator; this coordinator was present at the form's previous use and therefore was able to conduct an interview in a more lively manner.

---

[7] "Migrant Workers". The green criterion is: "There is no member of my family who works in another country or there is someone who works in another country and sends money regularly."

[8] "Regular Means of Transportation". The green criterion is: "Our apartment is very comfortable and is never too hot or cold at home. We have enough furniture, equipment, and living space to study, relax, and eat together."

[9] "Household Violence". The green criterion is: "Physical, sexual, economic, or psychological violence is not a problem for our family."

[10] "Desire to Develop Skills and Knowledge" . The green criterion is: "In our family we are constantly trying to find ways to improve our abilities."

The third family did not meet WVA's criteria for working with families based on a brief initial greeting, so the form did not get used in any capacity. Specifically, there were no members of the family that were eligible for vocational training, the primary intervention vector for CLASS.

The third interview (with the fourth family) was conducted with only the AUA students present in the room. It lasted nine minutes (our shortest interview so far), and four questions, #25[11] , #30[12] , #42[13] , #53[14] were skipped. However, the majority of the questions that were not skipped were answered by the social worker herself, while only periodically asking questions.

The fourth interview lasted 10 minutes and three questions were skipped, #25[15], #30[16], and #53[17], during this interview as well, it was noted that the social worker was having trouble articulating the questions, and the social work coordinator ended up doing the majority of the form administration. This dynamic persisted throughout the day, even as familiarity with the tool was presumably growing.

The fifth interview was a special case. We asked the social worker to conduct the introductory session as they would without the usage of the Poverty Stoplight tool in a sample analogous to a control. We made this decision on the spot for two reasons. The first was that we had already collected four samples with the same social worker, and the previous two had not shown much variation in usability characteristics. The second reason was that the primary dynamic we had identified was the social worker experiencing difficulty owning the interview,

---

[11] "Safety". The green criterion is: "During the last 12 months, no violent acts of any kind, including theft, have been committed against members of my family."

[12] "Stable Housing". The green criterion is: "We have our own or long-term rental apartment. We are happy with our rental agreement and are confident that we can obtain alternative housing if we need it."

[13] See footnote 4.

[14] See footnote 6.

[15] See footnote 8.

[16] See footnote 9.

[17] See footnote 6.

and the social work coordinator picking up that slack. We wanted to understand if this was due to discomfort with the form or instead due to latent factors in the social worker's individual characteristics. The resulting session exhibited the same dynamics as the previous, with the social work coordinator owning most of the conversation. Moreover, we found that when the social worker was pressed by the coordinator to ask additional questions at the end of the interview by the coordinator, she used questions from the form (from memory) as her additional inquiry.

In the post-usage semi-structured interview, the social worker rated the usability of the form as a seven out of ten. They remarked that some of the questions seemed redundant or inappropriate for usage but could not recall specific questions.

The primary takeaways from this day of testing were that the baseline skill level and experience of the social worker can have a dramatic impact on the usage of the form. To adapt our form training process for the next iteration we decided to spend more time articulating our specific intended usage patterns for the form and encourage the social worker to read through it thoroughly beforehand. We had no major modifications that we believed would be useful to make to the form itself, so we did not change it for the next iteration.

Trip 3 4/14: Gyumri

Our third day of interviews was in Gyumri itself. We met with a new social worker and the coordinator in the Gyumri Municipality building and facilitated the form training. This training emphasized the form methodology in which the family fills out the form and we advocated for the social worker to read through the entire form before using it. The social worker

we were working with that day was also experienced and had the relatively larger resources of the Gyumri Municipality behind her in terms of training and field support.

The first family interviewed lasted for 27 minutes and had a total of ten questions skipped. This was one of the longest interviews we conducted as well as the interview with the most questions skipped. A major factor in this was the way the form was administered. Unlike the previous two social workers, this social worker conducted the form very closely with the subject, sitting next to them and letting the subject use the pen. This is how we, as well as Fundación Paraguaya and previous WPI teams, envisioned the form being used, in line with Poverty Stoplight documentation, and was one of the things we emphasized in this training session. We additionally noted that the social worker was not engaged with the form process, even if she was facilitating it as intended by the Poverty Stoplight theory. Because the social work coordinator wasn't occupied assisting the form application, she was able to conduct a side interview with another member of the family.

