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ENDLINE IMPACT EVALUATION

CAN TEXT MESSAGES IMPROVE LOCAL GOVERNANCE?
AN IMPACT EVALUATION OF THE U-BRIDGE PROGRAM IN UGANDA

October 2017

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CONTENTS

TABLES

FIGURES

ACRONYMS

DEO	District education office
DFO	District finance office
DHO	District health office
FGD	Focus group discussion
GAPP	Governance, Accountability, Participation and Performance
ICT	Information and communications technology
IPA	Innovations for Poverty Action
MP	Member of parliament
NGO	Non-governmental organization
OLS	Ordinary least squares
RCT	Randomized controlled trial
RTI	Research Triangle Institute
SMC	School management committee
SMS	Short message service
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

EVALUATION PURPOSE AND QUESTIONS

This evaluation of the U-Bridge activity in Uganda's northwest Arua District is intended to contribute to a growing body of academic and policy research exploring whether the rapid penetration of mobile technology in low-income countries can be harnessed to improve governance outcomes. Against a background of weak existing channels of political communication, this evaluation seeks to determine if technological innovations that reduce the costs of access to public officials improve political communication, citizen voice, and ultimately citizen welfare. This evaluation report is structured around four main evaluation questions:

1. **Citizen engagement**: To what extent will citizens in low-income countries such as Uganda adopt a newly introduced short message service (SMS)-based political communication platform to articulate their priorities and to report service delivery deficiencies to government officials? What factors encourage the adoption (system uptake) of a communication platform such as U-Bridge?
2. **Differential uptake**: What factors explain why some villages and some individuals are more likely to use a communication platform such as U-Bridge than others? Relatedly, does a communication platform such as U-Bridge flatten access to marginalized populations, or does it simply perpetuate or exacerbate existing inequalities in who gets to be heard?
3. **Government engagement:** To what extent do local government officials have an interest in engaging with citizens via ICT platforms such as U-Bridge?
4. **Impact on service delivery**: Does the implementation of a communication platform such as U-Bridge improve the delivery of public services?

PROJECT BACKGROUND

U-Bridge is one component of a large, multi-year, multi-district United States Agency for International Development (USAID) program called Governance, Accountability, Participation, and Performance (GAPP), implemented by RTI International. U-Bridge is an SMS-based (text message) service request system that provides citizens and local government officials with a tool for submitting, tracking, and responding to requests, primarily around public service delivery. U-Bridge is an open-source software package that runs on a variety of mobile devices, including tablets and smartphones. The platform has been developed as part of collaboration between UNICEF Uganda and RTI International. The U-Bridge platform was implemented in collaboration between GAPP and Arua district local government.

U-Bridge is designed to open a new channel of communication between citizens and local government officials, allowing citizens to report public service deficiencies. It is a voluntary program, where citizens register to participate in the sending and receiving of messages. The GAPP team registered mobile phone numbers at project-supported community meetings, and the research team conducted door-to-door registration in treatment villages.

EVALUATION DESIGN

The first three questions (about engagement and uptake) were addressed using observational data at the level of individuals and villages in the areas where the project was introduced. Data sources include the Uganda census, in-person and telephone polls conducted by the researchers, interviews, and focus groups.

The final question about impact on service delivery was addressed with a randomized controlled trial (RCT) methodology. The evaluation design focused on the two most salient public service issues, health and education. Thus, the research team sought to randomize treatment around places where these public services are delivered, using Arua's 48 health centers as the units of randomization. Specifically, we constructed 48 village-clusters, each with one health center and several nearby villages.

FINDINGS AND CONCLUSIONS

Citizen engagement: To what extent will citizens in low-income countries such as Uganda adopt a newly introduced SMS-based political communication platform to articulate their priorities and to report service delivery deficiencies to government officials? What factors encourage the adoption (system uptake) of a communication platform such as U-Bridge?

We found that there is demand for a program such as U-Bridge. During a 14-month period, more than 10,000 messages were sent over the U-Bridge system. Coders determined that about 3,000 of these messages were relevant and about 700 were actionable. While 700 actionable messages out of 10,000 may sound discouraging, irrelevant messages are to be expected with such a system. Considering the relatively small population in the treatment areas, 700 messages is approximately one relevant message per eight adult villagers. It is also informative to compare these adoption rates to a similar ICT7 platform (uSpeak) that was implemented at the same time. uSpeak was part of collaboration between the National Democratic Institute and the Ugandan parliament designed to encourage communication between citizens and their Members of Parliament (MPs). The uSpeak system, which targeted a much larger population, generated only about one message per 30,000 citizens. Furthermore, we found that about 13 percent of those reporting to have heard about U-Bridge also reported using the new ICT service at least once in the past 12 months. This represents a relatively high uptake rate (about three times the rate reported by Grossman, Humphreys and Sacramone-Lutz (2014) in uSpeak).

We identified several aspects of U-Bridge that encourage adoption. These include:

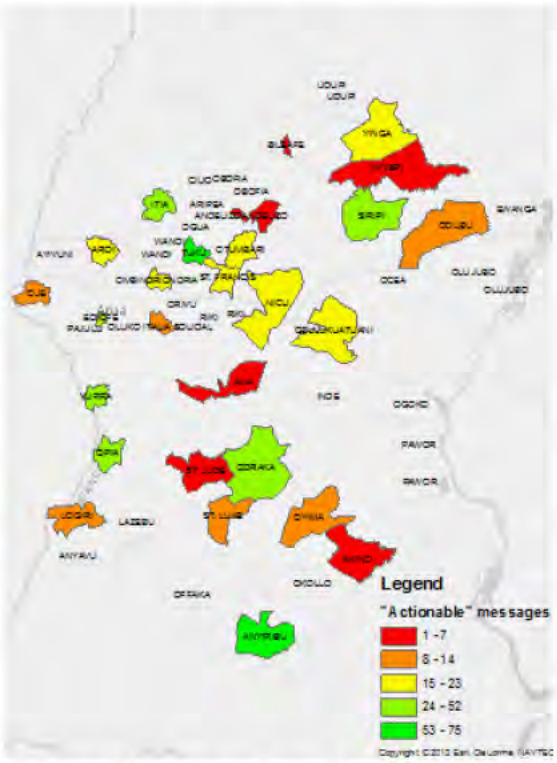
- **Convenience and low cost**: In one participant's words, "It is cost-free to send these messages to the local government and you do not need to move, you can send the message from the comfort of your home."
- **Anonymity:** U-Bridge users frequently highlighted the fact that U-Bridge guaranteed anonymity. In fact, users reported a general fear of being ostracized or receiving fewer or lower quality services for reporting negatively through channels that do not guarantee anonymity. Health center staff members corroborated this view and related several anecdotes whereby citizens had been denied service after expressing unfavorable views of public service provision.
- **Continuous engagement with potential users**: Interest in a program such as U-Bridge risks fading over time if it is not regularly promoted. As such, automated voice call ("robo-calls") designed to survey U-Bridge users also contained reminders to use the U-Bridge service. Through an analysis of unsolicited text messages, we determined that such messages had been experiencing a slight gradual decline that leveled off once the robo-call polling began. Furthermore, when the U-Bridge user phone polls brought up the issues of education, health or water, there was a spike in the number of unsolicited text messages about

these issues.

- **A focus on local issues**: The higher uptake levels achieved in U-Bridge with messages targeted toward district officials relative to the national uSpeak program with messages targeted at MPs, suggests that the average villager might have a stronger interest in resolving local service issues.

Differential uptake: What factors explain why some villages and some individuals are more likely to have used a communication platform such as U-Bridge than others? Relatedly, does a communication platform such as U-Bridge flatten access to marginalized populations, or does it simply perpetuate or exacerbate existing inequalities in who gets to be heard?

Figure 1: Map of actionable messages by treatment cluster



Initial village level analysis: While uptake of U-Bridge was relatively high, it was not uniform across localities. As shown in Figure 1, in some villages, a relatively large share of villagers sent messages, while in others very few villagers sent messages, if at all.

To begin exploring variation in the uptake of U-Bridge, we first conducted a basic analysis of village-level predictors of usage. In this preliminary analysis, we found that villages that had a registration campaign—a door-to-door registration drive conducted by the research team—had a greater number of individuals who sent messages and a greater number of messages sent. In further analysis, we do not find that factors such as ethnic diversity or the share of non-agriculture laborers have a strong predictive power with respect to patterns of usage at the village level. We found that distance to the local government headquarters was positively correlated with uptake, possibly because traditional methods of communication (including physical travel) are costlier in villages that are located far away from the headquarters, making a program like U-Bridge particularly attractive. We also found, perhaps unsurprisingly, that average levels of education predict uptake.

Due to the relatively weak explanatory power of many of these structural factors, we hypothesized that how and whether individuals in a village are connected to one another– i.e., network structures – may be playing an important role in affecting program uptake (see Larson and Lewis, 2016). To investigate the role of social networks in explaining variation in the uptake of U-Bridge, we selected 16 villages for deep analysis, including eight villages that we classified as high-uptake and eight with low-uptake, and we conducted network surveys in these villages, involving over 3,000 respondents. Using these data, we examine why some individuals were more likely than others to use the U-Bridge platform. We looked specifically at individual and network effects:

- **Individual level effects**: Regarding the influence of individual factors, we find, consistent with a large literature on the determinants of political competition, that controlling for other factors, the following foster adoption:
    - **Gender**: Males were 60 percent more likely to have heard about the platform. Conditional on having heard about the platform, women were less likely than men to adopt.

- **Age**: A one-year decline in age resulted in a one percent increase in the likelihood of hearing about the U-Bridge and one percent greater likelihood to adopt it**.**
- **Education**: Completing at least some secondary education made a respondent five times more likely to hear about the platform and four times more likely to adopt it.
- **Phone usage:** Using a phone in the last year made a respondent 70 percent more likely to hear about U-Bridge and three times more likely to adopt it.[1]
- **Politically engaged**: More politically engaged individuals were more likely to adopt.

- **Network effects**: A decomposition analysis suggested that network factors offered the best explanation of usage over both individual and village level factors. Having one "neighbor" (a network connection) that had heard about the platform made an individual 20 percent more likely to have heard about U-Bridge, and having one adopting neighbor made an individual 36 percent more likely to adopt. Of particular importance is the role of "seeds," or individuals who attended the initial GAPP community meeting about the platform. These individuals had about a 40 percent chance of adopting the platform, which highlights the importance of community meetings. Successful initial communication about the program had a large influence on final uptake because social networks amplify the effect of such communication.

We found that U-Bridge does not "flatten" (i.e., even out) access to marginalized populations, and in fact, risks perpetuating inequalities in whose voices are heard. Close to nine percent of male respondents to the survey reported sending at least one message via U-Bridge; however, only 1.5 percent of female respondents reported using the ICT platform in the past 12 months. This is mostly, but not fully, because women are less likely to have heard about the service in the first place. While 44 percent of male respondents reported that they had heard of U-Bridge, only 23 percent of female respondents had. Conditional on having heard of U-Bridge, women were also less likely to send text messages. Seven percent of female respondents who had heard of U-Bridge reported sending at least one text-message in the past 12 months as compared to 20 percent of male respondents. These differences are all statistically significant, and they were not a function of access to mobile phones. This lack of flattening with respect to gender was also found with age, education, and political engagement. Those who heard about and adopted the technology tended to be young, educated, and already politically engaged.

Government engagement: To what extent do local government officials have an interest in engaging with citizens via ICT platforms such as U-Bridge?

Via numerous interviews with government officials, we found that Arua government officials had an interest in maintaining the U-Bridge platform, since many of them believe it provides valuable information that improves their ability to provide public services under their purview. Nonetheless, the response of district officials to incoming messages still seems to be lagging behind citizen expectations, which potentially suppresses citizen program use (as evidenced by the relatively high degree of unsatisfied users, reported below). On one hand, focus group discussions (FGDs) conducted at the district level suggested that district officials felt that they are learning a lot. It was very clear from both focus group meetings and interviews that district officials were reading the messages, extracting valuable information, and using it to inform their actions. In addition, of 143 registered users who reported using U-Bridge in our endline survey, 62 percent said they usually or always heard back from the district, and 60 percent said they saw some or much improvement on the issues they raised in messages. On the other hand, only 38 percent of surveyed users said they were satisfied with the response, mostly pointing to insufficient government engagement. An examination of a sample of responses sent by district officials revealed

[1] Note that an individual can still report using U-Bridge even if they do not personally own a phone, for example by using a friend or neighbor's phone.

that responses often suggested that users contact lower levels of local government. There is no way to assess whether or not this happened, and anecdotal evidence suggests that at least in some cases users found these responses insufficient. From interviews with officials, it is clear that there is room for improvement in developing an action plan for who should get which messages, and what record should be kept of their response.

Impact on service delivery: Does the implementation of a communication platform such as U-Bridge improve the delivery of public services?

Using data from unannounced audits of schools and health clinics the research team conducted, as well as administrative data culled from district offices, we divided outcomes into three sectors—water, education, and health—and three domains: (1) monitoring, (2) effort, and (3) inputs. We did not find that there were statistically significant differences in these outcomes between the treatment and control areas.

While these results are somewhat disappointing, there are many reasons why a program like U-Bridge may not result in a change in service delivery outcomes in the time period under investigation. Some messages had a focus other than health, electricity, and water, and many texts were not immediately actionable. Interview data suggests that specific, targeted improvements were made in a number of communities in response to information received via U-Bridge; however, the number of such improvements and their dispersion across policy areas was insufficient to reveal an impact on the indicators we collected.

An important component of the theory of change was that a program like U-Bridge could create a sea change in government performance, not because of the sum of specific interventions, but because service providers would understand that they were being monitored, and would consequently improve their effort level. Despite the evaluation's limitations, we believe that if such a major transformation in accountability and effort had taken place, some trace of it should have shown up in some of our service-provision indicators. Based on the evidence we analyze here, we conclude that U-Bridge is a convenient, low-cost way for citizens to express their voice, which in some cases will lead to targeted improvements; however, we did not find evidence that it led to an overall improvement in the quality of service.

RECOMMENDATIONS

Outreach

- Future ICT programs should consider additional investments in community mobilization, this should include those used here (e.g., door-to-door registration, community meetings, robocalls) and efforts that could not be incorporated in this project because of concerns of contaminating the RCT evaluation design (e.g., radio advertisements, radio programming, outreach through churches and mosques).
- Dialogue meetings are important opportunities for training about the most useful types of messages, the management of expectations, and the creation of expectations among service providers about future monitoring. These should be continued and incorporate the recommendations below.

Training citizens

- Future ICT programs should make greater efforts to "train" citizens on how best to use the service. Specifically, we recommend using examples to emphasize the importance of actionable messages, rather than general messaging.

- Future implementers should make greater efforts to build trust in the anonymous nature of the service; this may include actual demonstrations of the way messages display on the District officials' tablets during the inception and dialogue meetings.
- Implementers should also make additional efforts to provide citizens with information on the roles and responsibilities of different levels of government, which will help ensure messages sent by users target the issues that can be resolved by the recipient of the message.

Increasing participation by less empowered groups

- Implementers should make greater efforts to understand why women do not use services like U-Bridge at similar rates to men. More generally, efforts to roll out ICT for development programs like U-Bridge should be sensitive to the populations they are reaching or not, and make special efforts to make sure marginalized populations are also able to access and use the programs.
- Implementers should make greater efforts to invite and ensure that marginalized populations attend inception community meetings to be exposed to the new service. Our network analysis suggests that women's relative low participation is more a result of not having heard about U-Bridge than about not sending a message conditional on hearing. This is compounded by the fact that men are more likely to be in the social network of other men than of women. In other words, if early adopters are men, and later adopters are more likely to be connected to early adopters, then women are less likely to be late adopters too.

Improving government response

- Future ICT implementers should ensure that a mechanism is in place throughout the entire period of implementation to filter out non-relevant messages and highlight actionable messages.
- Citizens will not use even the most user-friendly and innovative ICT platform if they do not hear back from government officials or if users are dissatisfied with officials' responses. Thus, significant efforts must be made to encourage government officials to respond to all relevant incoming messages, and especially to follow up on pending actionable cases. This may require greater effort in training officials to not simply respond to the first incoming message, but to treat messages as cases that should be followed through until case is deemed closed and the user has been updated on the district's actions at every stage.
- Future programming should include a mechanism for improved case tracking so civil servants and politicians can better keep track of which issues have been resolved or not.
- Given that district officials might receive messages that are better targeted to other levels of government or other local government officials, the above mention filtration mechanism should ensure that relevant messages be forwarded directly to the correct individuals rather than directing citizens to contact these individuals themselves. This forwarding of messages and responsibility should also be captured in the case tracking system with follow-up.

EVALUATION PURPOSE AND EVALUATION QUESTIONS

This is an impact evaluation of the U-Bridge program, one component of a large, multi-year, multi-district program funded by the United States Agency for International Development (USAID). The program, Governance, Accountability, Participation, and Performance (GAPP), was implemented by Research Triangle Institute (RTI) International in Arua, a district in northwestern Uganda. U-Bridge was a follow-on to an earlier program, Olutindo, which RTI International successfully piloted in another district in Uganda. Planning for the evaluation began in 2013. U-Bridge began operation in Arua in mid-2014 and continued through early 2016. Evaluation activities took place throughout that period, seeking to evaluate usage, satisfaction, and impact on service delivery. The U-Bridge program built on burgeoning interest among governments and development agencies in Uganda and elsewhere about how and when information and communications technology (ICT) can be harnessed to overcome development challenges, especially with respect to public service delivery.

EVALUATION PURPOSE AND QUESTIONS

This evaluation was designed to contribute to a growing body of academic and policy work exploring whether the rapid penetration of mobile technology in low-income countries can be harnessed to improve governance outcomes. Against a background of weak existing channels of political communication, this evaluation asked: can technological innovations that reduce the costs of access to public officials improve political communication, citizen voice, and ultimately, citizen welfare?

Specifically, this evaluation seeks to test if a technological platform that connects citizens and local government officials, using a simple innovation such as text-messaging, can (1) alter the nature of political participation, (2) increase the knowledge of local government officials, and (3) strengthen representation and accountability. This evaluation is therefore designed to produce evidence that helps us understand the extent to which mobile phone penetration might serve as a "disruptive technology," affecting who gets to be heard and what gets communicated to public officials (at the local level). This evaluation report is structured around four main evaluation questions:

1. **Citizen engagement**: To what extent will citizens in low-income countries such as Uganda adopt a newly introduced short message service (SMS)-based political communication platform to articulate their priorities and to report service delivery deficiencies to government officials? What factors encourage the adoption (system uptake) of a communication platform such as U-Bridge?
2. **Differential uptake**: What factors explain why some villages and some individuals are more likely to use a communication platform such as U-Bridge than others? Relatedly, does a communication platform such as U-Bridge flatten access to marginalized populations, or does it simply perpetuate or exacerbate existing inequalities in who gets to be heard?
3. **Government engagement:** To what extent do local government officials have an interest in engaging with citizens via ICT platforms such as U-Bridge?
4. **Impact on service delivery**: Does the implementation of a communication platform such as U-Bridge improve the delivery of public services?

We expand briefly on these four questions below.

Citizen engagement (system uptake)

The first goal of this evaluation was to explore the extent to which rural Ugandans adopted a mobile-based ICT platform to contact district officials to articulate their priorities and report service delivery deficiencies. ICT platforms can be an engine of change only if there is an underlying demand to communicate priorities and problems to public officials via mobile technologies.

Differential uptake

Naturally some citizens chose to use U-Bridge to communicate with government officials, while others chose not to do so. Since the success of a program like U-Bridge hinges critically on community participation, and since usage affects which voices are heard, the evaluation also sought to explore the reasons behind differential uptake. This analysis will improve the understanding of the conditions under which communities and community members are more likely to adopt ICT for political communication. Importantly, our goal is not to simply document differential usage, but also explain it at both the individual and village levels.

The extent to which an innovative technology can have a transformative effect depends, in part, on the *users' identity,* and especially on the technology's ability to flatten political access to those whose voice is less likely to be heard using traditional forms of political engagement. We are especially concerned with uptake among marginalized populations. "Flattening" occurs when the share of marginalized constituents using ICTs for political communication is high relative to that of elite users and relative to the rates at which they use traditional forms of engagement. Similarly, flattening occurs when usage is not concentrated in villages that are already well connected; say due to proximity to the local government headquarters. By contrast, an ICT platform could exacerbate inequalities in participation, if they are used primarily by groups of citizens like males, high-income or high-education citizens who are already engaged in frequent communication with public officials using traditional forms of engagement. One of the key questions about differential uptake is whether U-Bridge is flattening access for marginalized individuals and remote villages or has mostly been used by those who are already well connected to district officials.

Government engagement

Even if there is a strong underlying demand for strengthening weak political communication channels, citizens are only likely to use a new ICT platform to the extent that they expect government officials to pay attention and respond to their messages (Grossman, Michelitch and Santamaria-Monturiol, 2016). A high rate (and high quality) of response will encourage citizens to use the ICT platform, and to recommend it to their neighbors and friends. Citizens will not use or recommend even the most innovative user-friendly ICT platform if they do not hear back from government officials. Thus, public officials can easily derail the implementation of a new communication platform simply by not responding to incoming messages (Grossman, Humphreys, Sacramone-Lutz, 2016). Whether public officials are responsive to citizens using the ICT platform will crucially depends on if they believe that citizens' messages are informative; i.e., allow them to better perform their tasks. The evaluation's third goal is thus to assess government responsiveness, which captures whether there is sufficient interest among district government officials to communicate with citizens via an ICT platform.

Service delivery outcomes (welfare implications)

Fourth, if there exists an underlying demand to use a low-cost, impersonal communication mobile-based platform, and if public officials encourage usage by signaling to citizens a high level of responsiveness, then we should expect citizens to use the system to report service delivery problems. As we describe below in our theory of change, under certain conditions, a high uptake can improve both the district's access to timely information and incentive to address service delivery problems. If true, we should observe that the quality of service in treated villages improves over time. Testing these assumptions is another core objective of this evaluation.

PROJECT BACKGROUND

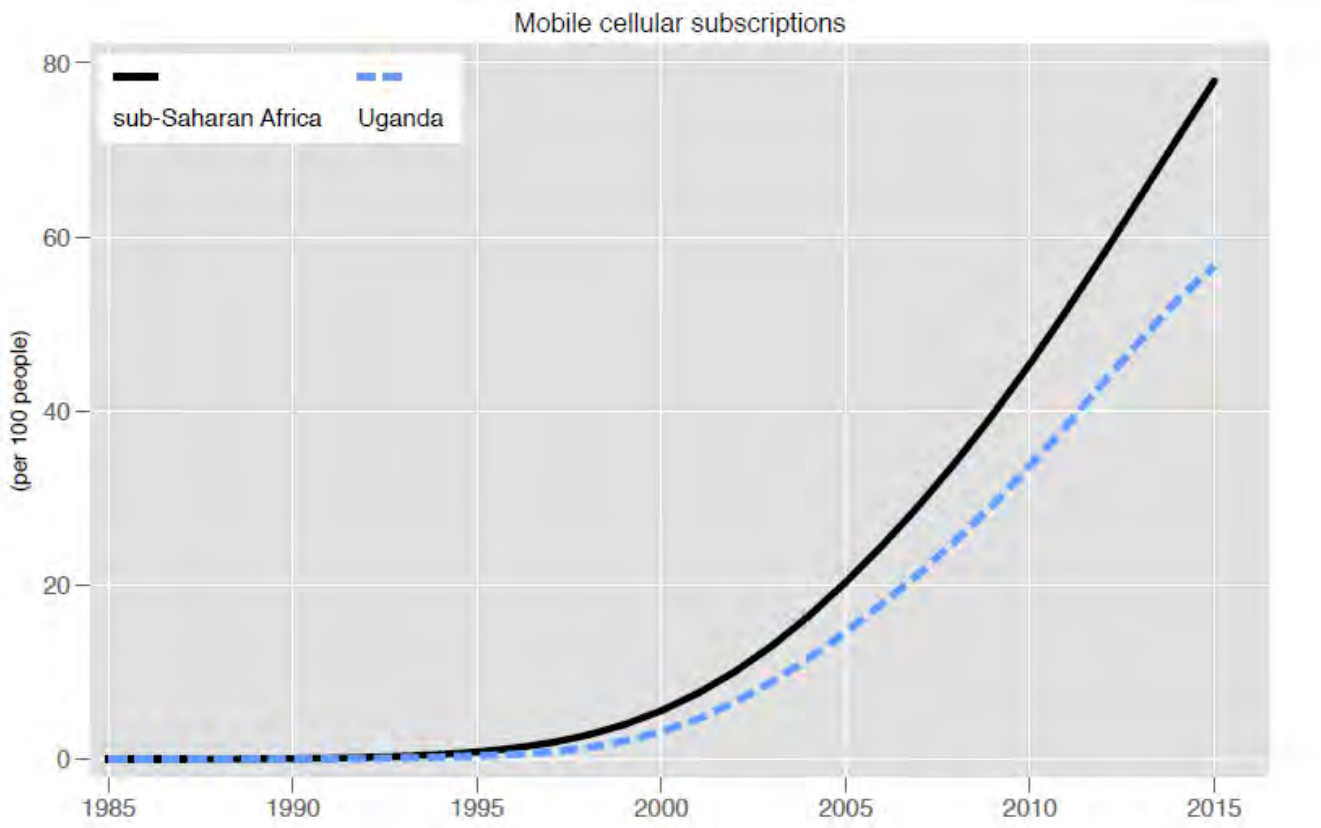
Contrary to expectations, the simultaneous adoption of democratic institutions and decentralized forms of governance in many low-income countries has not resulted in significant improvements in the delivery of public services, such as water, health, and education (UNDP, 2002). Service providers like teachers and nurses are commonly absent (Chaudhury, 2006), and many of those who do show up to work are unmotivated and exhibit low levels of effort (Kremer et al., 2011). Patients frequently receive incorrect diagnoses and treatment (Amin, 2008), and schools and clinics often report shortages of vital inputs (Glewwe, 2009).

A 2013 World Bank study found that 52 percent of Ugandan government health care workers and 27 percent of government teachers were not present during unannounced audits. When government workers were present, the quality of care and teaching was poor. Most health workers could not correctly diagnose common health conditions and most teachers did not demonstrate competence in the curriculum they were charged with teaching pupils (World Bank, 2013). Such weak service provider efforts are likely, at least in part, the result of poorly functioning local governments that lack the capacity and/or will to adequately monitor frontline service providers and hold them accountable.

Given this reality, there has been greater emphasis in recent years on the role communities may play in holding frontline service providers to account. The assumption is that community members are well positioned to directly monitor frontline providers since they have both the incentives to demand better services and first-hand information on the level of service provision in their locality. In this vein, recent studies have examined the impact of providing citizens with information about schools' performance (Andrabi, Das, and Khwaja, 2014), and of mobilizing communities to form parent-teacher associations (Banerjee et al., 2010) and health management committees (Bjorkman and Svensson, 2009) with the intention of enforcing agreeable local service delivery standards (local “social contracts”).

With increased access to technology, citizens are further able to inform frontline service performance. In the past decade, access to mobile phone has increased exponentially (Figure 2), prompting an interest in harnessing innovations in information communication technology (ICTs) to solve some of the most intractable development challenges (Grossman, Humphreys, and Sacramone-Lutz, 2014).

Figure 2: Access to mobile telephones (1985-2015)



Note: Source: The World Bank; International Telecommunication Union, World Telecommunication/ICT

Rigorous evaluations of the effectiveness of participatory monitoring initiatives, however, have produced conflicting and generally disappointing results (Banerjee et al., 2010). Many such efforts face two major limitations. First, there is a growing recognition of the challenges collective action problems pose to community monitoring—it is difficult to get individual community members to participate in continuous monitoring activities. Given the time commitment required for effective monitoring, and the possible social costs associated with pressuring local providers, motivating citizens to take active part in direct community monitoring is far from straightforward. The costs of monitoring are borne by individuals, while the entire community reaps the benefits. Because of the incentives to "free ride," grassroots platforms tend to suffer from low participation rates (Blair et al., 2015).

Second, many existing grassroots monitoring programs attempt to address deficiencies in public service delivery by circumventing government actors (see Duflo, Hanna and Ryan, 2012; Bjorkman and Svensson, 2009; Andrabi, Das and Khwaja, 2014; Banerjee et al., 2007). However, since government remains the primary actor who administers programs, allocates resources, sets standards, and has the legal authority to discipline frontline service providers, policy interventions that do not change the incentives of government officials are unlikely to have a large-scale or sustainable impact on the provision of public services (Khemani, 2007).

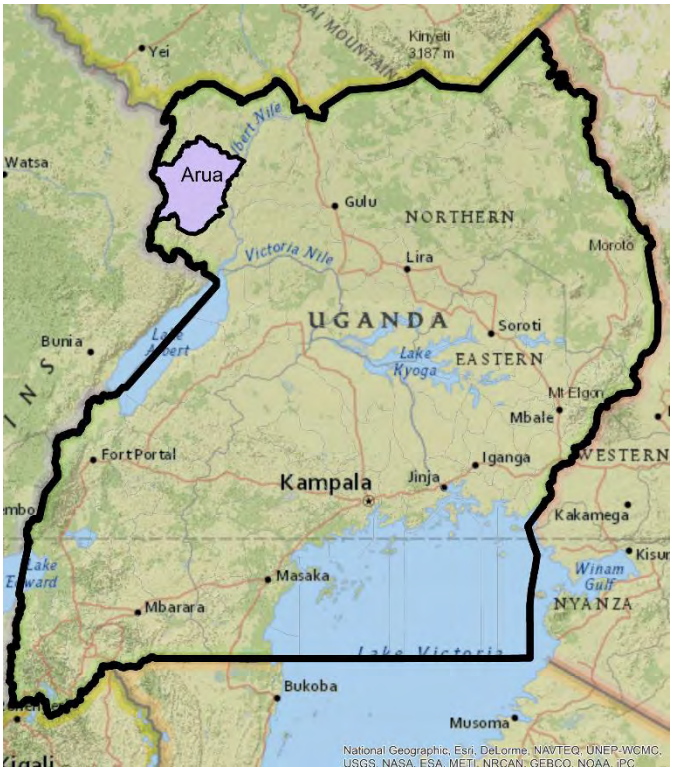
THE U-BRIDGE SYSTEM

ICT-based interventions have the potential to address both limitations by lowering the cost of participation and by strengthening existing accountability mechanisms between citizens and public officials. U-Bridge is an SMS-

based service request system that provides citizens and local government officials with a tool for submitting, tracking, and responding to requests, primarily around the delivery of public services. U-Bridge is an open-source software package that is compatible with various mobile devices, including tablets and smartphones. The platform was developed as part of collaboration between UNICEF Uganda and RTI International. RTI International is the prime contractor for the USAID-funded program, GAPP, of which U-Bridge is a part.[2] The U-Bridge platform was implemented in collaboration between GAPP and Arua district local government. Arua district is highlighted within Uganda map in Figure 43.

U-Bridge is designed to open a new channel of communication between citizens and local government officials, allowing citizens to report public service deficiencies. It is a voluntary program, where citizens register to participate in the sending and receiving of messages. The GAPP team registered mobile phone numbers at project-supported community meetings, and the research team conducted a door-to-door registration in treatment villages. Anyone could also register at any time by texting "Join" to the program shortcode, which was free. Using the U-Bridge technology, citizens can engage with Arua district government officials in three ways, outlined below.

Figure 3: Arua district location



First, users can send unsolicited and anonymous messages using the U-Bridge short code (8500), at no cost. District officials, in both technical and political positions, are equipped with 3G tablets that enable them to access the messages anywhere they have an Internet connection. Messages are anonymous and appear on the tablet as "cases" that can be tracked using the system's dashboard. Notwithstanding message anonymity, district officials can respond (and are encouraged by GAPP to do so) to incoming messages from within the dashboard.

Second, Arua residents who are registered as U-Bridge members can respond to short periodic polls (usually a single question). In the context of this evaluation, only the research team administered polls, though there is no logistical hurdle (apart from cost) preventing Arua district government from administering its own polls in the future if it desires. The polls were conducted over an eight-week period using a robo-call system operated by VotoMobile, a Ghanaian-based social enterprise. 3,062 U-Bridge registered and verified users provided explicit consent to respond to the weekly polls. The majority of users (2,591) entered the program through a door-to-door registration campaign the research team conducted, which took place between October and November 2014 in treatment villages. An additional 251 users registered following GAPP's community meetings, where sign-up sheets were passed between attendees. Finally, there are 220 users from Arua that have registered with U-Bridge

[2] The U-Bridge program is modeled after Olutindo ("bridge" in the local language, Luganda), which was a USAID-funded program implemented by RTI under an earlier project, Leadership, Empowerment, Advocacy and Development (LEAD). RTI experts developed the open-source SMS software package to run on a variety of mobile devices. The earlier project enabled only the first type of communication listed above; namely, it allowed citizens to send an SMS to the district officials about social service provision issues. Interviews with officials involved in the earlier program suggest that the service had genuine potential for improving communication between district officials and participating communities.

independently; for example, by following registration instruction on flyers that were distributed during the community meetings. It should be noted that GAPP originally intended to conduct radio programming and outreach through religious institutions; however, these initiatives were ultimately not undertaken to avoid encouraging uptake in comparison communities. As such, in the absence of the evaluation, this last group of self-registered individuals might have been larger. GAPP shared the results of U-Bridge polls with Arua district officials. In theory, these polls could be conducted via text message, but the research team found relatively low response rates to text message polls, as compared to robo-call polls.

Third, citizens have an opportunity to attend periodic community dialogue meetings that GAPP organized and implemented. At these meetings, attendees received information about national service standards and the actions they can take to communicate with local officials. In addition, citizens could interact directly with district officials that have attended the meetings and provided an overview of actions that the district has taken around service delivery. Community dialogue meetings were also intended to help create common knowledge between district officials and villagers, the importance of which is detailed in the theory of change below. The GAPP team conducted the first round of meetings in the last quarter of 2014 as part of the launch of the U-Bridge service. The last round of community dialogue meetings took place in early 2016.

THEORY OF CHANGE

Consider a local government (e.g., district) that is responsible for administering health, education, and water services in a low-income country setting. District officials based in district capitals know that there are problems with frontline service providers operating throughout their district, and they have the means to discipline frontline providers that shirk their responsibilities. Nonetheless, they often lack reliable, actionable, and timely information on problems when they occur. For example, they know that some nurses and teachers fail to show up to work regularly, or abuse patients and students, yet they may not know when such incidents take place.

Citizens, by contrast, have local knowledge, but as mentioned above, direct community monitoring is subject to significant collective action problems. Since existing communication channels from citizens to government officials are weak, citizens have difficulty reporting problems in a timely and cost-effective manner. Citizens know that public officials do not have localized information on service delivery problems and thus, have low expectations that government officials will discipline low-performing providers. District officials know that citizens have low expectations and thus, have little incentive to exert much effort to hold frontline providers to account. Further, even if they have the incentives do so, it may be prohibitively costly to directly monitor all service providers on a regular basis., for example by visiting schools or health facilities. The result is a “low equilibrium” status quo: citizens do not report problems; public officials do not or cannot seek out information; and service providers are free to underperform.

An innovative ICT platform that enables citizens to communicate with government officials anonymously and at no cost has the potential to alter this status quo. Mobile technology allows immediate and timely communication; anonymity reduces the fear of social retributions and the cost of sending a text message is mostly cognitive, not monetary, as messages are free. If citizens use the platform to report service delivery problems, then district officials will have accurate, localized, timely information. More so, if citizens know that district officials possess actionable information they will increase their expectations of government action. Importantly, if the district officials know that citizens are aware that officials have this new actionable information, officials will also know that they will be held to higher citizen expectations. In short, such common knowledge is expected to increase both the ability of district officials to address service delivery problems and their incentive to do so, potentially leading to a new equilibrium. The benefits could be potentially large, as the simple repair of a borehole could benefit a large number of people. The U-Bridge program we evaluate is based on the simple idea that participatory

grassroots programs need not necessarily be designed to circumvent government actors. Instead, grassroots efforts can be harnessed to better inform government officials of service delivery deficiencies and strengthen the already existing chain of accountability whereby public officials are accountable to citizens and frontline public servants are accountable to their leadership. Such efforts should utilize the fact that while community members possess better information on local service delivery problems, public officials have a comparative advantage in enforcing public rules of conduct (Olken, 2007). This division of labor between those who are best positioned to collect information (community members) and those who are best positioned to act upon the information (actors outside the community, such as public officials), lies at the heart of U-Bridge, and other recent "crowdsourcing" initiatives.

Decentralized crowdsourcing reporting platforms remove many of the material, social, logistical, and time costs associated with grassroots monitoring (Grossman, Humphreys and Sacramone-Lutz, 2014). However, the extent to which this translates into improved service provision is far from guaranteed due to the following barriers:

1. Decentralizing crowdsourcing programs does not altogether eliminate the collective action problem of reporting. Villagers may not believe the platform is anonymous and achieving common knowledge in mostly a Generation-2 mobile setting (i.e., unconnected to the Internet) is not straightforward. It is possible that not all villages can solve free-riding and coordination problems.
2. For community members to use the system, information about the service and how to use it must be widely accessible. Like other new technologies, adoption rates are likely to vary between and within villages for a variety of reasons discussed below.
3. Even if information about the new service is widely available, citizens may not view the ICT platform as an effective political communication tool. The extent to which there exists underlying demand for using ICTs to supplement existing communication channels is still an open question (Blair et al., 2015).
4. There is no guarantee that public officials will act on crowdsourced information. If public officials want to derail the process, they can decide to ignore incoming messages. Citizens are not likely to continue using the platform over time if they do not hear back from government officials (Grossman, Humphreys and Sacramone-Lutz, 2016). Technological fixes in of themselves do not make non-responsive public officials responsive.

Our evaluation efforts, described in greater detail in the following section, were explicitly designed to test the validity of this theory of change. The overall design of the study is driven by the end goal of measuring the effects of the program on service delivery. That goal requires the designation of treatment and control communities. However, an equally important goal of the evaluation is to explore the extent to which the above factors might create barriers to the use of ICT innovations to strengthen governance outcomes. To achieve that goal, we carefully examine the communities where the program was implemented

EVALUATION DESIGN

EVALUATION QUESTIONS AND HYPOTHESES

The evaluation uses a randomized controlled trial (RCT) methodology to test whether U-Bridge resulted in improved service delivery, particularly in terms of health, education, and water. We also rely on observational data to analyze patterns of engagement and use among the communities that were exposed to U-Bridge. We begin with a description of the overall design and randomization approach, followed by the specific methodologies and analytical approaches used to answer each of the evaluation questions, and then discuss each of the four sources of data: qualitative data, service provider monitoring data, administrative data, and an endline survey.

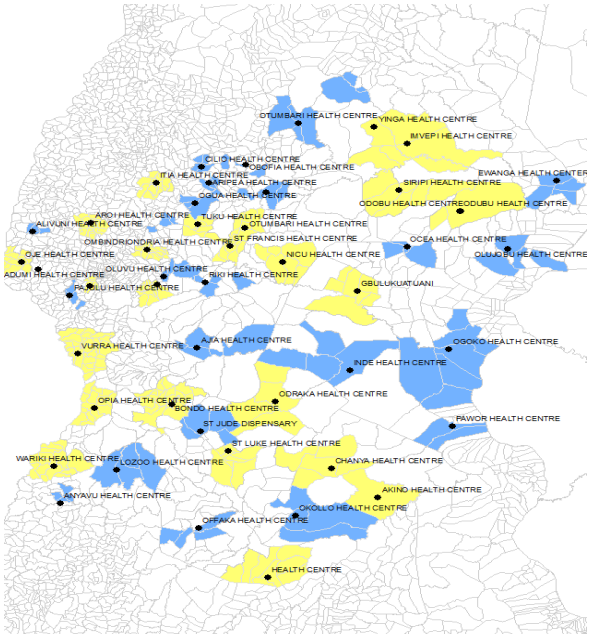
RANDOMIZATION

The overall evaluation design and randomization approach was designed to test the effect of U-Bridge on service delivery. The evaluation design focused on the two most salient public service issues, health and education, and as such, the research team sought to randomize treatment around places where these public services are delivered. While there are hundreds of government primary schools in Arua, there are only 48 government health centers. Thus, we used health centers as the unit of randomization. Specifically, we constructed 48 village-clusters, each with one health center and several villages surrounding the health center. Clusters in the GAPP program are defined as the group of nearby villages that are serviced by the same public health center. Half of Arua's 48 clusters were randomly assigned to treatment (U-Bridge access) and half to control. All the villages within a cluster were assigned to the same treatment status.

In each cluster, about four to five villages were selected to be included in the study. These villages included the village in which the health center was located (primary village) and three or four additional nearby villages. The selection of additional villages was determined by the presence of a government primary school and the location of the village relative to other clusters. Whenever possible, we selected villages that had a government primary school within their administrative boundaries and/or that were located nearby the health center. We excluded villages that were located close to other clusters to limit the likelihood of spillovers.

In total, there were 118 villages in 24 clusters across Arua that were assigned to the U-Bridge treatment group, with an equal number of clusters and villages in a control group. The mean number of villages per cluster is 4.9; the minimum number of villages per cluster is two (Akino, Odubu and Yinga) and the maximum is eight (Aroi). Figure 4 illustrates our randomization scheme.

Figure 4: Treatment assignment (treatment=yellow; control=blue)



DATA SOURCES AND DATA COLLECTION

The study used a mixed-method approach for answering the questions that drive this evaluation. Recall that this evaluation focused on four main goals:

1. **Exploring underlying demand:** We assembled data culled from the U-Bridge system to examine both usage rates (uptake) and message content over time. We corroborated this analysis with qualitative information derived from focus group discussions (FGDs) as well as original survey data collected from over 3,000 respondents from 16 villages in the study area at endline (March-April 2016). (Further information on both the FGDs and the endline survey is provided below). This aspect of the evaluation was not an experimental design; rather, we examined variable uptake in treatment areas.
2. **Explaining differential uptake:** We combined social network analysis with qualitative analysis of the endline survey data from 16 villages to explore how and why the diffusion of U-Bridge from early to late adopters varied between and across villages. Diffusion and flattening were also not experimental treatment effects.
3. **Assessing government responsiveness:** We were unable to obtain data from UNICEF that would allow us to calculate Arua district government's response rate.[3] Instead we relied on both users' satisfaction level as captured by the endline survey data and from FGDs with district officials.
4. **Assessing impact on service delivery:** To test for the program's effect on service delivery outcomes, we used an experimental research design. Specifically, we culled service delivery inputs and outcomes from administrative data collected by the local government and from unannounced audit visits conducted by the research team in areas that were randomly selected to get access to the U-Bridge service with comparable areas that served as a control group.

[3] We worked through GAPP to contact UNICEF for these data on multiple occasions, but were not successful in obtaining them. Nevertheless, these data, by design would only have been available for the treatment group, and thus would not constitute a primary outcome variable in the analysis.

Below we describe some of the data used to address the evaluation key questions. More detailed information about each of these approaches is included in the relevant sections.

Qualitative data collection was conducted in Arua District over several days in June 2016 and again in July 2017. Enumerators were hired and trained in conducting semi-structured interviews and FGDs by a team from Innovations for Poverty Action (IPA) Uganda and Social Impact. Three types of qualitative data collection exercises were conducted:

1. **Individual interviews** with Arua District "super users," citizens who fell within the top ten percent of utilization of the U-Bridge system measured by number of SMS messages sent. Interviews were held in five different villages in the district with 20 super users.
2. **Individual interviews** with Arua district leaders after the conclusion of the program.
3. **Focus group discussions** with leaders from villages in Arua District identified by the research team as both high-performing and low-performing. High performing villages were Wali and Oviva, and low-performing villages were Ariepi and Drimindra. Interviewees held both formal and informal leadership roles, including the LC1 chairperson, clan leader, health centre staff, members of the village health team, LC1 committee members, and teachers. Leaders present at the FGD varied across villages and the mix of positions was based on availability.

The interview guides for both the individual interviews with super users and village leader FGDs focused on five primary lines of inquiry: (1) motivations to use the U-Bridge platform, (2) the role that anonymity played in the decision to use or not use the platform, (3) coordination within the village and between citizens and village leaders, (4) government efficacy, and (5) alternate channels (i.e. channels that are not U-Bridge) used to report public service deficiencies to the Arua district local government. Participants were also asked to provide general or miscellaneous feedback on their use of the platform. All interviews and FGDs with users were recorded. The recordings were then transcribed, translated, back-translated, and formatted into individual reports. Following each interview, tracking forms were completed that summarized key themes, noted any items of concern, and logged other logistical information. To develop this evaluation report, the research team read and analyzed every interview and focus group transcript, isolated common themes, and developed organizational matrices. Personally identifiable information was removed from all comments.

Unannounced audits of health clinics and schools in treatment and control clusters were conducted at baseline (June-July 2014) before U-Bridge was implemented, at midline (June 2015), and at endline (March 2016), after the program concluded. Audits took place in each of the 48 health centers and in 134 primary schools, the latter of which were divided among 44 in treatment clusters, 43 in control clusters, and 47 in quasi-control facilities in neighboring districts. The audits aimed to collect information on all three domains: monitoring, effort, and inputs. For example, we collected data on communication with district officials (monitoring), on absenteeism rates the day we visited the facility (effort), and the stock of supplies (inputs).

Administrative data. Arua District, like all districts in Uganda, collects regular reports from government facilities. Enumerators from the research team compiled data collected by the district to supplement data collection conducted in the unannounced audits. There is wealth of data at the district line ministries that can be assembled to help determine if more resources (and attention) have been allocated toward service provision in communities that have access to U-Bridge. For example, the DHO received monthly reports from each facility in which the facility reports the number of patients treated and procedures undertaken. The research team extracted performance trends directly from these reports. Both the DHO and DEO keep records of inspectors' visits in school and clinics; these data allow testing whether greater administrative attention is being directed at service units in treatment areas. We also assemble data on stockouts and staffing information from the DHO, and staffing

information from the DEO. These data thus provide a secondary source, in addition to the audits discussed above, of absenteeism rates and stockouts.

Endline survey data collection took place in April and May 2016. We selected 16 villages in total, eight with high uptake of U-Bridge, and eight with low uptake of U-Bridge. We describe the selection process in greater detail in below. In this set of high and low performing villages, we conduct a village mapping exercise. We first conduct a listing exercise to determine the number of households in the village, followed by a survey that targeted every household from the listing exercise. Then, we conduct a short survey with every possible household in the village, and every available individual present in the household. This mapping includes a set of basic demographic questions, questions that allow us to construct individuals' social network, and questions on U-Bridge knowledge and use. Upon completion of this activity, we have an individual-level dataset of 3,184 individuals, which is between 77-87 percent of the adult individuals residing in the surveyed villages.

We wrote a pre-analysis plan, which is appended to this report, and conducted our analysis accordingly. Data analysis was conducted using several methods, depending on the question and data sources available. In the sections that follow, we discuss our approach and findings for each of our four goals in turn: (1) exploring underlying demand, (2) explaining differential uptake, (3) assessing government responsiveness and (4) testing impact on service delivery outcomes.