The second family interview was unique in that halfway through, the social worker handed off the interview to an AUA team member. This interview lasted 29 minutes and started off again with the social worker conducting the form closely with the family member. But around midway through an AUA team member had to take over this session as the social worker talked to another member of the family. This scenario was the only one we could definitively say that the interview process "failed" as the worker was adequately unserved in terms of usability to completely abandon the process.

The interview with this social worker produced a response similar in character to the previous two. The worker believed the concept of the form was good, but she believed that many of the questions were unnecessary/non-applicable like previous workers. She also suggested that

cutting the form down to between 20-25 questions might be a better option as she believed the 54 questions were excessive. In spite of this, she still rated the form's usability a "7 or 8" out of ten.

The main takeaway from this iteration was that the form can be executed as we intended but would take longer than in usage as a simple questionnaire. Additionally, we found that the social worker was less engaged with the process when the family members were more closely involved. This disengagement was because the family members were the ones doing the bulk of the interpretation of the form, during which there was little interaction between the worker and the family member. Moreover, the social workers couldn't skip through or smooth over the more apparent questions, slowing down the entire process. We found no major flaws with the form artifact itself, except for a preference towards top-side booklet binding for ergonomic usage in small spaces. The training protocol modifications for this iteration achieved their goal, but the resulting process alignment seemed to cause regression in buy-in and social worker investment.

Post-Field Interviews

After collecting these data, and to better understand our findings, we interviewed domain experts about the dynamics we had observed. The first of these interviews was with the social work coordinator who was present throughout all of the iterations. She expressed sentiments that aligned with our observation of the form: many questions seemed redundant or inappropriate and the form was on the complex side for both social workers and families. Additionally, she remarked that she wasn't entirely confident in the authenticity of the data we collected, as families may have been misrepresenting their material conditions due to issues of pride or presentation.

Additionally, we had the opportunity to interview another member of the Armenia social work community who has had experience coordinating and training social workers. We checked the conclusions of our analysis with her perspective, and found general alignment. In particular, she agreed that the form seemed too complex for the training resources available to the social workers who would have to use it.

Analysis

While the social workers and the WVA coordinator agreed that the form was functional in use, reactions to the form's contents were observed to be different. The first issue concerned the number of questions that the form had, 54 to be exact. As a result of the lengthy nature of the form, workers voiced that both they and families would lose interest as an interview would go on. This would lead to a less interactive session with both parties disconnected from one another; this is precisely what the form's creator was hoping to prevent.

Another aspect of the form that generated a negative response from social workers was that they believed many questions to be too similar to one another and thus repetitive, once again contributing to a tedious and consequently apathetic use of the form. Further, the social workers believed that because of the rather blunt nature of some of them, the families are likely to answer untruthfully. As an example, a question concerning sexual assault is worded as "Is sexual violence common in your family?" Because there is often more than one family member present and this question is extremely personal, the probability that this question would be answered honestly is much lower when compared to other questions. This could be ascribed to a process failure, where the session should be set up as a one-on-one meeting, but the specific use case we consider injects the form into a larger existing pattern of social work. The social workers,

families, coordinators, and institutions are set up for this meeting to serve an important additional function as a way for the worker and organization to connect with the entire family, something impossible in a one-on-one meeting. Aside from this, the workers also mentioned that some questions were not applicable to Armenian poverty conditions, like questions pertaining to the existing government support of conflict-relocated families. The intersection of these phenomena meant that the form was evaluated poorly in terms of usability for the social workers, and also exhibited difficulties from the families' perspectives. Additionally, it is unclear how much value was provided to the implementing organization from the higher dimension poverty data produced by this additional effort due to data accuracy concerns, so it exhibits usability issues in that regard as well.