Limitations. As an RCT, the evaluation design has strong internal validity; however, it is important to note several limitations. First, given the limited number of health centers and schools, the evaluation was not ideally powered. While we do not believe that this influences our findings in the areas of health, a better powered study would have allowed for greater confidence in some of the conclusions regarding education. Second, and the service provider audits themselves occurred at three points in time, and it is possible that factors like teacher or health work absenteeism could have been abnormally high or abnormally low on the day of the audit. Unannounced audits of this kind are considered the gold standard in measuring absenteeism, but we also supplemented audit data with administrative data that is collected more regularly. The downside of administrative data is that is subject to manipulation and misreporting. However, there is no reason to believe that any data errors in the audit or administrative data would be correlated with treatment. Third, the evaluation focused on outcomes in health, education, and water, and as such the evaluation was not designed to detect changes in other policy areas that might have benefited from the initiative (e.g. roads). Fourth, much of the data on district official responses was lost when the SMS platform was updated, which limits our ability to understand a key piece in the project's theory of change. Follow-up interviews in Arua and an assessment of existing data were able to partially fill this gap. Fifth, as this study occurred in only one district, there are concerns over external validity. Arua might be unique from other districts in key ways, for example, cell phone penetration is relatively low, and district officials in other districts might have been either more receptive or less receptive to the initiative.

DATA ANALYSIS AND FINDINGS

EXPLORING UNDERLYING DEMAND

In this section, we first provide evidence supporting the core assumption underlying the entire U-Bridge project: that there exists an underlying demand to communicate with district officials about policy priorities and service delivery problems via text-message based ICT platforms. We then turn to explain the aspects of the U-Bridge program that affect uptake, focusing especially on convenience, anonymity, maintaining the relevance of the system, correctly targeting, and registration efforts. This analysis relies not on comparisons of treatment and control clusters, but by mobilizing a rich set of data culled from social network analysis of the treatment areas.

SYSTEM USAGE

We first explored system-level data to gauge citizens' underlying demand of an ICT platform like U-Bridge. Local research assistants examined and coded all messages that were sent to the U-Bridge platform between September 2014 and November 2015, totaling over 10,000. First, the local research assistants coded each of the incoming messages as either "relevant" or "not relevant." An example of a non-relevant messages is "we are for election." Relevant messages can be actionable or unactionable but are focused on issues of service delivery: for example, "I greet you all, but our major problem is sickness,'' or "the tobacco farmers are miserable how can U-Bridge help them?" We found that about one-third of messages sent to U-Bridge's short-code are relevant messages (over 3,000).

Second, we coded whether "relevant" messages provided sufficiently detailed information to be considered "actionable" by district officials. For example, citizens might text, "the Only Borehole in Ogboa Village is broken," or "nurses don't attend patients during Sat and Sun in Opia health center." Notably, only about one-fifth of relevant massages (674) were deemed actionable.[4] Cumulative messages sent over time in each of these three categories are shown in Figure 5.

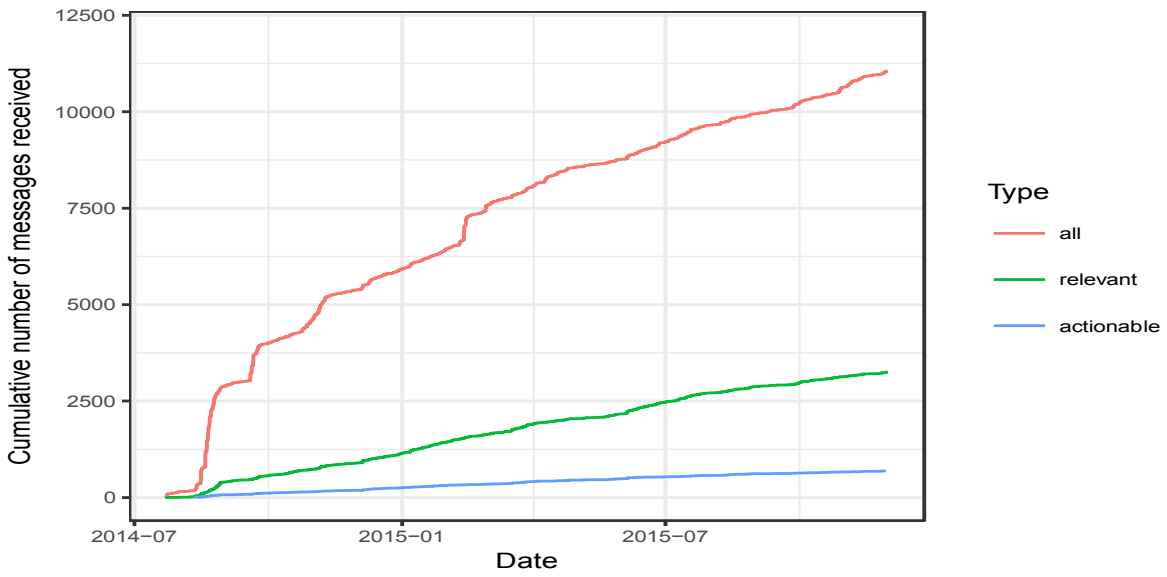
To someone unfamiliar with such messaging systems, 700 actionable messages out of 10,000 might sound discouraging; however, irrelevant messages are to be expected with such a system.[5] Furthermore, compared to other similar projects, the uptake of U-Bridge was relatively successful. The U-Bridge program entailed encouraging usage in just over 100 villages that have, on average, a population of about 250 adults. Seven hundred messages from 2,500 adults over a 14-month period suggests an uptake rate of about one relevant message per eight adult villagers. It is informative to compare these adoption rates to a similar ICT platform (uSpeak) that was implemented at the same time as part of collaboration between the National Democratic Institute and the Ugandan parliament and designed to encourage communication between citizens and their Members of

[4] Note that the research team, rather than district officials, coded messages as actionable or not. We coded messages as actionable if the message was about a specific problem in a specific place. District officials may code some messages slightly differently, given their own knowledge, but we were unable to gather officials' own coding, as this would have taken up a considerable amount of their time. We also counted only one actionable message in a string of messages from the same person on the same day. Sometimes users sent a long message that spanned multiple messages (character limits being a limitation of non-smartphones) and sometimes a user sent the exact same message or a version of the same message repeatedly on the same day. All these we counted as one actionable message. While we would expect some differences between a formal coding effort and informal coding by diverse district officials, we do not believe there would be substantial differences.

[5] Ideally, users of such information or programs such as GAPP would have a mechanism in place (e.g., an initial review by junior level staff) to filter out actionable and unactionable messages.

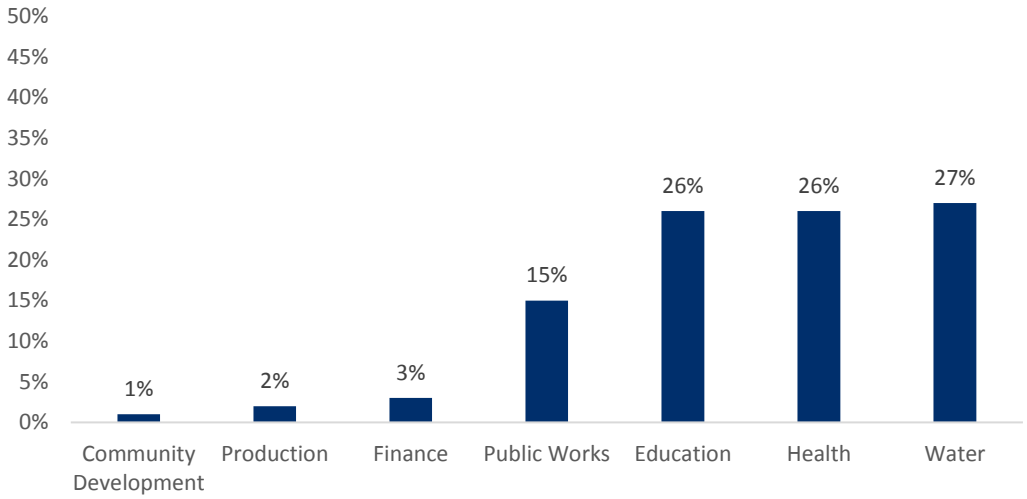
Parliament (MPs). The uSpeak system generated about one message per 30,000 citizens (Grossman, Humphreys and Sacramone-Lutz 2016). While not perfectly comparable, it seems likely that there is a significantly larger benefit from communicating with district officials regarding service delivery problems via ICT platform as compared to communicating with MPs.

Figure 5: Number of messages over time by message type



It is also useful to examine which policy areas received the most attention from U-Bridge users. Figure 6 breaks down "actionable" messages by sector, demonstrating that reports were roughly evenly divided between education, health, and water, while a substantial number also referred to public works (primarily roads). It is important to note that effective December 2015, a few months into the program, a member of the GAPP team filtered messages before they were seen by district officials. Therefore, the messages that were not relevant or actionable were not seen by district officials.

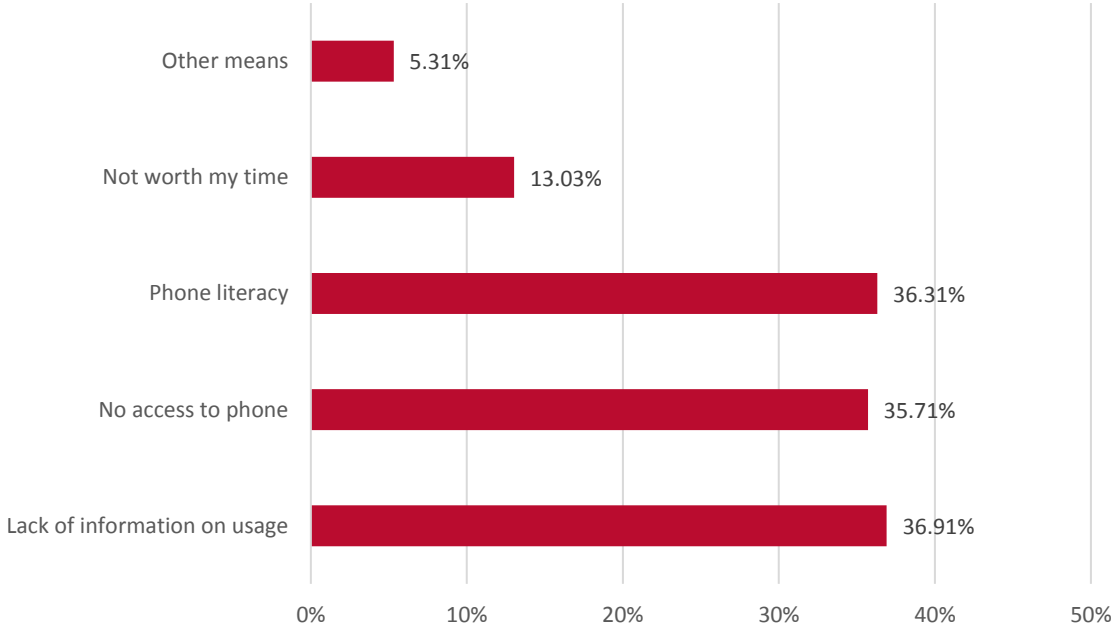
Figure 6: Actionable messages by type (n=674)



To further gauge whether there exists an underlying demand to communicate with district officials via an ICT platform, we examined endline survey data, described above. We explored the extent to which those that had heard about the ICT service ultimately decided to use it to communicate with district officials. About 13 percent of those who reported having heard of U-Bridge also reported using the new ICT service at least once in the past 12 months. This too represents a relatively high uptake rate (about three times the rate reported by Grossman, Humphreys and Sacramone-Lutz (2014) in the above-mentioned study of uSpeak).

Further, we also asked non-adopting respondents who had heard about U-Bridge for the main reason they had not used the platform. As Figure 7 illustrates, the main reasons were related to access or technological difficulties rather than demand. A very small share of respondents cited low interest or having other means to communicate with district officials. The share of respondents is greater than 100 percent as people were allowed to select more than one reason.

Figure 7: Main reason for not using U-Bridge among those who had heard of the platform (n=829)



ASPECTS OF U-BRIDGE FACILITATING SYSTEM USAGE

We turn to analyze data from the FGDs, where citizens who adopted the system articulated rather clearly some of the benefits of using of the U-Bridge SMS platform. These include: (1) convenience and low cost, (2) anonymity, (3) continuous engagement with potential users, and (4) a focus on local issues with the district local government. We further elaborate on these aspects below.

CONVENIENCE AND LOW COST

Overwhelmingly, FGD participants appreciated the speed with which SMS messages reached the district government, bypassing normal reporting mechanisms described by some participants as “costly and time consuming.” In a participant’s words, “it is cost-free to send these messages to the local government and you do not need to move, you can send the message from the comfort of your home.” The elimination of the

transportation costs associated with reporting public service problems in person featured prominently in respondents' comments on the new ICT platform.
Interestingly, some participants (in a high performing village) noted that U-Bridge complements, and in some instances, supplants their use of other formal reporting processes for public services administered by the district government. Users repeatedly cited increased reporting speed and lack of bureaucratic barriers (compared to formal report writing) as motivation for their use of the platform. Some FGD participants spoke about participating in village committees and their frustration with the wait time and perceived uncertainty associated with submitting official reports or complaints. One participant emphasized having more trust in U-Bridge than formal written reports, noting, "we were uncertain if our reports [on the health center] reached the government or not. But since U-Bridge came in, we now send it through the phone and we are sure it reaches there [the district government]."

ANONYMITY

In FGDs with villagers and with local leaders and in conversations and semi-structured interviews, the anonymity U-Bridge guarantees was a central factor in villagers' decisions to use the U-Bridge platform. In the words of one interviewee, "[anonymity] has made us send more messages and motivated us to report even the negative issues in our communities without fear of being discovered." System users reinforced several components of anonymity as centrally important: (1) avoiding conflict between citizens within villages, (2) avoiding conflict between the village and the district government, and (3) concerns around communicating unfavorable feedback on village leader performance.

Across both high- and low-performing villages, FGD participants reported feeling that social conflict would result if messages sent through U-Bridge were not anonymous. Almost universally, participants acknowledged that much of feedback they provided through U-Bridge was negative (i.e. reporting public service deficiencies). This was also clear to the research team when reading and coding the messages. Noting this usage pattern, one user said "if [our identities] are known, it would cause enmity between us since we are reporting mostly negative issues that might concern other people who have failed to do their jobs. [A lack of anonymity] would make us not send these messages."

In addition to potential conflict within the village, several users expressed fear of retribution from the district government if their identities were known. The word "fear" was frequently cited during interviews with super users, especially fear about worsening the relationship between the village and the district. Almost universally, super users spoke to the platform's anonymity averting the fear they would have felt if their messages had included personally identifiable information. One user went so far as to say that if district officials were unhappy with the messages and the user's identity was known, that individual would "probably" be harmed. Similarly, another participant noted her concerns, saying, "if my number was to be known, it would cause hatred between us and district government staff because, while they are on the ground working, we have not benefitted very much. Hence, reporting on issues through U-Bridge will appear as if we are accusing them. This would bring hatred and not unite us properly."

Finally, in the absence of anonymity there were also concerns of repercussions from village leaders, such as village chiefs, health center staff, and LC1 and sub-county political leaders. Fear of being ostracized for reporting negatively or receiving fewer or lesser quality services was also a common theme among respondents. Interviewees with village leaders corroborated this view. Health center staff members were the most vocal about this possibility, drawing on several anecdotes from living memory where citizens had been denied service after expressing unfavorable views of public service provision. Several respondents across high- and low-performing villages reflected that before using U-Bridge, they had never thought to provide poor feedback on the

performance of village leaders.

While most interviewees praised U-Bridge's guarantee of anonymity, several were unsure if their messages were truly anonymous. Several respondents cited a general distrust of claims made by both NGOs and programs administered by the government. Others simply stated that they could be identified when sending messages through U-Bridge. Despite the uncertainty, many users continued to use the program citing the low-cost and relatively low barrier to entry. One respondent noted, "I did not know whether [the government] knows or doesn't know my phone number. However, I continued to use the platform… I do not know whether my number is known or not known."

Interviewed village leaders confirm the importance of anonymity. Across leaders in both high- and low-performing villages, there was a broad consensus that anonymity encouraged the use of U-Bridge and was important in maintaining harmony and avoiding conflict.[6] Village leaders also reported that U-Bridge allows both citizens and government employees to safely express opinions that dissent from what is included in reports sent through formal channels and developed through scheduled report writing mechanisms. In one instance, a U-Bridge user sitting on a school management committee (SMC) disagreed with the facts of an SMC report, believing that several important management issues were being overlooked. Rather than risk confrontation with other committee members, that user conveyed his/her opinion through a U-Bridge message.

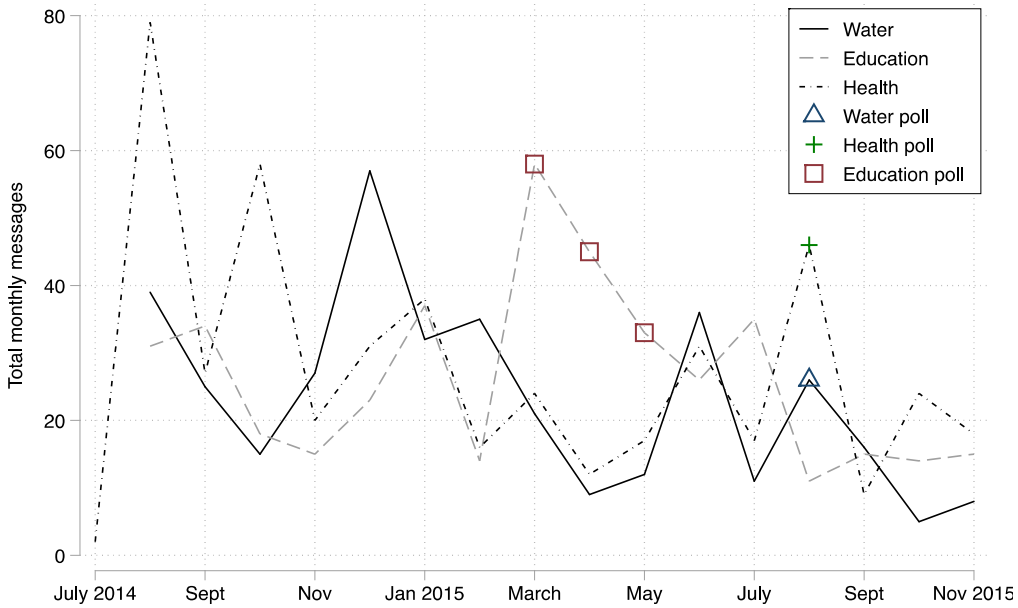
While the anonymity of U-Bridge is a strength, it does have drawbacks. Both super users and village leaders interviewed vocalized that one of the downsides of anonymity is that information becomes more difficult to verify. Village leaders in particular noted that this opens the system to manipulation and abuse.

CONTINUOUS ENGAGEMENT WITH POTENTIAL USERS

Patterns of use and qualitative data suggest that there was indeed some underlying demand for a direct and anonymous way of communicating with district officials. It seems likely, however, that interest in such a program, and memories about how it works, will fade over time. Moreover, it is possible that some individuals become registered, perhaps through a friend or household member, without fully understanding the program and how it might be used. As such, platforms such as U-Bridge require a mechanism to ensure that the platform is viewed as continually relevant. In addition to GAPP community meetings, one approach used here was for registered users to receive direct communications from the district and NGOs via polls and text messages. Such communications signal not only that the program still exists, but they communicate that district officials are interested in hearing from users.

[6] The minority of participants who did not feel anonymity was important was mostly composed of political leaders. One political leader from a low-performing village noted that he or she would "have no problem with the district officials knowing me, but they should not disclose my identity when they come to monitor [in the villages]." But even in this case, the same village leader conceded that "the fact that U-Bridge has hidden the identity of people sending messages has helped improve services."

Figure 8: Unsolicited, relevant text messages sent, by sector and month



Users received frequent SMS messages reminding them about the program and urging them to let their voice be heard. Furthermore, beginning in early 2015, we called U-Bridge users and conducted automated voice polls on various topics. In addition to gathering valuable information from users about public services and opinions that were transmitted to district officials, these polls served to remind voters that district-level officials desired input on specific policy areas. Each poll ended with an exhortation to continue sending unsolicited messages on related policies.

Figure 8 presents the monthly number of unsolicited messages concerning water, health, and/or education issues. As anticipated, Figure 8 demonstrates that unsolicited messages experienced a gradual decline over time in each policy area, but this decline seems to have leveled off when the polling began in March 2015. Furthermore, when phone polls raised the issue of education, there was a spike in the number of unsolicited text messages about education. In many cases, users responded to the poll and then wished to communicate to district officials the specifics of the relevant situation, like teacher absenteeism, in their community. There was also a similar spike in unsolicited text messages related to health when users received a phone poll about health clinics, and a smaller spike in the water sector in reaction to a phone poll about clean water.

THE DISTRICT AS THE CORRECT LOCUS OF AUTHORITY FOR ICT PROGRAMS

The higher uptake levels achieved in U-Bridge with messages targeted toward district officials relative to the national uSpeak program with messages targeted at MPs, suggest that the average villager might have a stronger interest in resolving local service issues. In the endline survey of communities where U-Bridge was in operation, respondents were asked the following question: “Some people think the Arua district government has the capacity to improve public services; others think they cannot improve services. In your opinion, how capable would you say the Arua district government is to improve services?” Eighty-four percent of respondents expressed a belief that the district government was either “very” or “somewhat” capable, and only eight percent expressed that the government was either “somewhat” or “very incapable.”

In fact, some users suggested that U-Bridge changed not only their relationship with the district government, but also that between the village and the sub-county. U-Bridge, in FGD participants' opinion, encourages citizens to provide more frequent and more specific feedback on public service issues. This has had an alleged spillover effect to improve the working relationship between the village and sub-county government, as users feel more empowered to participate in expressing their opinions and concerns to all levels of government, even those not formally implicated in U-Bridge's programmatic offerings. Likewise, in FGDs with district officials, some officials reported that information gleaned from U-Bridge encouraged them to communicate with village and sub-county officials about issues raised in unsolicited messages.

While a program like U-Bridge is better suited to local issues than national ones, an important question in designing a program like U-Bridge is whether voters understand the distribution and assignment of roles and responsibilities of elected and appointed officials in the central and various tiers of local government. U-Bridge was squarely focused on the district-level government, and predicated on the notion that voters understood district officials to be the relevant actors in holding frontline service providers accountable in sectors like education and health.

One set of poll results, however, gives us reason for pause. As part of our series of phone polls conducted through VotoMobile, we conducted several polls—in consultation with Arua district local government officials—that asked who was responsible for providing various services. In almost all of them, a large percentage of users reported believing that the MP or president was responsible for activities that were the responsibility of the local government. For example, in one such poll, we asked respondents who was primarily responsible for the problem of teacher absenteeism. A large plurality of respondents chose their parliamentary MP (48 percent). Next, 26 percent of respondents believed that primary responsibility lied with the LC5 (district chairperson), and 19 percent with the president. Only six percent of respondents believed that primary responsibility lied with the district-level government. In addition, there is even confusion on responsibilities among local government officials. As such, confusion over administrative responsibility in a decentralizing system might undermine usage of a platform like U-Bridge.

Combined, the findings above suggest that:

1. There exists a relatively high demand to contact local government officials using ICT-based communication platforms, especially in the sectors of education, health, and water.
2. Comparing uptake across uSpeak (MPs) and U-Bridge (district officials), the identity of message recipient is crucial for the decision to use ICT for political communication. This, we suspect, is at least in part, because citizens expect district officials to respond to their messages and act upon them, while they do not expect to hear back from their MPs (Grossman, Humphreys and Sacramone-Lutz 2016).
3. In addition to the specific factors detailed below, program features that appear to promote usage include ease of use, anonymity, mechanisms to remind and encourage participation, and clarity of responsibility.

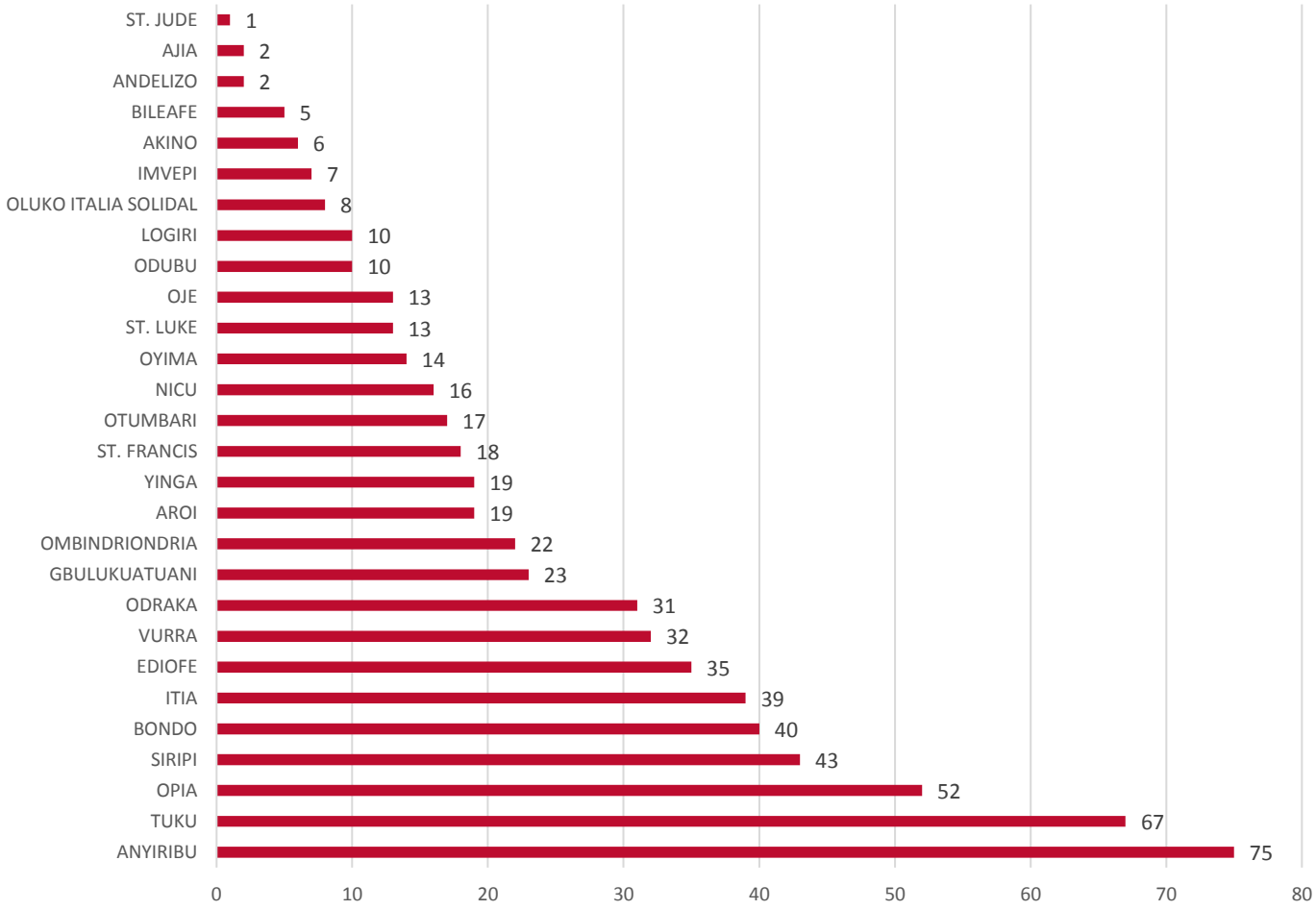
EXPLAINING DIFFENTIAL UPTAKE

This section explores the relative influence of village level, individual level, and network factors in explaining differential uptake across and within communities. As in the previous section, this analysis is based not on comparisons between treatment and control communities, but on the exploration of heterogeneity among treatment communities using observational data. We first conducted a comparative analysis of all treatment villages. We then used this information to select 16 villages for a more in-depth network analysis based on a census of all adults. Ultimately, one's social ties had a large influence on the uptake of U-Bridge. In particular, (1) being connected to adopters of the ICT platform significantly contributes to one's decision to adopt, (2) combined, the role of networks in explaining uptake is larger than individual-level characteristics and at least on par with village-level characteristics, and (3) successful initial communication about the program has a large influence on final uptake, because social networks amplify the effect of such communication.

INITIAL VILLAGE LEVEL ANALYSIS

While uptake of U-Bridge was relatively high, it was not uniform across localities. One year into the U-Bridge program, it became apparent that there was considerable variation in system usage across and within treatment villages. Some individuals sent many messages, while others sent none. In some villages, a relatively large share of villagers sent messages, while in others very few villagers sent messages, if at all. To illustrate, Figure 9 shows that over 70 messages were sent in the Anyiribu cluster but only one in St. Jude. Figure 10 displays this same information in a map. Since the success of a program like U-Bridge hinges critically on community participation, and since usage reflects whose voice gets to be heard, the evaluation also set up as a key goal to explore some of the reasons behind the observed differential uptake.

Figure 9: Number of actionable messages by treatment cluster (n=639)



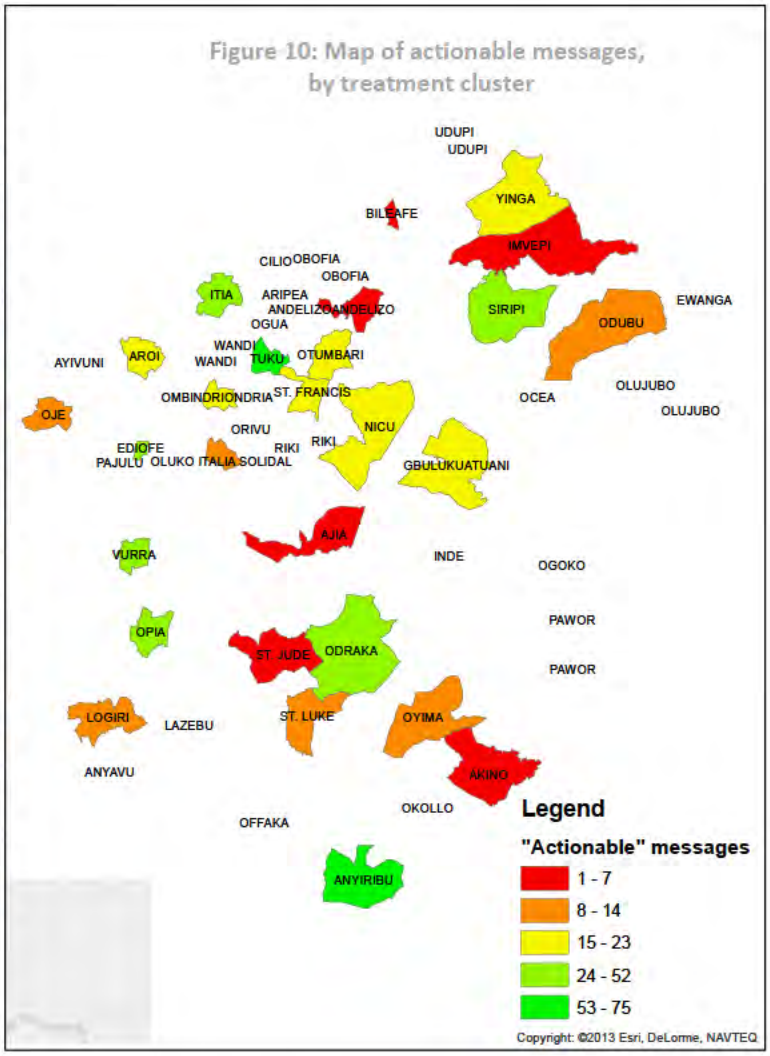
To begin exploring variation in the uptake of U-Bridge, we first conducted a basic analysis of village-level predictors of usage. In this preliminary analysis, we found that villages where a registration campaign had taken place (a door-to-door registration drive the research team conducted) had a greater number of individuals who sent messages and a greater number of messages sent. This is in line with findings reported by Grossman, Humphreys and Sacramone-Lutz (2016), that initial marketing activities crucially determines uptake of ICT innovations, a point to which we return below.

Among villages in which GAPP administered its registration campaign, there was considerable variation in uptake. In a second analysis, we explored the explanatory power of several standard political-economic theories to explain participation. We conducted a village-level regression analysis to examine predictors of the number of users and messages sent. Interestingly, we found that they failed to account for large variation between registration villages. For example, we did not find that ethnic diversity, the share of non-agricultural laborers, or distance to Arua had strong predictive power with respect to patterns of usage at the village level. We did find, perhaps unsurprisingly, that average levels of education predicted uptake. There was a positive relationship between educational attainment,

for example, as measured by the percent of adults who completed secondary school, and usage of U-Bridge. This is likely because basic literacy is required to send a text message. We also found, as expected, that population size predicted uptake in absolute terms. Full regression results as well as bivariate relationships between potential predictors and messages are available in Annex II.

Due to the relatively weak explanatory power of many of these structural factors, we hypothesized that how and if individuals in a village are connected to one another – i.e., network structures – may be playing an important role in affecting program uptake (see Larson and Lewis, 2016). To investigate the role of social networks in explaining variation in the uptake of U-Bridge we selected 16 villages for a deeper analysis. Specifically, we examined eight villages that we classified as high-uptake and eight that we classified as low-uptake, and then conducted a complete network survey in these villages.

Figure 10: Map of actionable messages, by treatment cluster



CASE SELECTION FOR A COMPARATIVE NETWORK STUDY OF 16 VILLAGES

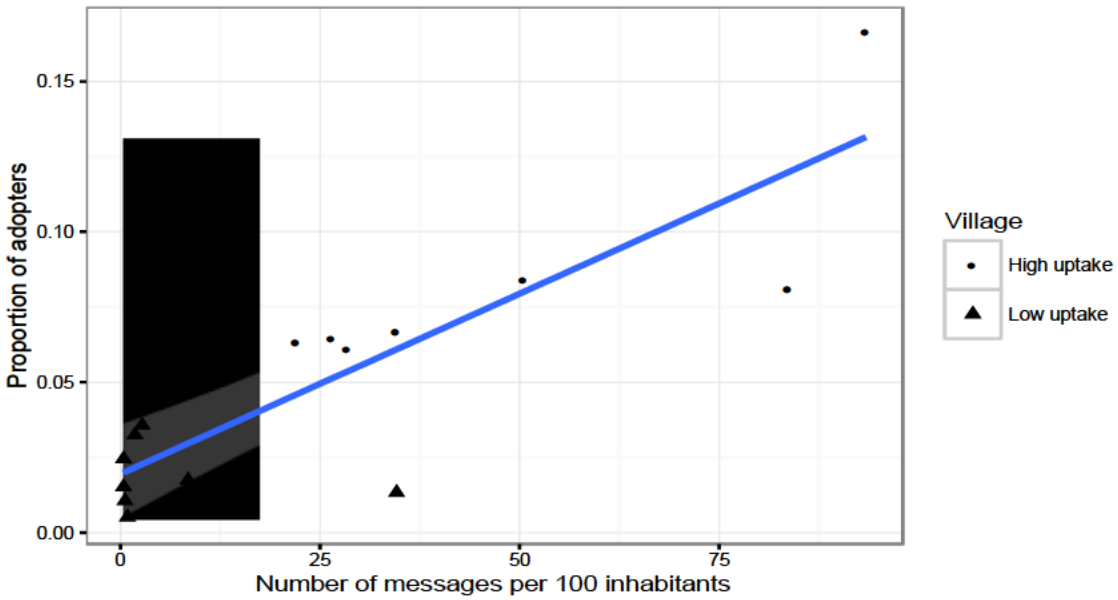
Because of the importance of population size and other factors in driving participation, we did not want to merely select the villages with the highest and lowest usage rates. Instead, we first ran a regression model predicting U-Bridge uptake, where the main dependent variable was messages sent per 100 people. Second, we generated predicted values for the dependent variable for each village. Third, we calculated the error between the predicted value and the actual value of the dependent variable; i.e., the difference between the actual number and the predicted number of messages per 100 citizens. Finally, we selected the eight highest performing (highest positive gap) and the eight lowest performing villages (highest negative gaps) for further study. If the model predicted that a particular village would send 10 messages per 100 based on the covariates of the village, and in fact the village sent 20 messages per 100, the gap between predicted and actual would be 10 messages, indicating a high performing village. Conversely if the same village had sent zero messages, the gap would be -10, indicating a low performing village.

ENDLINE SURVEY ANALYSIS APPROACH

Our social network analysis primarily focused on explaining individual uptake, defined as an individual's decision to send at least one message to district officials via U-Bridge in the past twelve months. In a survey of just over 3,000 people living in 16 treatment villages, we found that 30 percent had heard of the U-Bridge program.

Conceptually, successful program uptake might be better defined at the village-level, which we defined as the number of messages sent per 100 inhabitants during the study period. Individual-level and village-level uptake are distinct, and in theory do not have to be positively correlated. One can imagine a village where only a few people use the platform (low individual-level uptake), but send many messages on behalf of the entire community (high village-level uptake). Interestingly, however, the data show that there is a strong correlation between the share of adopters within a village and the number of messages sent per 100 inhabitants, as shown in Figure 11. This suggests that, for the most part, messaging has not been concentrated or captured by a small group; instead high system uptake represents a successful process of social diffusion.

Figure 11: Village-level uptake strongly correlates with individual-level uptake



Individual adoption of a platform such as U-Bridge is dependent on a host of factors, classified into the following three broad categories:

1. **Individual-level characteristics**, such as one's age, income, or education;
2. **Village-level characteristics**, such as available infrastructure, or ethnic makeup; and
3. **Social influence**, whereby an individual's decision to adopt is influenced by whether other villagers adopted.

Social influence may come from several channels: an individual may be influenced by people with whom he or she interacts (network influence) or by people that are physically located close to that individual (spatial influence). We usually think of the adoption of new technologies and products as increasing social influence to adopt. For example, being surrounded by many adopters likely pushes an individual to adopt. This might be because

connection to adopters reinforces the individual's belief that this is a good platform or a useful tool. However, social influence may also have an opposite effect in communication technologies that are subjected to collective action problems. In other words, being surrounded by many adopters of a reporting platform may reduce the likelihood that an individual decides to adopt, perhaps because it allows that individual to free ride on other users.

Our approach to testing for the effect of social influence was simple: we constructed a model of technology adoption at the individual level, considering the three broad categories of factors highlighted above. Through this, we determined that one's network ties (social influence) is a significant driver of adoption, above and beyond the effect of individual-level characteristics and village-level characteristics.

We measured the social network at the village level using a standard name generator technique (Kolaczyk, 2009). Specifically, we asked respondents to name up to five "closest" co-villagers in four kinds of relationships: family ties, friendship ties, to whom they would go if they had to borrow money, and to whom they would go to solve a problem regarding public services in the village. Finally, we constructed a network based on the union of those ties.

Potential ties were drawn from a listing of village residents that the research team generated with the village chairperson several days before the enumeration exercise. Because this "census" may have contained errors, mobile tablets used for electronic data collection were programmed to allow respondents to name individuals that were not included in the original census. Missing data is a common problem with network surveys. Understandably, we were unable to interview every single adult individual in each village. As such, there are individuals for whom we only observed a fraction of their network: they were mentioned as ties by other respondents but were not interviewed individually. About one-quarter of all named individuals fell into this category. Following standard practice, we excluded these individuals from the analysis.

Using those responses, we constructed the five different networks types, mentioned above. Furthermore, respondents that heard about the platform were also allowed to name up to five individuals whom they told about the platform. This allowed us to better track the diffusion process of knowledge about the platform.

DESCRIPTIVE STATISTICS

Table 1 shows descriptive statistics for the 16 Arua villages in which we conducted the endline survey, separated between high- and low-uptake villages. These measures were explicitly selected because they are plausible candidates for explaining adoption at both the individual and village levels. At the individual level, we considered characteristics stemming from standard models of political participation, or that obviously impact the usage of a mobile phone-based platform:

- Adoption is a self-reported, binary variable that equals 1 if the respondent has used the U-Bridge platform at least once in the past 12 months.
- Satisfaction is a binary variable that is only defined for adopters, and equals 1 if the respondent is at least somewhat satisfied about the platform.
- Secondary education is a binary variable that equals 1 if the respondent had some secondary education.
- Income is a subjective measure of relative income ranging from 1 (much lower) to 5 (much higher).
- Phone usage is a binary variable that equals 1 if the respondent has used a phone in the past 12 months to make a call or send a text message.
- Immigrant is a binary variable that equals 1 if the respondent was not born in the village.
- Being a leader is a binary variable that equals 1 if the respondent occupies one of several formal leadership positions within the village.

- Political participation index is an index aggregating measures of participation in the following political activities: attending a village meeting, contributing money to a village project or a village member, contributing labor to a village project, reporting a problem to a village leader, and reporting a problem to the local government. The index is constructed following the method developed in Anderson (2008), which gives more weight to more separating components of the index (i.e., higher variance).
- Pro-sociality is a behavioral measure of care for the community, derived from contributions to the standard public goods game.

Table 1: Differences between village averages in low and high uptake communities

	VARIABLES	sample	low uptake	high uptake	Δ	min	max
Outcome	% adopters	0.04	0.02	0.07	0.05***	0.000	1.00
	% heard	0.31	0.23	0.38	0.14***	0.00	1.00
	% satisfied	0.39	0.22	0.44	0.22**	0.00	1.00
Individual	age	37.39	37.22	37.55	0.33	18.00	101.00
	% female	0.58	0.59	0.56	-0.03**	0.00	1.00
	income	-0.45	-0.54	-0.36	0.19*	-2.00	2.00
	secondary education	0.23	0.18	0.28	0.09**	0.00	1.00
	% use phone	0.62	0.58	0.66	0.08*	0.00	1.00
	% immigrants	0.49	0.48	0.50	0.02	0.00	1.00
	% leaders	0.14	0.12	0.16	0.04**	0.00	1.00
	political participation index	0.00	-0.00	0.00	0.00	-1.23	1.77
	% attend meeting	0.08	0.05	0.11	0.06***	0.00	1.00
	mean pro-sociality	0.28	0.28	0.29	0.01	0.00	1.00
Network	degree	8.79	8.36	9.22	0.86	0.00	217.00
	betweenness	140.60	132.16	149.01	16.85	0.00	23850.50
	clustering coefficient	0.38	0.40	0.37	-0.03	0.00	1.00
	mean size	199.00	198.62	199.38	0.75		
Village	adult population	269.38	264.25	274.50	10.25	32.00	429.00
	ethnic fractionalization	0.04	0.02	0.07	0.05	0.00	0.41
	% employed	0.86	0.89	0.84	-0.05	0.68	1.00
	% non-agriculture	0.22	0.19	0.25	0.06	0.00	0.57
	% poverty score	-0.07	-0.09	-0.05	0.03	-0.48	0.47
N		3184	1589	1595	6		

Note: The table shows sample mean values overall and mean values for low- and high-uptake villages. Network characteristics are calculated from the union network. Individual and network characteristics are tested for difference in means using a t-test, with standard errors clustered at the village level; *p<0.1; **p<0.05; ***p<0.01. Village level characteristics are derived from Uganda's 2014 census data.

We also examined a few network characteristics that may affect social influence, such as degree centrality (the number of connections of an individual), betweenness (the extent to which someone needs to "go through" node *i* to reach someone else), and closeness (the mean distance between node *i* and any other node). At the village level, we also considered several other standard predictors of political participation (e.g., ethnic homogeneity).

On one hand, we found that individuals interviewed in high-uptake villages had somewhat higher socioeconomic status compared to individuals in low-uptake villages: they were richer, more educated, more likely to use a phone, have more leaders, and importantly, were more likely to attend meetings introducing the platform. Their networks are also slightly different. In particular, high-uptake villagers are more closely knit: their mean closeness is smaller. On the other hand, high and low-uptake villages do not differ much in terms of community level

characteristics as culled from the 2014 census, including the average poverty score, percent employed, ethnic diversity, distance to Arua town, and population size.

Altogether, these descriptive statistics suggest that differences in uptake may be better explained by differences in individual-level characteristics and processes of social influence than by differences in village characteristics. The results in the next section separate the impact of social influence from that of individual characteristics in this set of villages.[7]

ENDLINE SURVEY RESULTS

As mentioned, our micro-level model of adoption investigated three potential channels: village-level characteristics, individual-level characteristics, and social influence. We used a binary selection model to investigate the impact of each of these channels on the probability of adoption, modeling adoption in two steps: if the respondent heard about the platform, and if she adopted the platform, conditional on having heard about it.

Since we were most interested in processes of social influence, we took the most conservative approach and accounted for village-level characteristics using a fixed effect. This lumped into a village-level effect all the things that could not be explained by the other channels. We considered the individual-level characteristics mentioned in the preceding subsection. Finally, we considered two channels of social influence: spatial influence and network influence. To account for spatial influence, we constructed a variable that counted the number of adopters within the village besides the respondent, and gave less weight to those that are farther away from the respondent.

Regarding network influence, we investigated several competing processes. The literature on diffusion in social networks typically distinguishes between simple contagion and complex contagion (Centola and Macy, 2007). Network terminology calls “neighbors” the set of people to whom one is connected.[8] In simple contagion, one adopts when at least some number of her neighbors adopt. “Simple contagion” typically accounts for processes of diffusion of information: an individual knows about the news if at least one of her neighbors told her about it. “Complex contagion” accounts for processes of social reinforcement. In this setting, an individual adopts only if a minimal threshold or if at least some share of her neighbors adopt. Complex contagion usually describes processes of product adoption: an individual adopts a new social media application if at least half her friends use it.

Besides these two well-known diffusion processes, we also examine other ways in which the network might matter. We first investigated if some structural characteristics matter, such as one's degree (the number of neighbors one has), or one's clustering coefficient (the extent to which my friends are friends with each other). We also examine whether influence works in more sophisticated ways: in particular, does being explicitly told about the ICT platform by someone else have an impact on one's adoption? Does the satisfaction of neighboring adopters matter?

[7] Note that village selection considered village-level characteristics, which limits our ability to test the relative influence of village, network, and individual factors.

[8] Because the term neighbor may refer to both the common, geographic meaning of people one lives close by, and the network meaning of people one is connected to, throughout the document, we use neighbors in its network sense, and refer to the geographic meaning of neighbor as “proximate people.''

INDIVIDUAL LEVEL EFFECTS

Regarding the influence of individual factors, we found, consistent with a large literature on the determinants of political competition, that all else being equal, the following factors fostered adoption:[9]

- **Gender**: Males were 60 percent more likely to hear about the platform. Conditional on hearing about the platform, females were also less likely than males to adopt.
- **Age**: A one-year decline in age resulted in a one percent increase in the likelihood of hearing about the U-Bridge and one percent greater likelihood to adopt it**.**
- **Education**: Completion of at least some secondary education made a respondent five times more likely to hear about the platform and four times more likely to adopt it.
- **Phone usage:** Using a phone in the last year made a respondent 70 percent more likely to hear about the U-Bridge and three times more likely to adopt it.[10]
- **Politically engaged**: More politically engaged individuals were more likely to adopt.