Looking solely at issues social workers had with the form, this presents a case against recommending its use in the format the Poverty Stoplight organization envisions. If much of the form's user base is unable to have productive sessions with the form, this in turn works against the form's goals. In this case, regardless of how easy the form is to understand and use in the field, having sessions that are constantly apathetic works against building rapport between WVA workers and families. In sessions with the first social worker, by far the best use of the form we saw, the number of questions the form contained led to them becoming frustrated and tired, which was visibly apparent. As a result of this, the chance of making progress with a family is infringed. If the social worker is repeatedly using a form that they have no interest in, this in turn increases disinterest over every use and creates less engaging and therefore less productive interviewing sessions. It is possible that increased form-fluency or more motivated training could mitigate this factor, as form-executors developed more buy-in. However, we did not see increases in buy-in across the five executions in Azatan. Moreover, this form process would only

execute when a social worker was evaluating new families for the program, which is relatively infrequent, and likely not frequent enough to invoke a potential lock-in effect beyond our sample of that day. Higher quality training could potentially resolve this, and that modification will be explored in the recommendations section.

The second social worker expressed significant usability difficulties with the form process. As we explored in the results section, they consistently read in a monotone manner, and filled questions out without asking the family. They also had the WVA supervisor conducting the interview at parts. As a result of this, families grew increasingly disinterested in what the worker had to ask, once again impeding rapport building. In the second use session in Azatan, it was apparent that some of the form's questions weren't clear to the worker, leading to three questions being skipped. If the case is that the questions being asked aren't clear to the social workers or questions are being skipped, then this could lead to results that inaccurately describe a family's living conditions. It was with this social worker that we also ran a control interview, in which we saw them work without the form. The result of this interview was similar, with the social worker exhibiting the same process difficulties and transfer of ownership to the coordinator. While at first this may seem to indicate a process blocker on behalf of the social worker instead of the form, the social worker is still a client who must be able to functionally use the form. Moreover, our interviews with the social work coordinator and another domain expert indicate that this social worker was not an outlier in this capacity, as the level of experience and training for community based social workers is highly variable. Critically, this is the reason why WVA is looking for this standardized process; they want a way to accommodate this spread of ability. This means that even if some social workers can use the form without complexity blockers, if a significant portion can not, it is an inadequate solution to our specific use case.

In the case of the third social worker, while they understood how the form was to be used, they were also uninterested in using it during a session. This is highlighted in the first session conducted by them in Gyumri in which ten questions (nearly 1/5th of the form) were skipped. This indicates that even when using the form correctly, this method is still incompatible with existing Armenian social worker tendencies. In the second session, the worker handed the interview off to a family member mid-session, leading to team members needing to walk the family member through the process when they inevitably became confused. This is the clearest example of the form's failure to be used and it is obvious that if it cannot be used fully by a worker, then it is of no use being a standardized tool of World Vision Armenia. The number of questions skipped also poses an obvious issue, as gauging a family's situation would be vague and potentially inaccurate. By far the most major issue that was seen in this worker's first use of the form in Gyumri was the fact that they were overriding a family member's opinion on a question. What this means is that when the family member would give an answer to a question, the worker would suggest they answer differently (i.e. telling them to answer "red" instead of "yellow" for a question). This is wholly antithetical to the form's purpose of letting families answer questions how they see fit, and instead putting the determination of the poverty condition on the social workers. This may be okay for obtaining data, but as it goes against the form's intended use, it renders the motivation for the form's added complexity to be unnecessary.

As we can see, key trends in social workers responses include confusion over questions, leading to question skips or longer times taken explaining questions. The other constant trend is the frustration over form length and thus shrinking interest over session time. Aside from this, the way social workers responded to the form's content, which is exactly what we were trying to

avoid when creating a standardized protocol. What this milieu creates is sessions that are unlively, unproductive, and the risk of obtaining data inaccurate to a family's situation.

A secondary user of the form is the family being evaluated for integration into the parent poverty intervention program, like the Graduation program. If the form is incompatible with the user-story of a family attempting to gain access to social support, the form is not suitable for widespread use. A confluence of factors indicate that the Poverty Stoplight form, as used during our final iteration, was not well suited for this purpose. This misalignment comes down to three primary factors. The first is that the form, as executed in our final field iteration, was too complex for usage by the family. This complexity presented itself in terms of content as well as in terms of procedure. The second factor is that the form's intended content and execution methodology was incongruent with the physical realities of the implementation theater with regards to the number of family members that wanted to participate. The third factor was that some of the form's questions were incompatible with cultural sensitivities of the families and the power dynamics implicit in the execution sessions.