NETWORK EFFECTS

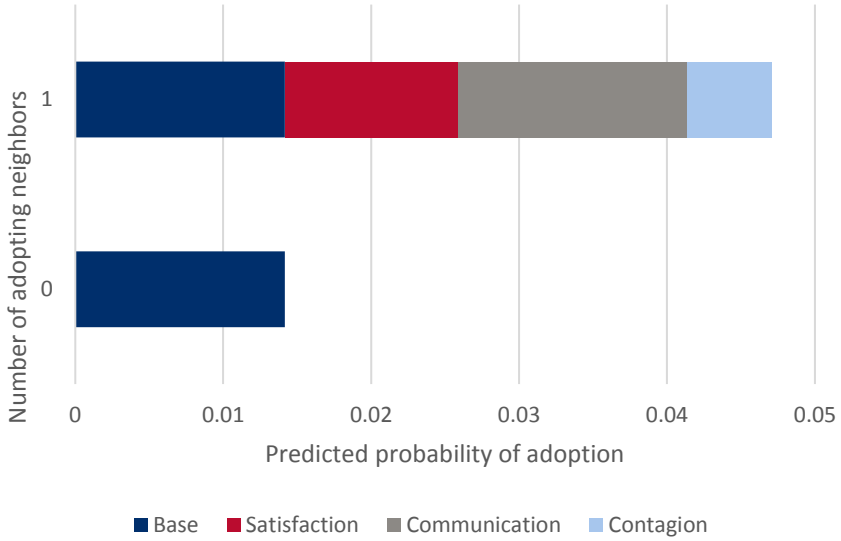
With respect to network influence, simple contagion fits the data marginally better than complex contagion. Having one neighbor that heard about the platform made an individual 20 percent more likely to have heard about it, and having one adopting neighbor made an individual 36 percent more likely to adopt. Spatial influence and more sophisticated structural characteristics, on the other hand, had no discernible effect on adoption.

Figure 12 illustrates the extent of network influence and separates it into different channels. The average individual has a 1.4 percent chance of adopting, if no adopter surrounds her. This probability increases by 0.6 percentage points if one of her neighbors adopts. It increases again by an additional 1.5 percentage point if that neighbor tells her about the platform, and by an additional 1.2 percentage point if that individual is satisfied by the platform. This suggests that what matters most for diffusion of adoption is not simply being surrounded by other adopters, but instead, actual interpersonal communication about it.

[9] The reported results herein use our preferred "simple contagion" specification.

[10] Note that an individual can still report using U-Bridge even if they do not personally own a phone, for example by using a friend or neighbor's phone.

Figure 12: Predicted probability of adoption for the average individual with 0 or 1 adopting alter



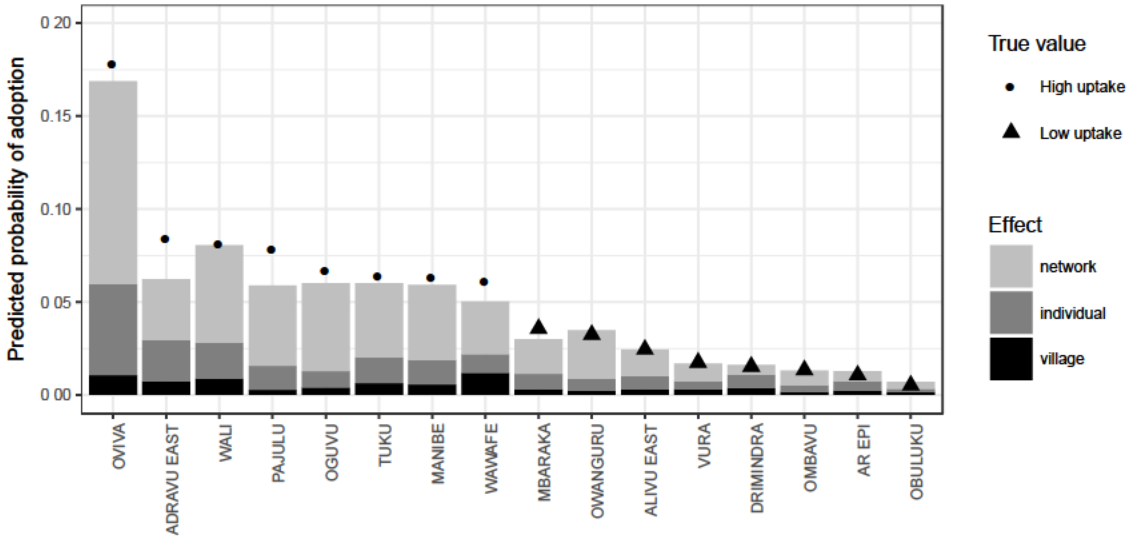
We also identified the networks that mattered most for diffusion. Recall that during the previous analysis, we considered the union of all measured networks. We thus reran our empirical analysis, and considered one network at a time, and examining, in each iteration, the model fit. We found that the union of all networks best accounted for the diffusion process, followed by friends, lenders, family members, and individuals to whom the respondent would go to solve a problem.

COMPARATIVE IMPORTANCE OF NETWORK EFFECTS

Equipped with a good model of diffusion at the individual level, we then investigated (1) how much of uptake owes to individual-level characteristics, village-level characteristics, and spatial and network influence, and (2) which network characteristics most foster adoption.

Figure 13 decomposes the mean predicted probability of adoption into three different parts: (1) the village-level effect, that lumps together the village-level fixed effect and mean spatial influence within the village; (2) an individual-effect, that captures the mean impact of individual-level characteristics, and (3) the network effect, capturing the mean impact of network influence. For instance, in Oviva, uptake is about 18 percent, out of which 1.5 percentage points owe to characteristics of the village itself, 6.5 to characteristics of villagers, and 9 to the network effect. While this provides strong evidence that the network effect is important, given the process by which we selected villages for analysis, we must be circumspect in our interpretation of the small village effect.

Figure 13: Decomposed mean predicted probability of adoption at the village level



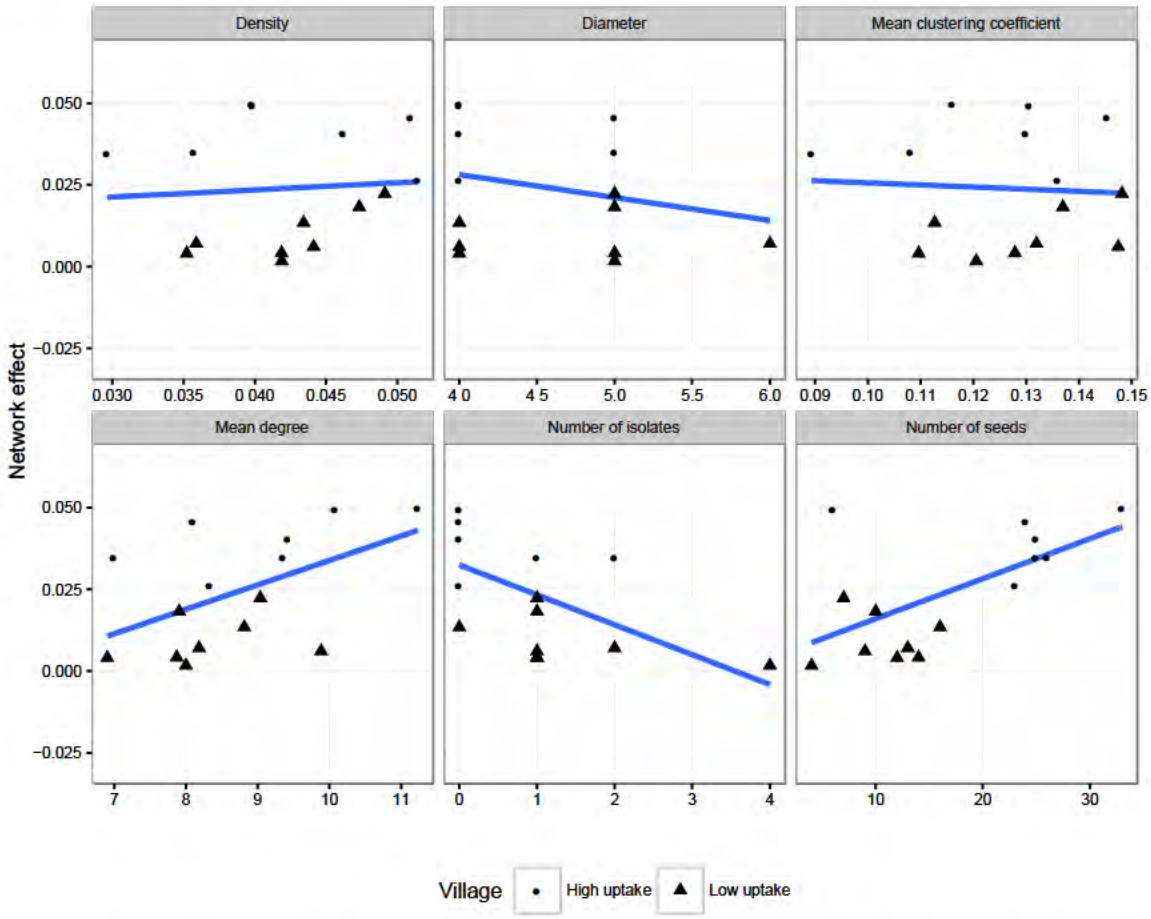
Importantly, Figure 13 underscores the fact that village-level effects are small and comparable across villages. This is a rather encouraging finding, suggesting that structural characteristics beyond the control of say local governments, donor agencies and NGOs – for example, communities' level of ethnic and religious diversity, or their distance from the district headquarters – play only a small role in system adoption.

Figure 13 also shows that though high-uptake villages adopted at a higher rate, in part, because they have people whose characteristics foster more adoption (better education, more politically engaged, etc.), the most important factor affecting adoption is the network effect. Put differently, social ties accounts for a larger part of the variation in the adoption of U-Bridge than the individual effect. Comparing, for instance, the high-uptake village of Oguvu to the low-uptake Mbaraka, we see that although those two villages have comparable village and individual effects (about one percentage point in each case), Oguvu benefited from a much larger network effect (five percentage points in Oguvu vs. two in Mbaraka).

UNDERSTANDING NETWORK EFFECTS

Although Figure 13 tells us that high-uptake villages benefited more from a network effect than low-uptake ones, it does not establish which characteristics of these networks favor diffusion. Answering this question from observational data is a difficult task. Figure 14 shows the correlation between the network effect and various network-level statistics across the 16 communities. A flat line suggests no relationship and a steeper line suggests a relationship. The figure suggests that the network effect relates to the degree distribution: mean degree, the average number of connections per respondent, and the number of isolates (individuals with no neighbors) are strongly correlated with uptake. However, establishing definitive conclusions from the picture is challenging, as we are only comparing 16 networks and we are only looking at bivariate relationships without any statistical controls. These networks vary in many dimensions, including (but not only) the statistics shown here, and the previous picture also established that the network effect is also correlated with the individual effect.

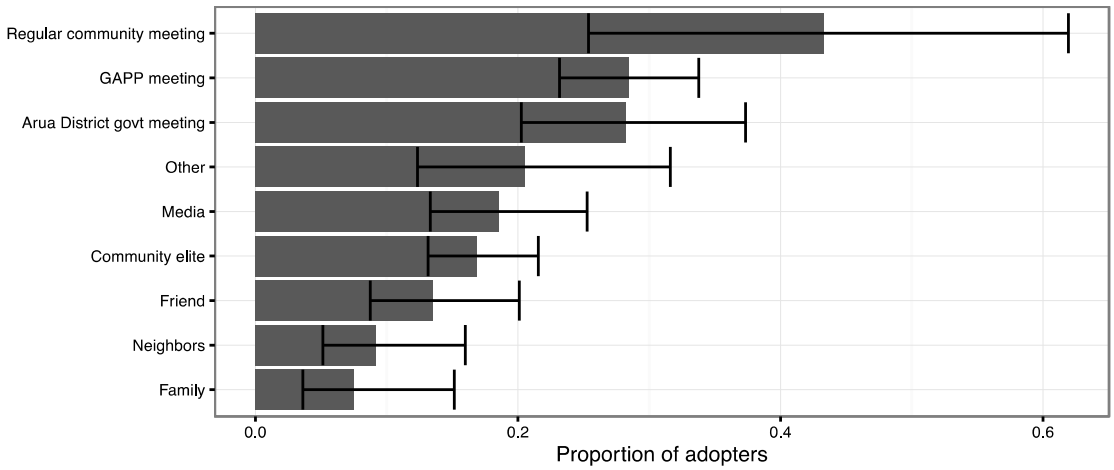
Figure 14: Correlation between village-level mean network effect and selected network-level statistics



Perhaps the most compelling part of Figure 14 is the graph comparing the number of seeds with network effect (bottom right). We refer to an individual who attended the initial community meeting about the platform held by GAPP a "seed." We see that high initial meeting attendance is strongly correlated with a high network advantage, suggesting the importance of GAPP's meetings.

Figure 15, which decomposes the probability of using U-Bridge, further supports the idea that meeting attendance is allegedly the most efficient way to foster adoption. Individuals who heard about the program through any community meeting, whether it was held by GAPP, the Arua Government District, or regular community meetings, had about a 40 percent chance of adopting the platform. Hearing about the program through some other source reduces that probability to somewhere between 10 and 20 percent.

Figure 15: Share of adopters by source of information about the platform



An immediate policy recommendation follows: to ensure successful program uptake, it is key to ensure that initial communication about the program has a large outreach (see also Grossman, Humphreys and Sacramone-Lutz 2016). The finding also suggests an interesting way to think of the diffusion process: processes of social influence act as a *social multiplier*; that is, they transform small initial differences in the number of seeds into large differences in final program uptake.

FLATTENING

Next, we explored if differential uptake of U-Bridge has the effect of flattening access to marginalized populations, or was more likely to be used by more privileged individuals. Specifically, we examined two types of ICT engagement: (1) sending messages via U-bridge and (2) answering periodic mobile polls. Though marginalization is multifaceted, we focused first and foremost on gender, since gender disparities in political communication and participation are some of the most pervasive.

We began with analysis of system uptake by marginalization. Since incoming messages to U-Bridge are anonymous we focus our analysis on self-reported information culled from our endline survey data in 16 treatment villages. First, we found that while close to nine percent of male respondents reported sending at least one message via U-Bridge, only 1.5 percent of female respondents reported using the ICT platform in the past 12 months.

This is mostly, but not fully, because they are less likely to have heard about the service in the first place. While 44 percent of male respondents reported having heard of U-Bridge, only 23 percent of female respondents had. Conditional on hearing, seven percent of female respondents who had heard of U-Bridge reported sending at least one text-message in the past 12 months as compared to 20 percent of male respondents. These differences were all statistically significant. These gender differences were not a function of access to mobile phones. First, the share of women with access to a mobile phone was no different than that of male respondents. Second, among those who reported having access to a mobile phone in the household, men were still six times more likely to use U-Bridge than women, at least in our sample of over 3,000 respondents from 16 villages.

These findings suggest a twin problem depressing female usage of U-Bridge. First, women were more likely to be excluded from politically relevant information flowing through social ties, as evidenced by the significantly lower share of women having heard about the new service. Second, even conditional on hearing, women were less likely to use the platform, which is consistent with the contention that women have a lower sense of (internal) political efficacy. Past work has demonstrated that explicit invitations to contact public officials via ICTs can significantly

reduce the gender gap in participation, since personalized invitations are especially effective for those with low sense of efficacy (Grossman, Humphreys and Sacramone-Lutz, 2016; Grossman, Michelitch and Santamaria, 2016). This too offers some possible avenues for reducing the gender gap in participation.

These endline survey findings are supported by data from the U-Bridge system. Of the 3,062 verified villagers from Arua registered to receive periodic messages from the research team, only 30 percent were female. In addition, while 29 percent of male users responded to at least one of the polls conducted by the research team, only 19 percent of female users did so. This difference is statistically significant. In other words, women were both less likely to register as users and were less likely to respond to polls conditional on previous registration.

These gender gaps reflect similar gaps in certain types of civic behavior found in recent survey data. For example, the 2015 Uganda Afrobarometer found that only 22 percent of women said they had "joined others to raise an issue" several times or often, compared to 34 percent of men. While not as large a gap, women also reported being slightly less likely to vote (64 percent for women compared to 70 percent for men).

Finally, we found the lack of flattening with respect to gender with age, education, and political engagement. Those who heard about and adopted the technology tended to be young, educated, and already politically engaged. We also found no evidence that messages were sent more frequently from geographically isolated places where other forms of communication with the district government might be more difficult.

SUMMARY OF FINDINGS: DIFFERENTIAL UPTAKE

What explains variation across and within treatment villages in the uptake of the U-Bridge program? First, uptake is clearly higher in villages where a registration drive took place. Second, in this evaluation report, we have shown that network ties, facilitating processes of social diffusion, have a large effect on uptake. More specifically, we have shown that (1) diffusion is best accounted for by a process of simple contagion, whereby an individual's probability of adopting increases with the number of her neighbors that adopted, and that (2) better connected individuals are more likely to adopt.

This micro-level diffusion process reveals that networks play a large role in explaining why some villages showed large uptake while others did not. In particular, we find that although high-uptake villages had both individuals that were more likely to adopt and greater network influence, the role of network influence was significantly larger than that either village or of individual characteristics.

Additionally, we investigated the reasons why some networks were better able to foster adoption than others. Although establishing patterns is difficult, notably because we are only observing 16 networks, networks with fewer isolates, and a higher average degree benefited more from network influence. We also showed that successful initial communication about the program has a large influence on final uptake, because social networks amplify the effect of such communication.

Finally, we analyzed whether the U-Bridge program helped facilitate the participation of traditionally marginalized groups like women, those with low education, those without a history of political engagement, or those living in geographically isolated areas. We found that this technology is used disproportionately by groups who were already more likely to participate in politics and community affairs—e.g. politically active males with high education.

ASSESSING GOVERNMENT RESPONSIVENESS

In this section, we assess the responsiveness of Arua district local government to incoming messages, and the extent to which district officials have an interest in maintaining and strengthening the platform over time. This analysis has been constrained to some extent by the fact the complete log of outgoing (response) messages from district officials to citizens was erased. Notwithstanding this limitation, we provide evidence suggesting that:

- Arua government officials have an interest in maintaining the U-Bridge platform, since many of them believe it provides them with valuable information that improves their ability to provide public services under their purview.
- The response of district officials to incoming messages is "not bad," but still seems to be lagging behind citizen expectations, which potentially suppresses program use.

The importance of government responsiveness can hardly be understated. In numerous semi-structured interviews and FGDs with villagers in Arua the issue of government responsiveness was a recurring theme. Interviewees consistently underscored how receiving responses from the government (either through text message responses or in-person community meetings) on the challenges faced by their communities in the realm of water, government employee absenteeism, education, and infrastructure drove their participation in U-Bridge. Significantly, even in the absence of concrete action, merely receiving a response from a district official led to feelings of goodwill and a more positive attitude towards U-Bridge and the government more generally. Conversely, inconsistent responses from the government derailed motivation to use the platform among super users. In the words of one interviewee:

> *I tried to say, "our spring water is not good," but I got disappointed in my heart later when they did not respond to my messages. It made me angry.*

Our study has some mixed findings with respect to government interest. On the one hand, FGDs conducted at the district level suggested that district officials were very supportive of the project. Focus group respondents noted that:

> *While we remain constrained by resources, the platform improves the ability of councilors to reach out to constituents.*
>
> *We found that district officials were generally positive about the program, and pointed to specific instances in which they received new information that they were then able to act upon.*
>
> *U-Bridge allows for responses in near real-time. Example: [date] Community Dialogue Meeting showed that the In-Charge of [XXX] Health Centre had been absent for several months. Following the meeting, the DS reported to both the CAO and DHO. This resulted in district action and the In-Charge returned to his post, apologized and explained his absence to constituents.*

In addition, of 143 respondents who reported using U-Bridge in our endline survey, 62 percent said they usually or always heard back from the district, and 60 percent said they saw some or much improvement on the issues they raised in messages.

On the other hand, however, only 38 percent of surveyed users said they were satisfied with the response, and when asked why, they mostly pointed to insufficient government engagement.

Although the log of actual responses from district officials is incomplete, responses we do have show that there were back-and-forth exchanges between district officials and users about specific issues. Users often complained

about broken boreholes, for example, and clearly received information about where to obtain and how to file the appropriate forms.

In other cases, many of the responses sent by district officials recommended that users take their concerns to lower level institutions, such as subcounty, the School Management Committees (SMCs), and Health Unit Management Committees (HUMC) who were technically responsible for the concern in question. This may have provided new information to users about the structure and responsibilities of different levels of local government, but if citizens were using U-Bridge because these channels had failed, they would likely have been discouraged by the district officials' responses. One health center in-charge who had sent a message reported that he/she received the reply that he/she should bring the matter to his/her councilor, but the in-charge did not know which councilor the district was referring to and never followed up the matter. As discussed elsewhere in this report, some expressions of dissatisfaction with government response might have to do with unrealistic expectations about what district officials could actually do in response to requests. Many messages pointed out that services were under-funded or simply absent in the user's community. A common request was to "build a health clinic here." Many such requests simply cannot be met given the district's budget and planning process:

> *Some messages require drastic changes in budgetary allocations. These are the hardest to respond to (e.g. there are not enough health workers") or, those messages that require action at the central level.*

District officials pointed out in focus group meetings that it would be useful in the future to work harder at meetings and outreach events to manage expectations and inform potential users about the types of messages that are most "actionable."

It was very clear that district officials were reading the messages, extracting valuable information, and using it to guide their actions. In some cases, government officials acted on messages received that were non-service delivery related:

> *Additionally, the platform has catalyzed how quickly the district responds to issues. For instance, community members reported that the Youth Chairperson was embezzling millions of shillings. They communicated to the district and police action was taken immediately.*

They were making efforts to coordinate with subcounty officials and bridge the divide between technocrats and politicians. U-Bridge also appears to have had the unanticipated effect of allowing political leaders to better monitor civil servants. In this way, U-Bridge served as a check and balance system, since many political leaders may lack information on what the technical wing is doing. With U-Bridge system, politicians can see if at minimum, civil servants have responded to their constituents (regardless of whether further action was taken or not).

Despite these positive findings, there is room for improvement in coming up with a clear action plan for who should get what messages, and what record should be kept of their response. Some messages were lost between the cracks, and poor coordination undermined the follow-up effort. Sometimes users received an initial thanks for their message, but no follow-up indicating the ways in which the information had been used or the issue resolved. A useful innovation would be a unified system for tracking messages, activities taken in response, and communications back to the user. The latter is especially important. On some occasions, district officials received information, used it to inform decision-making, but did not respond to the user. Unfortunately, we did not have the requisite data to measure the prevalence of this. A coordinated, unified message tracking system, including a record of communications back to the U-Bridge users, would be extremely valuable.

Finally, it is not clear that district leaders would have used the program extensively in the absence of an external actor like GAPP filtering messages and monitoring their usage. Indeed, GAPP hired an intern a few months into the program after realizing the district leaders' responses were few and far between. Reminding district leaders to respond required near constant vigilance and regularly contacting them by phone or in person. Political leaders who have access to messages may play some role in ensuring the technical wing responds to their constituents' messages, but this oversight is probably insufficient unless these political leaders are explicitly trained to monitor the behavior of civil servants, have interest in doing so, and have leverage over their behavior.

SERVICE DELIVERY

In this final section, we examine whether the U-Bridge program affected service delivery outcomes in the education, health, and water sectors. Service delivery outcomes are, in a sense, the "last mile" of a program like U-Bridge. As discussed, for outcomes to change, people must send messages reporting actionable problems through U-Bridge, and local government officials must have the capacity to address these problems for improvements to take place beyond what would have happened in the absence of the program.

As we have seen in the previous sections, there was significant variation in uptake, with some treatment villages and clusters using U-Bridge far more than others. Further, even among relevant messages there were many messages (4/5) that did not contain meaningful and actionable information about service delivery problems. Finally, while some problems are relatively easy, quick, and cheap to solve (for example, making a phone call to a head teacher to follow up on reports of the absence of a particular teacher), others are difficult, expensive and take long to solve (for example, a broken bridge and seriously damaged access roads).

Nevertheless, our evaluation examined a variety of service delivery outcomes, some of which would have been more likely to change relatively quickly in response to the program than others. We divide outcomes into three sectors (water, education, health) and three domains, (1) monitoring, (2) effort, and (3) inputs. These three domains are described below. The data collection strategy for these three domains is described subsequently.

MONITORING

The U-Bridge program allows citizens to send SMS messages about service delivery problems directly to district officials. If the system is being used as expected, the first-order change we anticipate is that district officials increase their *monitoring* of facilities. The district headquarters and thus district officials are often located quite far from facilities (the mean distance between Arua town and district villages is 25 kilometers), and have limited time and resources to spend physically visiting facilities. Though district officials generally know that there are problems with service delivery, they often lack specific and timely information on delivery deficiencies. Thus, we expect that if district officials hear complaints from a particular area via the U-Bridge system, they will be more likely to exert efforts into *monitoring* and supervising these facilities, for example, by making phone calls to or visiting the facility.

EFFORT

We expect that a secondary outcome may be an increase in effort at the level of the facility to improve services. Here we focus on activities that are under the direct control of individuals employed in the facilities, for instance making requests to the district for additional goods and staff and conducting outreach activities. We also consider direct measures of effort in schools and health clinics, including absenteeism among teachers and health care workers. Increased effort at the facility level might emerge either as a response to increased monitoring from

district-level officials, the expectation thereof, or the anticipation of greater direct local involvement in service provision monitoring.

INPUTS

Finally, if district-level officials grow accustomed to receiving feedback from citizens in the areas where U-Bridge was implemented and hence become more sensitive to the needs of the corresponding facilities, we should expect to see improvements in inputs. These include the number of staff and supplies like drugs in health clinics; for schools, these inputs include the number of teachers and school supplies; and for water these may be distribution of pumps and rehabilitation of wells. Our hypotheses were that U-Bridge would increase monitoring, effort, and inputs in health and education, and increase inputs in water.[11]

DATA SOURCES AND DATA COLLECTION

We measured outcomes in service delivery in the three domains outlined above using two primary data sources: (1) unannounced audits of schools and clinics conducted by the research team and (2) administrative data culled from the district education office (DEO), the district health office (DHO), the district finance office (DFO), and the district water office, compiled and entered by research assistants hired and supervised by the research team.

Both data sources have strengths and weaknesses. On one hand, a major benefit of audits is that they are conducted by a source independent of the government or facility, and are therefore less subject (though not immune) to manipulation. On the other hand, many (but not all) measures collected during the audit capture data from a specific day (e.g., absenteeism), producing somewhat noisy measures. Administrative data, conversely, may be subject to manipulation and misreporting (for example, a head teacher or health center in charge may have incentives to report that the facility is performing well on several dimensions even if it is not), but is collected more regularly. Notwithstanding this limitation, there is no reason to believe that biases in reporting from the facility level to the district level are correlated with treatment. In the analysis, we combined data from both the audits and administrative data into indices organized by domain.

Unannounced Audits

Unannounced audits were conducted at baseline (June and July 2014), before U-Bridge was implemented, at midline (June 2015), and at endline (March 2016), after the program concluded, in schools and clinics in both treatment and control clusters. Audits took place in each of the 48 health centers, and in 134 primary schools, the latter of which were divided among 46 in treatment clusters, 44 in control clusters, and the rest in quasi-control facilities in neighboring districts. The audits aimed to collect comprehensive information on all three domains: monitoring, effort, and inputs. For example, we collected data on communication with district officials (monitoring), on absenteeism on the day we visited the facility (effort), and the stock of supplies (inputs).

Administrative Data

Arua local district government collects regular reports from public facilities. Enumerators from the research team compiled data collected by the district in order to supplement data collection via the unannounced audits.

Specifically, we assembled data at the district line ministries that can help determine whether more resources (and attention) have been allocated toward service provision in treatment communities; i.e., that have access to U-Bridge. For example, the DHO received monthly reports from each facility in which the facility reports the

[11] Since unlike health and education the water sector does not have a full-time staff, such as teachers or health workers, the nature of the outcomes for water are different than the other two sectors.

number of patients treated and procedures undertaken. The research team extracted performance trends directly from these reports. Both the DHO and DEO keep records of inspectors' visits in school and clinics; these data allow testing whether greater administrative attention is being directed at service units in treatment areas. We also assemble data on stockouts and staffing information from the DHO, and staffing information from the DEO. These data thus provide a secondary source, in addition to the audits discussed above, of absenteeism rates and stockouts.

The key outcome variables are organized by sector (health, education, water) and domain (monitoring, effort, inputs). As noted above, in most cases, we combine data from the unannounced audits and administrative data to create summary indices for each sector-domain. Summary indices are constructed in two ways. First, following Kling, Liebman, and Katz (2007), estimation of the mean treatment effect was conducted by: (1) orienting each outcome so that higher values always indicate ‘‘better’’ outcomes; (2) standardizing outcomes into comparable units by translating each one into standard deviation units (i.e., by subtracting the mean and dividing by the standard deviation in the control group); (3) imputing missing values at the treatment assignment group mean; (4) compiling a summary index that gives equal weight to each individual outcome component; and finally (5) regressing the summary index (and the constituent variables) on the treatment indicator as well as any control variables (see also Casey, Glennerster and Miguel, 2012). The second uses a method developed by Anderson (2008), in which the summary index is a weighted mean of several standardized outcomes, where the weights---the inverse of the covariance matrix---are used to maximize the amount of information captured by the index. Specifically, we focus on the following six indices which are explained in greater detail in Annex III:

- Health monitoring index, based on DHO calls and visits, health inspector visits, health inspection calls, and completed inspection reports.
- Health effort index, including outreach campaigns, staff present during the audit, and staff attendance more generally.
- Health inputs index, of number of staff and stockouts of anti-malarial drugs and oral rehydration salts.
- Schools monitoring index, including DEO visits and calls and school inspector visits and calls
- Schools effort index, based on teacher absenteeism, teachers present the day of the audit, classroom observation, and staff meetings.
- Schools inputs index of number of teachers, students per uniform, book, and pencil, and infrastructure built.

DATA ANALYSIS

As discussed above, our research design took the form of a randomized controlled trial, where clusters of villages were randomly assigned to either treatment (access to the U-Bridge program and associated activities) or control. We measured all outcomes in two periods, short-term and long-term. Short-term outcomes were measured approximately one year into the program, while long-term outcomes were measured immediately after the program activities, including village meetings, have concluded, close to two years after the program launched. Following Banerjee et al. (2007), we report results for each time period separately.

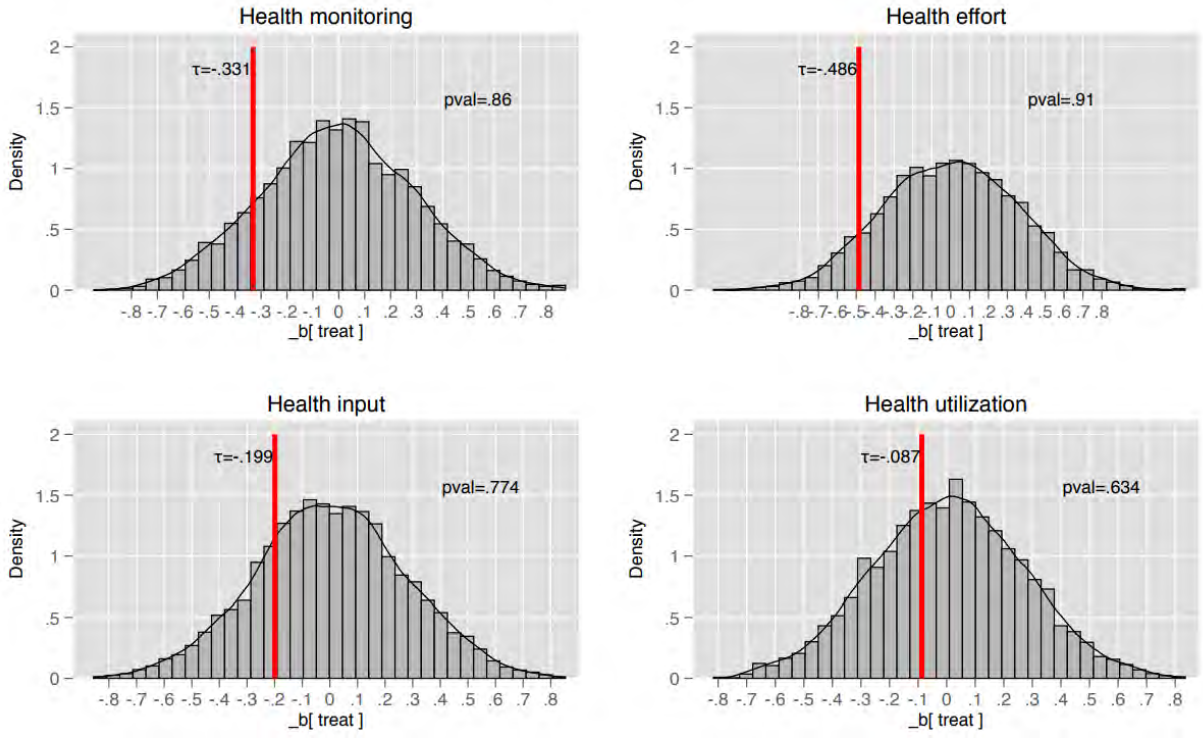
To estimate the treatment effect of the program we used ordinary least square (OLS) regressions, whereby the outcome value in the endline is regressed on the treatment indicator. We further control for the baseline value for variables in which we have data for both baseline and endline. This method increases statistical power since

controlling for baseline values reduces unexplained (or residual) error (Bruhn and McKenzie (2009).[12] In all models we cluster standard errors at the cluster level; i.e., the level of randomization as well as correct the standard errors by combining estimation results using seemingly unrelated estimation within family of outcomes.

The main results, capturing both short and long-term effect of access to U-Bridge on health, education and water services outcomes, are reported in Figures 16 – 21. Specifically, we report models with covariates adjustment for the weighted mean indices. Results in tabular form with and without covariates adjustment can be found in Annex IV; in these tables we report the effect of the program on the variables that make up each family of outcomes. Finally, for robustness, we report similar results using weighted mean indices (with and without covariates adjustment).

First, we find that the U-Bridge program had no effect on any domain of health services in either the short (Figure 16) and long-term (Figure 17). The coefficients on the treatment indicator (τ), represented by the red line, are not statistically significant and are negative across all health outcomes indices, suggesting that this null finding is not likely due to relatively low statistical power.

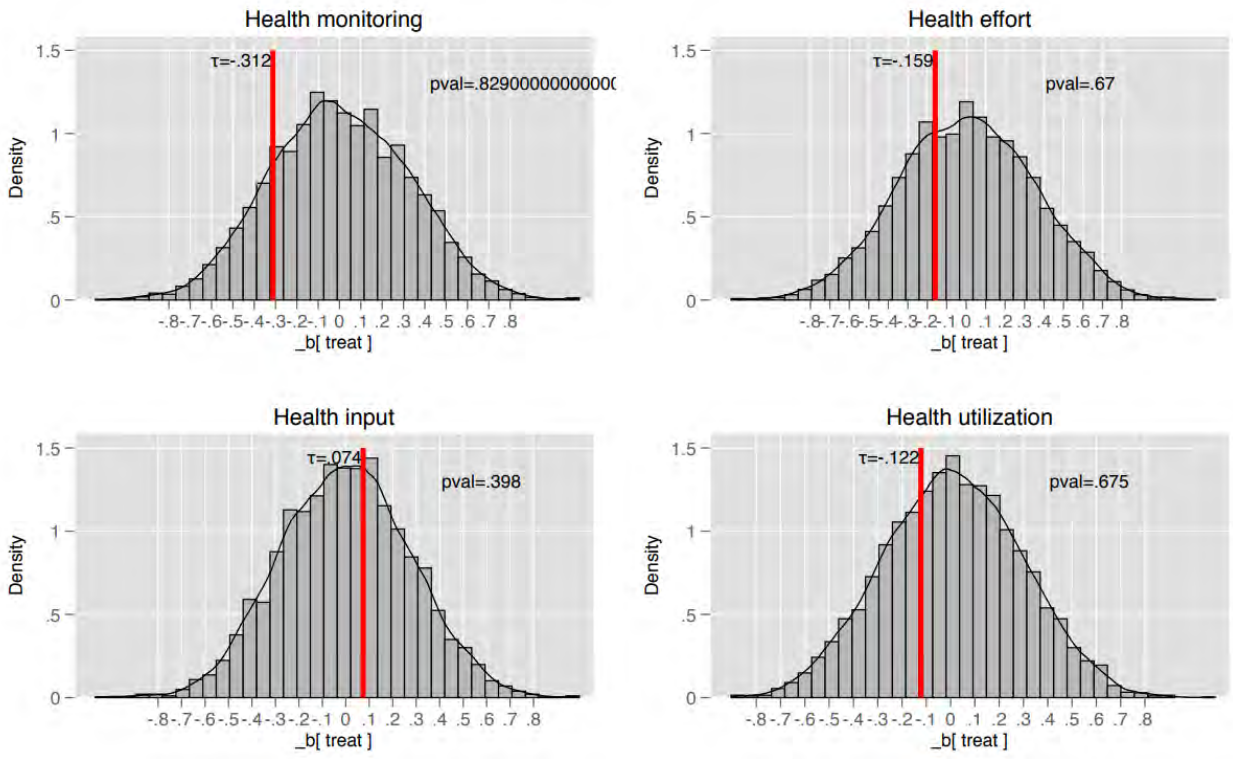
Figure 16: The effect of U-Bridge on health services in the short-term (one year)



Note: Indices created using weighted mean of standardized outcomes. All models control for baseline level of the dependent variable and adjust for pre-specified set of cluster-level covariates.

Figure 17: The effect of U-Bridge on health services in the long-term (two years)

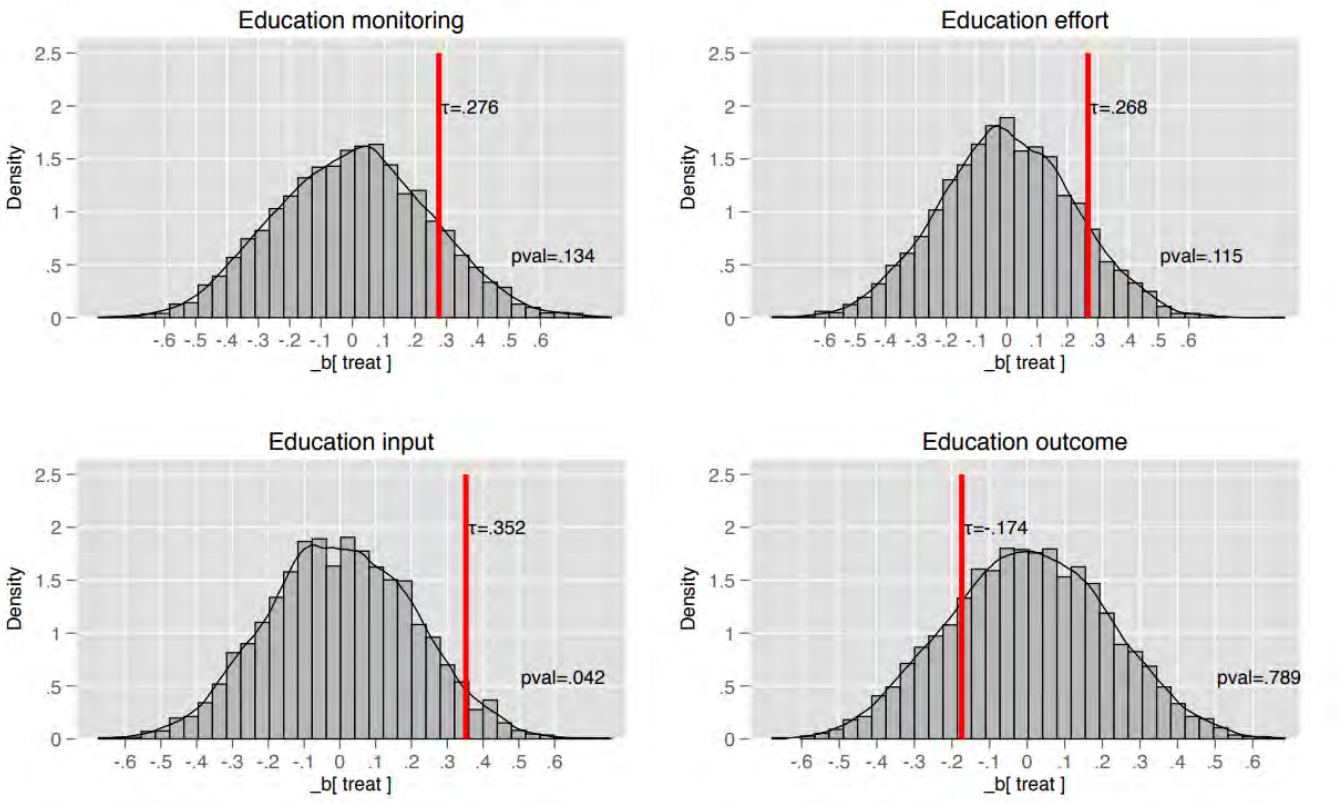
[12] Three health facilities are missing endline or baseline data because they were closed and no audit data could be obtained. We were unable to use include these facilities in the difference-in-difference estimation.



Note: Indices created using weighted mean of standardized outcomes. All models control for baseline level of the dependent variable and adjust for pre-specified set of cluster-level covariates.

Second, by contrast with health services, evidence suggests the possibility of moderate positive effects for education, at least in the short-term (see Figure 18). There is a positive treatment effect for school inputs where the effect size is both large (τ = .35) and significant (p - value = .042), and to a lesser extent for both school monitoring and effort where the effect size is about a quarter of a standard deviation, with p-values falling slightly below the 90% significance level (.134 and .115, respectively). Notably, teachers in primary schools in treatment clusters exhibit greater efforts - they were more likely to be present during our unannounced audits and engaged in meaningful teaching - and thus treated schools seem to have received greater supervision and somewhat greater input. These efforts did not translate to higher standardized test scores for students taking the Primary Leaving Exam (PLE), as the bottom panel of Figure 18 makes clear, however it is important to recognize that these scores come at the culmination of seven years of schooling, of which the treatment occurred in only the last.

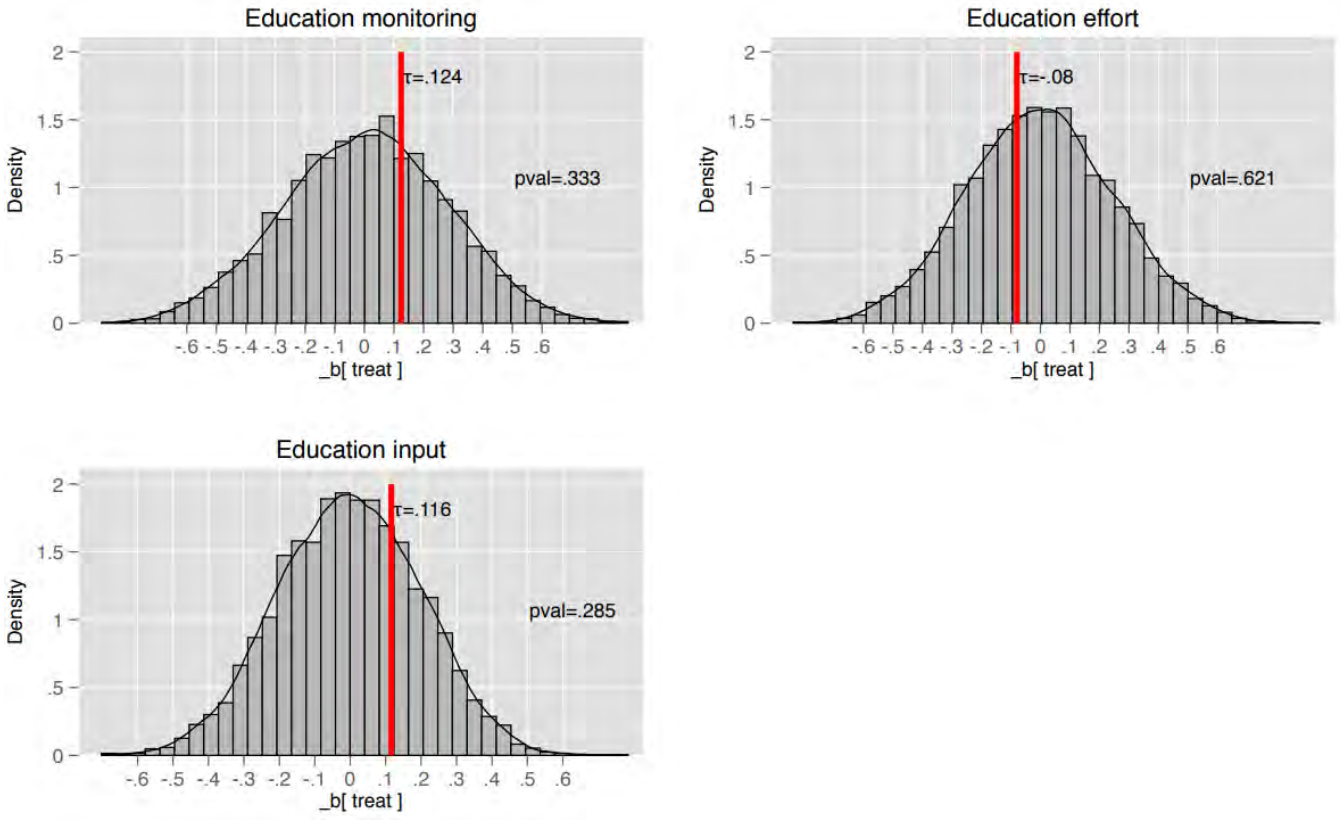
Figure 18: The effect of U-Bridge on schooling in the short term (one year)



Note: Indices created using weighted mean of standardized outcomes. All models control for baseline level of the dependent variable, adjust for pre-specified set of village-level covariates, and cluster standard errors at the cluster-level.

Even if these short-term effects are genuine, they were not sustained into the second year (Figure 19). While the coefficients on all three indices are positive, they are smaller than the coefficients in year-1, and all are insignificant.