In terms of complexity, the form exhibited symptoms of excessive complexity across the majority of our implementation sessions. In our first iteration, the social worker had to slow down multiple times for excessive periods of time to explain the intricacies of questions, sometimes skipping them outright after spending minutes explaining what the question was asking. In our second iteration there were multiple instances of the social worker attempting to articulate a question to a family, and then giving up and filling it in based on observed factors. In our final implementation we found that when the family members were directly interfacing with the form, they had difficulty understanding the criteria of the stoplight designations. This manifested in ten skipped questions in the first implementation session of our third iteration, and

a complete fallback to investigator support in the second. Some families had trouble understanding the content of the questions, which has two main detrimental impacts on the usability of the Poverty Stoplight tool as implemented in our final iteration. The first is that misunderstanding of the question criteria leads to inaccurate data – if a family doesn't understand what question they are answering, their answers are unlikely to be accurate. The second detrimental impact is on rapport-building. Confusion around form elements leads to a disconnect between the experience of the social worker and the family with whom they are working. This confusion represents a gulf and impedes the ability of the social worker to form connections with the family they are interviewing, something we noticed explicitly in our second iteration.

There is some difficulty here, as the form is clearly not too complex for usage in other execution environments outside of Armenia, as it has functioned successfully in other countries. We pose one hypothesis for why this dynamic could be unique to our use case, but a definitive understanding of this would require a comparative usability study. The possible unique blocker is that the form in Armenia is being used outside of the Poverty Stoplight program. In the Poverty Stoplight program, the reason why families are being interviewed in this way, and the specific impact of their questions, is different than the Graduation Program. Under Poverty Stoplight, social workers can tell interviewees that they are using this tool for themselves: the family is trying to respond to questions so that the family can understand their own situation for self targeted intervention later. This means that it is not a problem if an interviewee misunderstands a question, as they will know their internal justification while interpreting the form's results. However, in the Armenian use case, it is necessary for the social worker to perfectly articulate the intention of the form's criteria to the form user so the data can be of use to someone later interpreting it who was not there; the Armenian form is not more complicated, the use case just

has a higher threshold of understanding, so complexity shows up as a blocker when it otherwise wouldn't.

Beyond complexity of content, the form also expressed complexity of procedure. Specifically, the form was long enough that the process became cumbersome for the family. As the form execution sessions grew longer in the third iteration, we saw increased numbers of skipped questions and team member interventions. Additionally, as the interview sessions continued, we noted a subjective decrease in buy-in from the families, with initial excitement turning into rote execution. This qualifies as complexity, because it can be resolved by simplifying the form's execution methodology. This phenomenon hinders usability in similar ways as the previous dynamic, decreasing data quality and impeding rapport-building.

The second factor of family-usage misalignment was that the intended form execution methodology was incompatible with the realities of the execution theater. This manifested in terms of social realities as well as physical realities. On the social axis, it was usually the case that the entire family unit, sometimes up to ten people, was interested in participating in the interview sessions as a social event. This made the intended execution of the form difficult because the form is ideally utilized in close consultation with one or two representative members of the target family. Instead, the form was frequently utilized in the capacity of questionnaire, where the entire family was queried for each question. As described above, this high participation is informed by the patterns of social work the form is being injected into, as social workers are hoping to build rapport with as much of the family as they can during this initial interaction. This execution dynamic was additionally caused by the physical spaces within which the form was used. Frequently, these spaces were not conducive to a positioning of social worker and family member in which the form could be shown to the family member. This difficulty was

either due to the limited seating on immobile couches or physical constraints of a small space and additionally mediated by social protocol. This dynamic meant that the form's questions were infrequently exposed to actual interpretation by the family in question, and the final arbiter of question responses was the social worker. This resulted in the social workers frequently injecting their assumptions about question responses without even asking the questions and sometimes even overriding the family's responses with their own perspectives, something which was noted in the Gyumri observations.