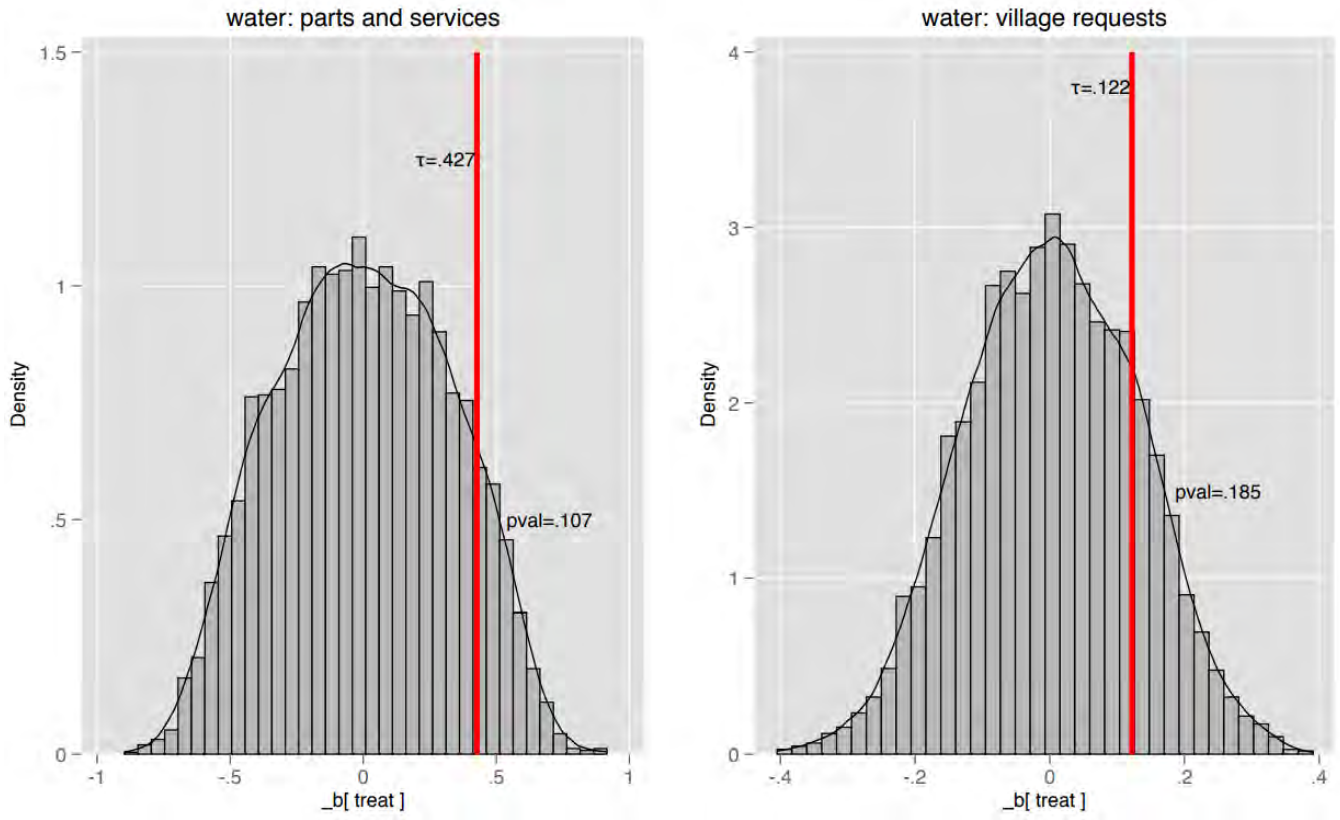
Figure 19: The effect of U-Bridge on schooling in the long-term (two years)



Note: Indices created using weighted mean of standardized outcomes. All models control for baseline level of the dependent variable, adjust for pre-specified set of village-level covariates, and cluster standard errors at the cluster-level.

Turning to the water sector (see Figure 20), where the post-treatment village level data is aggregated across two years (2015-2016), we find positive coefficients for the treatment indicator on parts and services provided (τ = .427 standard deviations), and for the number of village requests for any water service (τ = .122). As with the education sector, these treatment effects fall slightly below the 90% significance level (.107 and .185, respectively). Ultimately five more villages in treatment clusters had made requests for water parts and services in the post-treatment period (13 against 8 control villages), and five more villages ultimately received any water service in that period (9 treatment villages as compared to 4 control villages).

Figure 20: The effect of U-Bridge on water: parts and services and village requests.



Note: Indices created using weighted mean of standardized outcomes. All models control for baseline level of the dependent variable, adjust for pre-specified set of village-level covariates, and cluster standard errors at the cluster-level.

DISCUSSION: EXPLORING MIXED RESULTS

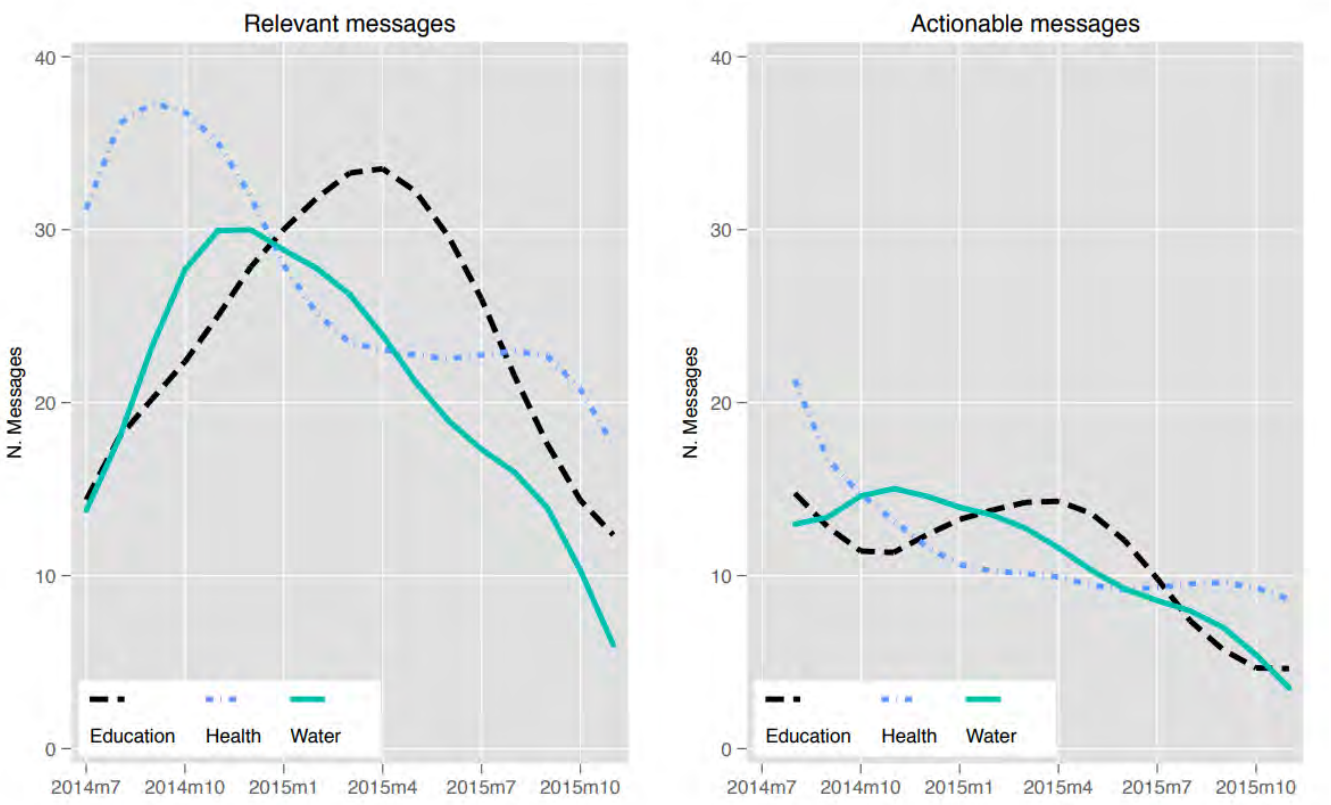
In this section, we explore the mixed results we found. In particular, why do we find evidence of effects in education and water but not in health? Why do these effects, if in fact they exist, disappear by year two? Exploring these two questions also allows us to evaluate the extent to which the preconditions for change in outcomes were met, and if so, through which pathway U-Bridge likely operated – in a piecemeal fashion or by creating common knowledge. The evidence at our disposal, including the audits and administrative data, but also an endline survey of treatment villages and qualitative interviews with local government officials and U-Bridge users, suggests that some but not all preconditions were met, and that any effects of U-Bridge on service outcomes are more consistent with the first pathway. That is, it appears U-Bridge was able to resolve isolated incidents, but the evidence is not consistent with the creation of common knowledge that would allow for an equilibrium shift from underperformance to high performance of service providers.

Why no effects in health?

Why did we find evidence of (short-term) effects in education and water, but none whatsoever in health? There are several potential explanations. First, it could be that there was less demand for improvements in health than in the other two sectors, perhaps related to the fact that most citizens use schools and water points far more

frequently than health clinics. Relatedly, perhaps citizens are less able to construct useful messages in health than education, as health may require a higher degree of comprehension or expertise. Second, perhaps the local government has greater control over the education and water sectors than the health sector, and thus is better able to affect outcomes in the former than the latter. This could occur if inputs and human resources are managed to a greater extent by the central government in the case of health, or if health workers are more specialized and thus there is a lower supply than in education, which would give health workers relatively more bargaining power and job security. To address the first possibility, we examine whether there are differences in the number of messages sent by sector. Messaging intensity can serve as a good proxy of citizens' demand for change from the status quo level or quality of service. While many citizens interact with schools on a nearly daily basis, perhaps reminded often about problems at their children's schools, and are confronted every day with the struggle associated dysfunctional water sources, most people do not interact with medical care on a regular basis. Thus, it may be that our mixed findings are simply a result of difference in underlying demand or salience of health care. Figure 21 suggests that this is unlikely a plausible explanation. Consistent with public opinion data on Ugandans priority of public services (Gottlieb, Grossman, and Robinson, 2016), the number of incoming messages (both relevant and actionable) exhibit similar patterns across public service type. It is not the case that there are more messages about problems in education and water than about problems in health.

Figure 21: Relevant and actionable messages over time by sector

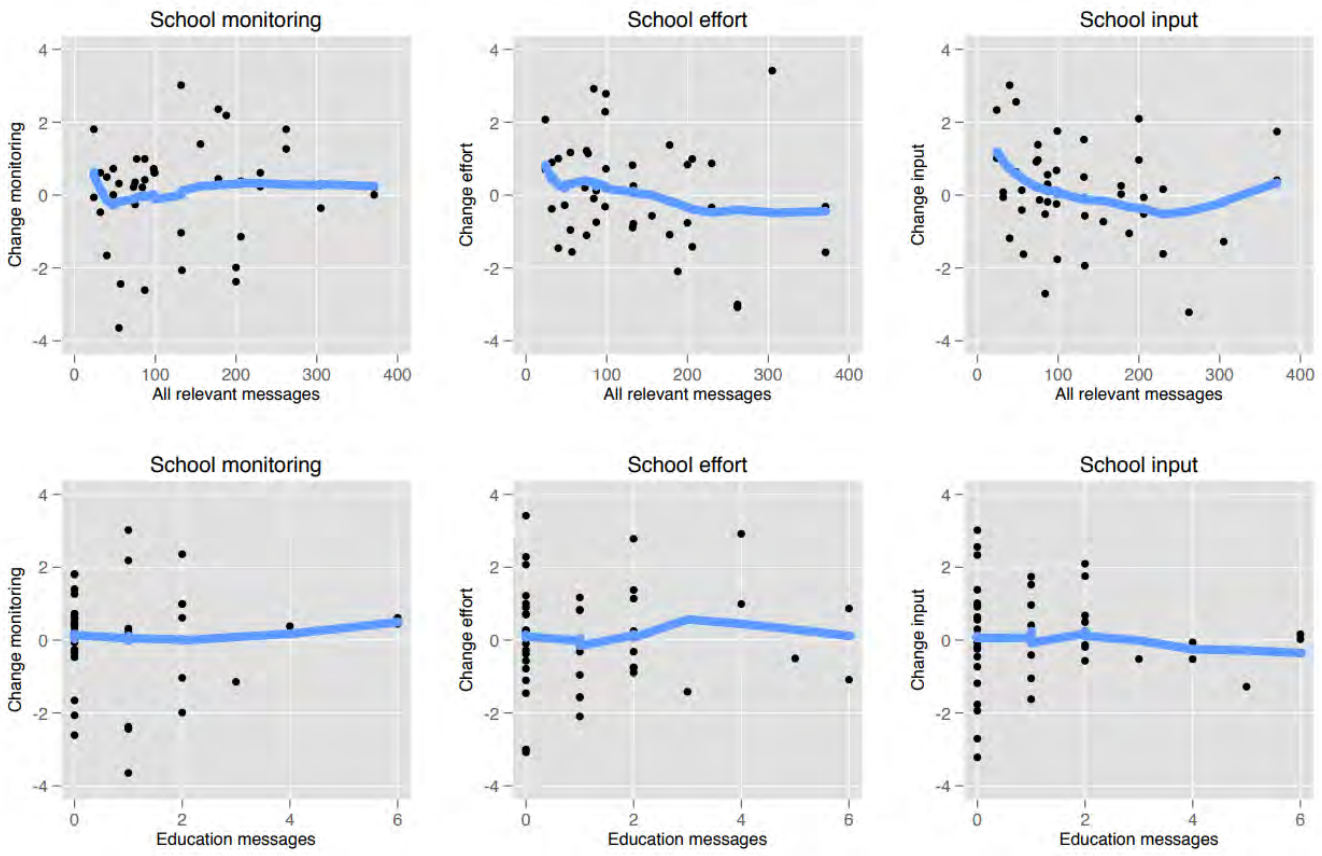


Note: Lines are derived from locally weighted regression (lowess) and cover a fifteen-month period

Next, we turn to the second possibility, which is that it is easier for the district to address complaints in the education sector than complaints in the health sector. This may be because health inputs are expensive and many aspects of health services, such as hiring doctors or stocking medicines, involve the central government, while education and water services are somewhat more decentralized. To explore this argument, we plot the change in

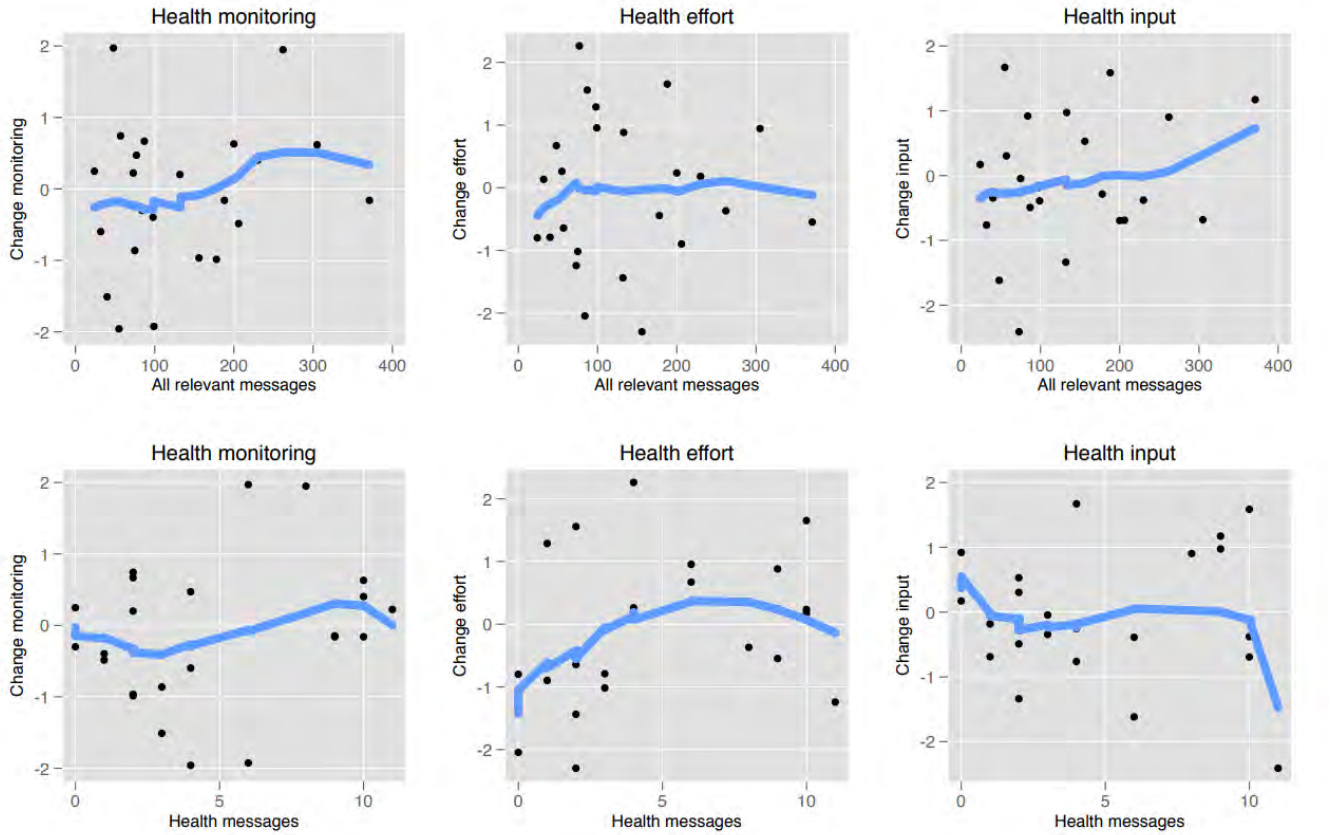
sectoral outcome indices between the baseline and the midline (year-1), against the number of relevant messages coming from each village. The data at hand does not offer support to this alternative. At least in the case of Arua district local government, the district education office is not more effective in translating messages into better outcomes (Figure 22), as demonstrated by the relatively flat blue lines, as compared to the district health office (Figure 23). Note, however, that this analysis is not definitive because (a) not all incoming messages could be assigned to a specific village or cluster, and (b) not all actionable complaints were captured by U-Bridge's platform[13].

Figure 22: Change in education outcomes from baseline to midline (short-term) against messages sent



[13] GAPP, for example, organized quarterly community meetings in two villages in treatment clusters. Meeting attendees have certainly raised service delivery issues with district representatives and these may or may not have been captured as a complaint in the system's platform.

Figure 23: Change in health outcomes from baseline to midline (short-term) against messages sent



More generally, Figure 22 suggests that positive effects in the first year for education were not driven disproportionately by villages with a higher volume of messages. Both the above explanations implicitly assume that change occurs due to the responsiveness of district officials to specific citizen complaints. However, another possibility identified in the theory of change outlined above is that following the introduction of the ICT platform, service providers internalize the possibility of sanctioning, and increase effort independently of actual messages. This mechanism is consistent with Figure 22, and could explain the divergence across sectors if health workers somehow were more secure in their position than teachers, perhaps due to shortages of qualified workers or less responsive management in the district health office. Unfortunately, we have no data that would allow us to test this claim.

Why don't the effects in education persist?

Perhaps the most exciting possibility of a program like U-Bridge is that it can generate common knowledge between service providers, citizens, and district-level officials about monitoring, thus generating incentives for better performance of teachers and headmasters in the long run. If common knowledge of this kind were being created in treatment clusters in Arua, however, we would expect that positive effects would strengthen over time. For example, the effect of U-Bridge could be sustained as teachers gained personal experience of being monitored, or perhaps heard that colleagues had been sanctioned for poor performance identified via the program, or that district education officials were visiting more often or asking harder questions. Since the positive effects disappeared by the second year, it seems unlikely that this internalization took place. In our interviews with district officials, we learned of some examples in which information gleaned from messages was indeed used for disciplinary action, but this seems not to have been enough to generate sustainable changes in the outcomes we

were able to track. Moreover, in some cases, the disciplinary action taken was not very costly to the service provider. For example, district officials cited the transfer of a poor performing teacher from one school to another as evidence of the program's success. Such a transfer would obviously have been a relief for the school where the complaint had been made, but a burden for the recipient school, and not terribly costly for the teacher in question. Thus, it could be that the sanctions the district is able or willing to impose on poorly performing service providers simply are not costly enough to deter poor performance. The results are consistent with a scenario in which initial excitement about and engagement with the program led to a temporary increase in monitoring activity from district officials, as well as short-term improvements in performance and physical inputs; however, it appears that this is difficult to sustain. As demonstrated above, the volume of education (and other) messages declined substantially over time, and it is possible that service providers learned over time that the threat of vigorous monitoring and sanctioning was minimal.

Educators and health workers probably knew that U-Bridge was in their area, mainly through the community meetings where messages were reported in masse, but they probably did not get the feedback from individual messages. They also probably did not know when the program stopped. As such, any general effect on behavior change was likely due to the belief that they were being monitored rather than observing actual increased monitoring by the district. While actual monitoring probably happened in some cases, it does not appear to have been a general phenomenon. This may also help explain short term effects. It is possible that public employees thought they were being monitored more closely, but realized there was not actually a change in district behavior.

CONCLUSIONS AND RECOMMENDATIONS

In this concluding section, we discuss our main conclusions and recommendations for future efforts to use ICT platforms for better governance.

1. UNDERLYING DEMAND EXISTS

This evaluation found that there exists underlying demand (i.e., interest and need) to strengthen weak existing political communication channels by utilizing innovative, mobile platforms that allow citizens to anonymously communicate directly to district officials at low-cost. This is a non-trivial finding as similar programs in Uganda, including those whereby constituents can contact MPs or district councilors via text-messaging platforms, have experienced low participation rates. We suspect that the relatively high uptake of U-Bridge in Arua District reflects both the large investment in mobilizing communities (via community meetings, community dialogues, and household registration) and the fact that district civil servants were generally more responsive to incoming messages compared to national and local politicians. Regular contact with users via text messages and polls may have also kept users engaged over the life of the program, and helped elicit concrete, sector-specific service complaints.

RECOMMENDATIONS

- Future ICT programs should consider additional investments in community mobilization, this should include those used here (i.e., door-to-door registration, community meetings, robocalls) and efforts that could not be incorporated in this project because of concerns of contaminating the RCT evaluation design (e.g., radio advertisements, radio programming, outreach through churches and mosques). While door-to-door registration campaigns are potentially expensive, given the large influence on usage observed here, they should be incorporated into future efforts. This need not require a census style registration effort. Instead a random selection of households could be made and selected households could be encouraged to tell their neighbors about the service. Alternatively, this approach could be used in marginalized areas or to specifically target women, two concerns addressed below.

2. CONTENT OF MESSAGES MATTERS

Though usage rate were relatively high, many relevant messages were not actionable. This makes it more difficult for district officials to respond to problems and there is some evidence that this has also increased levels of dissatisfaction among users who generally did not see improvements when they made only general and relatively vague complaints.

RECOMMENDATIONS

- Future ICT programs should make greater efforts to “train” citizens on how best to use the service. Specifically, we recommend using examples to emphasize the importance of actionable messages, rather than general messaging.

- Future ICT implementers should ensure that a mechanism is in place throughout the entire period of implementation to filter out non-relevant messages and highlight actionable messages.

3. SEVERAL ASPECTS OF U-BRIDGE ENCOURAGE USE

Convenience of use, low cost, anonymity, continuous engagement with potential users, and a focus on local issues were all factors that encouraged use. While the anonymous nature of U-Bridge was recognized as extremely important by interviewees, some users did not fully trust that the messages are anonymous. Given the importance of anonymity, this lack of trust might be reducing participation or leading to messages with inadequate information to be actionable. Furthermore, we discovered that many program participants did not view the district government as an important actor in service provision, which might also reduce participation.

RECOMMENDATIONS

- Future implementers should make greater efforts to build trust in the anonymous nature of the service; this may include actual demonstrations of the way messages display on the District officials' tablets during the inception and dialogue meetings.
- Implementers should also provide citizens with information on the roles and responsibilities of different levels of government, which will help ensure messages sent by users target the issues that can be resolved by the recipient of the message.

4. HIGH VARIATION IN DEMAND

While average demand was relatively high when compared to similar programs in Uganda, there was tremendous variation in usage of U-Bridge in places where it was introduced, both at the individual and community levels. We investigated several possible explanations for this variation, and found that at the individual level, those who were more likely to use U-Bridge were men, had higher levels of education, were younger, and were more politically engaged. Importantly, we observed a gender gap in U-Bridge use that mirrors a gender gap observed in other types of local political participation in Uganda. In other words, we did not see much evidence that this platform "flattens" access for marginalized populations. The extent to which the concerns of women and other marginalized groups are being represented through U-Bridge is not clear.

At the community level, we found that social networks, distance from Arua, education, and the door-to-door registration drive greatly affected the extent to which a community used U-Bridge or not. Communities in which a door-to-door registration took place were much more likely to use U-Bridge than those that did not.

With respect to social networks, we found that the likelihood that an individual used U-Bridge increased with the number of people in her social network that used U-Bridge. We also found that people who were highly connected within a village were more likely to adopt U-Bridge.

RECOMMENDATIONS

- Implementers should make greater efforts to understand why women do not use services like U-Bridge at similar rates to men. More generally, efforts to roll out ICT for development programs like U-Bridge should be sensitive to the populations they are reaching or not, and make special efforts to make sure marginalized populations are also able to access and use the programs.
- Implementers should make greater efforts to invite and ensure that marginalized populations attend inception community meetings to be exposed to the new service. Our network analysis suggests that

women's relative low participation is more a result of not having heard about U-Bridge than about not sending a message conditional on hearing. This is compounded by the fact that men are more likely to be in the social network of other men than of women. In other words, if early adopters are men, and later adopters are more likely to be connected to early adopters, then women are less likely to be late adopters too.