The third dynamic impacting the family use-case was the incongruencies between the form's content and the cultural sensitivities of the families as well as the power dynamics implicit in the execution sessions. In terms of cultural sensitivities, questions about contraception and reproductive health were immediately understood by the social workers to be inappropriate. The "sexual health" question was cut from our execution between iterations one and two, but there were many other questions that social workers reflected on as misaligned with the cultural dynamics underscoring the sessions. This led the social work coordinator to believe that some of the responses, particularly to questions that would reflect on the pride of the families, were not accurately representative of the underlying material conditions as families had social incentives to misrepresent their condition. Additionally, there were questions, such as the "household violence"[18] question or the "autonomy of decisions"[19] question, that may have had different answers depending on which members of the family were present. A social worker highlighted a moment when a husband cut off his wife to indicate that the family shared decision making between all members. In this case, the pathology could be resolved by asking this question

---

[18] See footnote 9

[19] "Autonomy of Decisions". The green criterion is: "In my family, all members are involved in the decision-making process and have a right to vote. At the same time, everyone is free to make decisions about their personal life".

without husbands present, but given the spread of questions and the latent power dynamics present in many of them, there is no silver bullet resolution besides a personal interview. Because so many family members were present for these sessions, these questions were necessarily influenced by the latent power dynamics between those members. These incongruencies were a cause of a lower quality of data as perceived by the social worker and parent organization. Additionally, they presented significant inhibitors in rapport-building between the social worker and the family as a byproduct of violated Armenian social norms.

These factors combine to inhibit the ability for the form to facilitate execution of the family-seeking-aid user story. If the data from the form, as produced by the family, are inaccurate, it is harder to evaluate the family's eligibility for participation in the candidate program. Additionally, if rapport between the social worker and the family is inhibited by the family's experience with the form, the family will be less open to seeking the social worker's assistance or their parent organization as a resource in seeking aid. Thus, the form fails to accommodate the needs of the family-user.

Given that the form has difficulty supporting either the social worker or the family as a user, the only remaining justification for its usage is if it supports the parent organization in their initiatives. The user-story implicit in this use-case is the usage of the high-dimensional and precise data produced by the form in accurate selection of families for participation in the organization's poverty intervention program. Additional user-stories include the capacity for the form data to support the parent organization in selection, referral, and application of additional initiatives outside of their primary broad spectrum poverty intervention program. Unfortunately, the Poverty Stoplight tool as executed in our final iteration is not compatible with either of these user stories. The primary blocker is that these use cases are entirely predicated on the quality of

the data, which was compromised by the usability blockers in the previous two user cases. The degree to which these data were inaccurate is difficult to validate, but the perception of the data's accuracy from the observing stakeholders, represented by the social work coordinator, was low enough that they didn't believe it would serve as a ground truth criteria for admitting families into the candidate program. The institutional perception of this inaccuracy is enough to indicate failure in this use case, as it would inhibit efficient organizational buy-in and mobilization around it, regardless of the actual underlying precision.

One possible mitigation strategy for the perceived imprecision of these data, applicable only in the additional-program use case, would be to launder the inaccuracy through the statistical power of the average. If enough data were collected, trends could be extracted from that collation on a macro-level and large-scale auxiliary initiatives targeted based on those conclusions. However, according to interviews with the local social work expert, the only actor who can execute on that scale is the national government through the Ministry of Labor and Social Affairs. Unfortunately, according to that same expert source, their policies and initiatives are shielded from our recommendations by many layers of national bureaucracy and therefore don't serve as an effective execution vector.

Conclusions & Recommendations

Our combined analysis indicates that the Poverty Stoplight form, as executed in our final iteration, did not serve as an effective tool to accommodate the use case we evaluated it for: serving as a first-contact evaluation to test candidacy for a poverty intervention program in WVA's Armenian social work. Because of this, we do not recommend the usage of the fully featured Poverty Stoplight form to WVA for their use case. Additionally, we can extend this analysis to any organization considering the Poverty Stoplight tool for usage in the capacity of first-contact evaluation in Armenian community level social work.

There are multiple modifications which could be made to the tool, to varying degrees of severity, which could potentially respond to these usability blockers. The first major modification to the workflow would be to use additional time to train social workers in the usage of the form. The second modification would be to invest more time in rewriting the criteria questions. The third would be to pare down the form's criteria set, resulting in a much shorter document. Of these options, we believe the third is the only one reasonable for the realities of Armenian community level social work.

A considerable number of our usability issues lie in form comprehension, both for social workers and families. One way to respond to these would be to supplement the training of the social workers to include more guidance in the usage of the form. This additional instruction could theoretically lower confusion about the form's usage and content for the social workers who would then be better able to explain the form to the families, mitigating their confusion as well. However, a major component of the Armenian social work landscape, as articulated to us by the social work expert we interviewed, is that Armenian social workers are already

institutionally undertrained. We experienced this first hand with our second social worker who exhibited usability difficulties in the sessions even without the form. Based on our domain expert interviews, if there were resources to provide additional training on the Poverty Stoplight form usage, that time and investment would be better served training the social worker in more generally applicable skills and techniques. Thus, while it may be the case that additional training would allow the Poverty Stoplight form to serve well in the intended use case, this is unhelpful as that training would have a higher return if the time and coordination effort was spent elsewhere. Under this cost-benefit analysis, the tool-and-training modification critically fails the institutional user.

An additional way to respond to comprehension problems, as well as some of the cultural sensitivity issues, would be to spend more time refining the Poverty Stoplight tool question content. These revisions could tailor questions to match social worker's expectations and vocabulary, reducing confusion. Additionally, revisions could rework culturally sensitive questions towards a more palatable presentation, improving outcomes tied to that misalignment. However, there are two main problems with this approach. The first is the instability of the form requirements with respect to time. The form we utilized for this project had already undergone extensive tuning in 2019, but we found that the questions are already exhibiting inaccurate targeting. While some of the questions seem inappropriate external to developments in the last four years, significant changes in the social work landscape like the 2020 conflict and the COVID-19 pandemic have shifted the information social workers are looking for and the expectations they have about family evaluation. While these are extreme events, it would be poor design to make a tool that is incompatible with these types of shifts, as poverty intervention is especially important in times of shifting needs. Critically, any tool that fits our use case would

have to be flexible in this regard, and the 54 metric Poverty Stoplight form would require considerable investment for each retargeting of its high dimensional approach.

The second problem with question redesign is location instability. Feedback around applicability of questions was frequent from the social workers we worked with, but they all expressed different perspectives on which questions were redundant. When queried, social work experts expressed that this was possible due to the fact that each iteration was conducted in a different locale. For example, for social workers who were located in areas like Talin, where all the client families were war-impacted, questions about services that the government already provides the refugees were less helpful for targeting their aid. Notably, this wasn't the case in 2019, and also highlights the shifting requirements of the form over time. Due to the multi-municipality paradigm of CLASS, a tool for usage in this case, as well as any designed for widespread use in Armenia, would need to be tuned to each individual municipality or execution theater if it was to approach the level of precision necessary to resolve the expressed usability issues.

This leaves the final modification we considered, a significant reduction in the number of metrics. This reduction would take the form further away from the intention of the Poverty Stoplight theoretical backing, but could serve to accommodate the needs of the Armenian community-level intake use case. Notably, because the form is being used in a capacity different from the Poverty Stoplight program, many of the theoretical underpinnings of the incredibly granular high-dimensional design are wasted, and complexities are exaggerated. Based on feedback from social workers and observing experts, we propose a reduction of the question count from 54 to between 15 and 20 for usage in the Armenian family screening use-case. A municipality level community social work office could consider the entire corpus of questions

and select the questions which best fit the individual needs of their intervention methods, community dynamics, and level of training. This would address all usability complaints presented above, with the only detraction present in the dramatic departure from the form's historical structure. Complexity blockers are mitigated by reducing the question count, sensitivity issues are resolved by removing insensitive questions, and data accuracy increases as a result.

The purpose of this project was to evaluate the usability of the Poverty Stoplight tool as a solution to a specific need present in WVA's social work process: the evaluation of families for admission into their poverty intervention program. We determined that the Poverty Stoplight form did not serve as a useful tool for this purpose without significant modification. Thus, we recommend a heavily modified form, one with the majority of questions removed, for usage by WVA. Notably, because our analysis centers around usability through the cross-sectional lens of the CLASS social workers and their disparate municipalities, this conclusion extends to any other Armenian group operating in a similar capacity to WVA; any Armenian social work actor who lacks a standardized methodology for family intake is party to the same recommendation. Outside of Armenia, our results indicate that while the Poverty Stoplight form tool may not be a plug-and-play tool for any poverty protocol, it can serve as a robust base to structure a tailored methodology off of.

References

- Armenia | Our Work | World Vision International. (n.d.). Retrieved February 23, 2023, from https://www.wvi.org/armenia

- Bastien, J. M. C. (2010). Usability testing: A review of some methodological and technical aspects of the method. International Journal of Medical Informatics, 79(4), e18–e23. https://doi.org/10.1016/j.ijmedinf.2008.12.004

- Burt, M. (2019). Who Owns Poverty? Red Press.

- Community Level Access to Social Services. (n.d.). Retrieved February 23, 2023, from https://www.wvi.org/armenia/our-grant-projects/community-level-access-social-services

- Community Level Access to Social Services (CLASS). (n.d.). Retrieved February 23, 2023, from https://www.wvi.org/armenia/access-social-services-class

- Cosentino, E. (n.d.). Implementation of the Stoplight Framework- Stoplight for Community Development in Argentina A Case Study

- Lazar, J., Feng, J. H., & Hochheiser, H. (2014). Research Methods in Human-Computer Interaction, eTextbook. Wiley Textbooks.

- Maramba, I., Chatterjee, A., & Newman, C. (2019). Methods of Usability Testing in the Development of eHealth Applications: A Scoping Review. International Journal of Medical Informatics, Retrieved February 23, from . https://doi.org/10.1016/j.ijmedinf.2019.03.018

- Militzer, J. (n.d.). Who Owns Poverty?: A Q&A with Fundación Paraguaya Founder and CEO Martin Burt—NextBillion. Retrieved February 23, 2023, from https://nextbillion.net/who-owns-poverty-martin-burt/

- Moqueet, N., Zaremba, J., & Whisson, I. (n.d.). Ultra-Poor Graduation Handbook V2. Retrieved February 23, 2023, from https://www.wvi.org/sites/default/files/2019-07/WV-BRAC%20Ultra-Poor%20Graduation%20Handbook%20V2%20-%20July%202019.pdf

- Poverty Stoplight Team. (2019, January 31). Cerrito Initiative: *Towards a community without poverty. Poverty Stoplight.* Retrieved February 23, 2023, from https://medium.com/poverty-stoplight/cerrito-initiative-towards-a-community-without-poverty-d062b563ea6b

- Programme of the Government of the Republic of Armenia (2021). Retrieved February 23, 2023, form https://www.gov.am/files/docs/4737.pdf

- Sargsyan, T. (2008). Republic of Armenia Government Decree. Retrieved February 23, 2023, from https://www.gov.am/files/docs/77.pdf

- Téllez, N., Ramos, N., & Hammler, K. (n.d.). *The Effects of the Poverty Stoplight on the Agency of Families in the Community of Cerrito—Benjamín Aceval*. Retrieved February 23, 2023, from https://a.storyblok.com/f/42340/x/9db49672a8/tellez-et-al-effects-of-the-poverty-stoplight-in-cerrito.pdf

- What is Poverty Stoplight? (n.d.). Retrieved February 23, 2023, from https://www.povertystoplight.org/en/what-it-is/

- Wilson, C. (2013). Brainstorming and Beyond: A User-Centered Design Method. Newnes.

Appendix 1.

Note-taker:		Date:	Location:		Family #:
Training Session:					
Social Worker(s:)					
# Questions:		Start Time:		End Time:	
Areas of confusion, suggestions, misc. notes:					
Implementation Session:					
Checkpoint:		Session Start	Q10 (Healthcare)	Halfway Q27 (Clothing)	Final Question
Time at Checkpoint:					
Times Observer Intervened:			Questions Skipped:		
Questions that took long:					
Why did they take long?					
Notes on household representative experience/emotional state. (Include question w/ events if relevant)					
Notes on social worker experience/emotional state. (Include question w/ events if relevant)					
Major deviations from the expected form flow. (Include question w/ events if relevant)					

Appendix 2.

Semi-Structured Post-Usage Interview Questions for Social Workers

1. How would you describe your overall experience using the Poverty Stoplight tool?

2. If you could change one thing about the Poverty Stoplight tool, what would you change and why?

3. How was using the Poverty Stoplight tool different than what you would have normally done in this session?

4. Were there any moments during this session where you felt frustrated using the Poverty Stoplight tool?

5. Were there any moments during this session where you felt that the Poverty Stoplight tool was especially helpful?