5. ROOM FOR IMPROVEMENT IN RESPONSIVENESS AND OUTREACH

Though the responsiveness of public officials in Arua was clearly much higher than that of MPs and district councilors, there is still ample room for improvement. For example, we found that only about two out five of surveyed U-Bridge users were satisfied with the service, although about 60 percent said they saw some or much improvement in the issues they raised in their messages and 62 percent of users said they usually heard back from district officials. We further found that villagers with social ties to satisfied users were much more likely to adopt the service than those connected to users who were unsatisfied. Additionally, after 1.5 years of program activities, a majority of residents (69 percent) surveyed in villages where the program was rolled out said they had not heard of the U-Bridge program. We heard of many cases where citizens made an anonymous complaint, but declined to reply to the government's response in which the DHO or the DEO asked for more detailed information on the case (e.g., name of teacher, or name of nurse, etc.) This suggests that some citizens may have not understood that the district officials can respond to their complaints and send them a text via the system even without ever knowing their mobile number. This type of attrition both reduced citizens' trust in the system and the proclivity of government officials to respond to incoming messages. Further, many of the responses sent by district officials recommended that users take their concerns to lower level institutions, which in some cases appears to have been discouraging.

RECOMMENDATIONS

- Dialogue meetings are important opportunities for training about the most useful types of messages, the management of expectations, and the creation of expectations among service providers about future monitoring. Dialogue meetings served at least three purposes: a) sharing the messages sent by a particular villages with more people in the village than just the users (perhaps allowing for greater common knowledge or collective action), b) making technical and political leaders more aware of problems people have that they report at meetings but maybe not via SMS (including those who didn't use the U-Bridge platform, either because they didn't have a phone or otherwise, and c) to hold technical and political leaders accountable to one another in answering people's concerns. These should be continued and incorporate the recommendations above.
- Citizens will not use even the most user-friendly and innovative ICT platform if they do not hear back from government officials or if users are dissatisfied with officials' responses. Thus, significant efforts must be made to encourage government officials to respond to all relevant incoming messages, and especially to follow up on pending actionable cases. This may require greater effort in training officials to not simply respond to the first incoming message, but to treat messages as cases that should be followed through until case is deemed closed and the user has been updated on the district's actions at every stage.
- Develop a mechanism for improved case tracking so civil servants and politicians can better keep track of which issues have been resolved or not.
- Given that district officials might receive messages that are better targeted to other levels of government or other local government officials, the above mention filtration mechanism should ensure that relevant messages be forwarded directly to the correct individuals rather than directing citizens to contact these individuals themselves. This forwarding of messages and responsibility should also be captured in the case tracking system with follow-up.

- It would be useful to design a better feedback loop to service centers. For example, schools and health centers should be provided with information about the number and type of messages that were sent about the facility.

6. NO DISCERNIBLE EFFECT ON GENERAL INDICATORS OF SERVICE DELIVERY COMPARED TO CONTROL FACILITIES

While we are confident that some problems that were raised through U-Bridge were addressed in a satisfactory way, our data does not suggest that U-Bridge had a large discernible effect on service delivery outcomes or increase in monitoring of activities compared to facilities where U-Bridge was not present. Given the large number of indicators employed in our analysis, we do not believe that this null finding is simply due to inappropriate choice of indicators, although we note that the analysis focused on three sectors, health, education, and water, and we cannot assess whether U-Bridge improved other areas of service delivery in Arua, such as infrastructure and roads. It is also important to recall that improvements in service delivery in U-Bridge facilities could indeed occur while still observing an overall null effect if improvements were also observed in control facilities. Thus, our report does not suggest that no improvements took place, rather than there were not greater improvements in treatment as compared to control facilities.

We believe that this null finding is primarily driven by (1) not all areas have adopted the service at high enough rates, (2) not enough messages included actionable information, (3) citizens generally declined to provide more detailed information when prompted by government officials, likely due to fear of anonymity breaches, and (4) some requests were impossible for the district to address due to resource constraints. In addition, it may take time until improvements start showing up in administrative data. For example, empirical studies that explore the relationship between transition to democracy and service delivery outcomes generally find positive effects only after a four- to five-year lag.

Finally, there might have been other benefits. A number of district leaders interviewed said that through dialogue meetings citizens became more informed about their rights and responsibilities with respect to service delivery, and citizens learned that they should demand for better services. We unfortunately have no way of verifying whether or not this is the case though it is possible.

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ANNEXES

ANNEX I: DEVIATIONS FROM THE EVALUATION DESIGN REPORT AND ANALYSIS PLAN

Methods used are discussed in the body of the report. In the original design, the research team planned to conduct an endline survey in both treatment and control areas to determine if the intervention had led to perceived or observed improvements in service provision in treatment vis-à-vis control areas. However, the research team ultimately conducted the network mapping in the 16 villages examined here. This decision was made in light of the tremendous variation we observed in the uptake of the U-Bridge program within treatment areas. We believed it would not be very meaningful to conduct an endline survey in treatment and control areas if there were many treatment areas that effectively did not use the program. Rather, we considered this an important learning opportunity where we could examine the factors at the individual, village, and network levels that were associated with the adoption and use of U-Bridge. These findings will likely be useful to future programs since low usage rates are a common problem in ICT for development and widely reported in other studies.

Prior to the submission of a draft report and the presentation of findings to evaluation stakeholders, the research team developed a formal analysis plan for the analysis of service provider monitoring data. The subsequent analysis comparing treatment and control areas showed no program impact. During a presentation of findings to stakeholders in Arua in September 2016, however, district officials were surprised by the null findings, as they perceived that the program to be very helpful. As a result, we worked with GAPP and sent additional research assistants back to the district to ensure we had collected all the available data that we could use for the analysis. Our findings remain substantively the same.

We believe we have learned much about how and when people use the U-Bridge system, and are encouraged by the fact that district leaders report finding the system very useful. It is possible that there are some improvements that were not documented anywhere, and possible that in the longer-term U-Bridge will result in significant effects on service delivery. Due to the fact that uptake was so variable, and that many treatment areas sent very few messages, it is perhaps not surprising that we do not find an overall treatment effect for the service delivery outcomes. Nevertheless, as we have discussed at length, there is much to be learned from this evaluation and reasons to believe that a program of this kind can be effective in improving communication between citizens and local governments.

ANNEX II: VILLAGE LEVEL REGRESSION RESULTS

The following tables present regression results supporting the village level analysis.

Table 2: Determinants of uptake at the village level

	Senders/adult pop			Messages/adult pop		
	(1)	(2)	(3)	(4)	(5)	(6)
GAPP activities						
Registration drive	2.357***	2.269***		10.296***	9.680***	
	(0.223)	(0.373)		(1.909)	(2.351)	
Community meeting venue	0.572	0.379	0.406	3.851	2.957	3.177
	(0.496)	(0.355)	(0.416)	(3.216)	(2.804)	(3.408)
Service points (binary)						
Primary school	0.306	0.277	0.369	1.269	1.030	1.682
	(0.336)	(0.312)	(0.437)	(2.321)	(2.149)	(3.321)
Health center	-0.622	-1.037***	-1.123*	-3.478	-5.492*	-6.171
	(0.365)	(0.441)	(0.577)	(2.417)	(2.754)	(3.672)
GIS						
Distance to district capital		0.413**	0.458*		1.876*	2.123
		(0.718)	(0.235)		(0.909)	(1.365)
Distance to health center		-0.309*	-0.165		-1.754	-1.482
		(0.162)	(0.237)		(1.068)	(1.358)
Census data						
ELF		1.055	1.109		3.343	2.921
		(0.849)	(0.815)		(4.194)	(4.449)
% Secondary education		0.806*	1.278***		3.900*	6.153***
		(0.407)	(0.300)		(2.017)	(2.045)
Adult pop (100)		-0.451**	-0.558***		-1.951**	-2.341**
		(0.195)	(0.196)		(0.943)	(0.957)
Constant	0.036	1.869**	4.411***	-0.086	7.809*	18.125***
	(0.213)	(0.818)	(0.761)	(1.123)	(3.837)	(4.108)
N	120	120	91	120	120	91
R^2	0.217	0.502	0.513	0.147	0.325	0.311
Sample	All villages	All villages	Registration villages	All villages	All villages	Registration villages

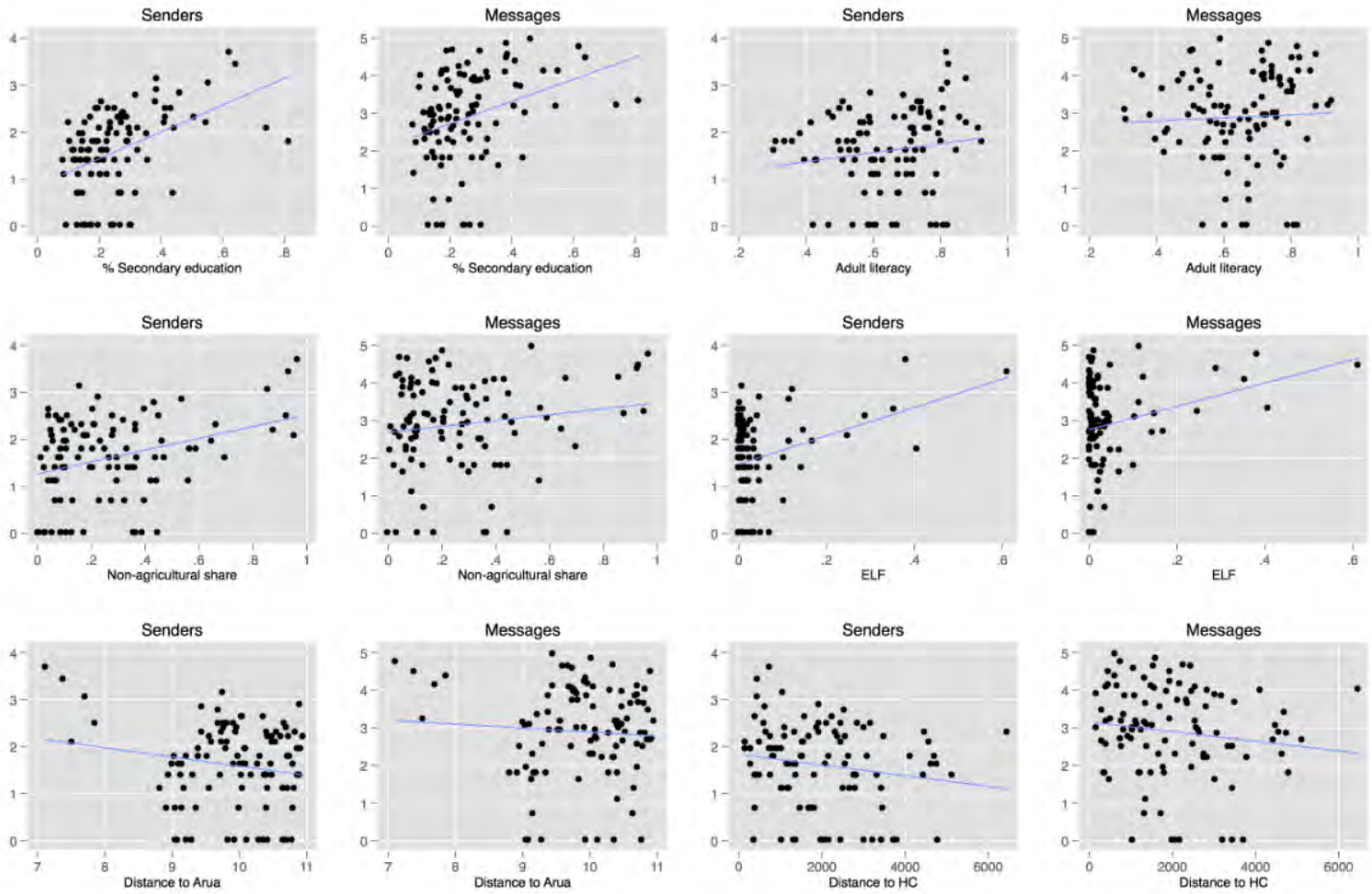
Robust standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table 3: Determinants of uptake at the village level

	N. Senders			N. Messages		
	(1)	(2)	(3)	(4)	(5)	(6)
GAPP activities						
Registration drive	6.751***	4.941***		30.257***	23.302***	
	(0.957)	(0.903)		(4.939)	(4.688)	
Community meeting venue	1.483	1.655*	1.496	9.547	9.959*	10.395
	(0.944)	(0.856)	(0.980)	(6.498)	(5.635)	(7.136)
Service points (binary)						
Primary school	0.641	0.387	0.996	3.236	1.786	3.967
	(1.099)	(0.678)	(0.872)	(5.316)	(4.283)	(6.703)
Health center	-0.721	-2.509**	-2.964**	-3.902	-10.543*	-13.104
	(1.106)	(1.009)	(1.306)	(6.214)	(6.048)	(8.064)
GIS						
Distance to district capital		0.902	1.081*		3.615	4.028
		(0.537)	(0.615)		(2.441)	(2.999)
Distance to health center		-0.673*	-0.856*		-3.662	-5.183
		(0.386)	(0.497)		(2.386)	(3.044)
Census data						
ELF		-0.192	-0.784		-6.755	-11.725
		(0.740)	(1.047)		(4.433)	(7.563)
% Secondary education		1.753***	2.405***		7.733***	11.147**
		(0.484)	(0.483)		(2.418)	(4.026)
Adult pop (100)		1.723***	1.793***		5.885***	6.271***
		(0.288)	(0.287)		(0.834)	(0.956)
Constant	-0.161	-3.832***	0.661	-2.280	-15.370**	4.417
	(0.790)	(1.163)	(1.235)	(3.743)	(5.574)	(5.315)
N	120	120	91	120	120	91
R^2	0.238	0.689	0.655	0.205	0.402	0.309
Sample	All villages	All villages	Registration villages	All villages	All villages	Registration villages

Robust standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Figure 24: Village level bivariate relationship between diverse factors and the number of senders and number of messages



ANNEX III: CONSTRUCTION OF INDICES USED TO EVALUATE CHANGE IN SERVICE DELIVERY

The following table provides a summary of the variables used to evaluate changes in service delivery:

SECTOR	TOPIC	CONCEPT	EXPLANATION	CODING	SOURCE
Health	Monitoring	DHO visits	Number of visits to the facility by DHO in the past three months.	Continuous	Audit variable
Health	Monitoring	DHO calls	Frequency of calls made by DHO to facility in the past three months, categorical variable	1 = Never 2 = about once a month 3 = about once a week 4 = several times a week 5 = every day	Audit variable
Health	Monitoring	Health inspector calls	Frequency of calls made by health inspector to facility in the past three months, categorical variable	Continuous	Audit variable
Health	Monitoring	Health inspector visits	Number of visits to the facility by health inspector in the past three months, as recorded in facility registration book	1 = Never 2 = about once a month 3 = about once a week 4 = several times a week 5 = every day	Audit variable
Health	Monitoring	Health inspection reports	Number of inspection reports completed by the district/health inspector	Continuous	Administrative data variable
Health	Monitoring	Yearly health inspection	Number of times health center was inspected according to inspector summary reports for financial year	Continuous	Administrative data variable
Health	Effort[14]	Outreach	Frequency of campaigns/events that the clinic undertook in	1 = Never 2 = about once a month	Audit variable

[14] Note that the correlation between the effort variables was low. Hence, we examine each variable separately instead of creating an index.

			previous three months, like a visit to a rural village or an immunization drive	3 = about once a week 4 = several times a week 5 = every day	
Health	Effort	Staff present	Total staff present at the time of the audit	Continuous	Audit variable
Health	Effort	Staff attendance rate	Four-day average of total employees present over total employees expected to be present	Continuous	Audit variable
Health	Effort	Register book	Whether or not health center has attendance register book	0=health clinic does not have register book 1=health clinic has register book	Administrative variable
Health	Effort	Attendance	Total number of new attendances at clinic	Continuous	Administrative variable
Health	Inputs	Days w/o anti-malarials	Number of days in the past 30 days that anti-malarial medication has been out of stock	Continuous	Audit variable
Health	Inputs	Anti-malarial stockout half-year (HMIS: Form 105 Section 5.1)	Number of days in the 7-month period before/after program initiation that anti-malarial medication has been out of stock	Continuous	Audit variable
Health	Inputs	Oral rehydration stockout month	Number of days in the past 30 days that oral rehydration salts (ORS) have been out of stock	Continuous	Audit variable
Health	Inputs	Oral rehydration stockout half-year (HMIS: Form 105 Section 5.1)	Number of days in the 7-month period before/after program initiation that oral rehydration salts (ORS) have been out of stock	Continuous	Administrative variable
Health	Inputs	Total stockout	The average number of days in a month that a preventative medication was out of stock	Continuous	Administrative variable
Health	Inputs	Funds received	The total amount of funds that a health center received over	Continuous	Administrative variable

			one financial year according to HMIS form		
Health	Utilization	Total out patient	Total outpatient attendance at the health clinic	Continuous	Administrative variable
Health	Utilization	Total outpatient referral	Total out patient referrals at health clinic	Continuous	Administrative variable
Health	Utilization	Total outpatient diagnoses	Total diagnoses for outpatients at the health clinic	Continuous	Administrative variable
Health	Utilization	Tetanus doses	Total doses of tetanus administered to women, pregnant women included. Patients are administered 1 to 5 doses	Continuous	Administrative variable
Health	Utilization	HPV doses	Total doses of HPV administered to girls. Patients are administered 1 to 3 doses	Continuous	Administrative variable
Health	Utilization	Children immunized	Total number of children from 0 to 4 years old that are immunized	Continuous	Administrative variable
Health	Utilization	IPT doses	Total number of first dose and second dose of IPT/IPT1/IPT2 administered at the antenatal clinic	Continuous	Administrative variable
Health	Utilization	Iron acid	Number of pregnant women receiving iron/folic acid on 1st antenatal clinic visit	Continuous	Administrative variable
Health	Utilization	Free ITN	Number of pregnant women receiving free ITNs at the antenatal clinic	Continuous	Administrative variable
Health	Utilization	Syphilis test	Number of pregnant women tested for syphilis at the antenatal clinic	Continuous	Administrative variable
Health	Utilization	Maternity admission	Number of admissions to maternity unit	Continuous	Administrative variable

Health	Utilization	Maternity delivery	Number of deliveries performed in the maternity unit	Continuous	Administrative variable
Health	Utilization	Vitamin A (mothers)	Number of mothers given Vitamin A supplement	Continuous	Administrative variable
Health	Utilization	Post-natal	Total number of post-natal attendances	Continuous	Administrative variable
Health	Utilization	Vitamin A (children)	Total doses of 1st and 2nd doses of Vitamin A given to children	Continuous	Administrative variable
Health	Utilization	Deworming doses	Total doses of 1st and 2nd doses of deworming administered to children aged 1 to 14 years old	Continuous	Administrative variable
Schools	Monitoring	DEO visits	Number of visits to the school by DEO in the past three months, as recorded in facility registration book	Continuous	Audit variable
Schools	Monitoring	DEO calls	Frequency of calls made by DEO to school in the past three months	1 = Never 2 = about once a month 3 = about once a week 4 = several times a week, 5 = every day	Audit variable
Schools	Monitoring	School inspector visits	Number of visits to the school by school inspector in the past three months, as recorded in facility registration book	Continuous	Audit variable
Schools	Monitoring	School inspector calls	Frequency of calls made by school inspector to the school in the past three months, categorical variables	1 = Never 2 = about once a month 3 = about once a week 4 = several times a week 5 = every day	Audit variable
Schools	Effort	Teacher absenteeism	Number of teachers absent over total	Continuous	Audit variable

			number of teachers expected present		
Schools	Effort	Teacher present (day)	Fraction of teachers from classes observed present during audit, as measured by enumerator	Continuous	Audit variable
Schools	Effort	Meaningful board	Extent to which something meaningful is written on the board in observed classrooms (average over classrooms), as measured by enumerator	0 = nothing meaningful written, 1 = something meaningful written	Audit variable
Schools	Effort	Teacher engaged	Average across observed classrooms of teacher engagement, as measured by enumerator	0 = absent 1 = present and disengaged 2 = present and engaged	Audit variable
Schools	Effort	Staff meetings	Number of staff meetings in past three months	1 = None 2 = between 1 and 3 3 = more than 3	Audit variable
Schools	Effort	Fire requests	Number of firing requests submitted by school	0 -1 -2	Audit variable
Schools	Inputs	Number of teachers	Number of teachers in the school, according to school records	Continuous	Audit variable
Schools	Inputs	Number of teachers (Yearly Workplan 6: Education) Teacher employed	Number of teachers in the school, according to the 2014/2015 and 2015/2016 workplansteachers employed in the school, according to workplans	Continuous	Administrative variable
Schools	Inputs	Students per uniform	Ratio of students to books, observed by enumerator	Continuous	Audit variable
Schools	Inputs	Students per book	Ratio of students to books, observed by enumerator	Continuous	Audit variable
Schools	Inputs	Students per pencil	Ratio of students to pencils, observed by enumerator	Continuous	Audit variable

Schools	Inputs	Enrollment	Total student enrollment in the school	Continuous	Administrative variable
Schools	Outcome	PLE grade 3	Number of students completing primary school who scored a divisional grade of 3 in the primary leaving examination (grade 1 is the highest score)	Continuous	Administrative variable
Schools	Outcome	PLE grade 4	Number of students completing primary school who scored a divisional grade of 4 in the primary leaving examination	Continuous	Administrative variable
Schools	Outcome	PLE grade U	Number of students completing primary school who failed the primary leaving examination (Division U=Ungraded)	Continuous	Administrative variable
Schools	Outcome	PLE grade X	Number of students completing primary school who were absent from the primary leaving examination (Division X=absent)	Continuous	Administrative variable
Water	Parts and Services	Parts and services 1	Sum of water related parts distributed and services completed for 2013 to 2014	Continuous	Administrative variable
Water	Parts and Services	Parts and services 2	Sum of water related parts distributed and services completed for 2014 to 2016	Continuous	Administrative variable
Water	Village Requests	Village requests	Sum of water related requests in villages	Continuous	Administrative variables
Water	Village Requests	LC1 requests	Sum of water related requests in villages	Continuous	Administrative variables

ANNEX IV: SERVICE DELIVERY OUTCOMES

The following tables estimate the effect of the program on the variables that make up each family of outcomes across education, health, and water services. The tables examine both short-term (one year) and long-term (two year) effects with and without covariates adjustment.

Table 4: Education outcomes analysis (no covariates)

	Short-term				Long-term			
Variable	Coef	SE	P-val	CI	Coef	SE	P-val	CI
Monitoring weighted index	0.170	(0.222)	0.442	[-0.264 , 0.605]	-0.002	(0.230)	0.994	[-0.453 , 0.449]
DEO calls	0.307	(0.202)	0.128	[-0.089 , 0.702]	0.025	(0.222)	0.911	[-0.411 , 0.460]
Inspector calls	0.432	(0.227)	0.057	[-0.013 , 0.876]	-0.177	(0.211)	0.401	[-0.590 , 0.236]
DEO visits	0.048	(0.217)	0.826	[-0.378 , 0.473]	0.257	(0.239)	0.281	[-0.210 , 0.725]
Inspector visits	-0.218	(0.216)	0.313	[-0.641 , 0.205]	0.034	(0.215)	0.874	[-0.386 , 0.455]
Effort weighted index	0.240	(0.181)	0.186	[-0.116 , 0.596]	0.106	(0.237)	0.656	[-0.360 , 0.571]
% Teachers present (records)	-0.186	(0.192)	0.333	[-0.563 , 0.191]	0.048	(0.225)	0.830	[-0.392 , 0.489]
% Teachers present (observed)	0.317	(0.202)	0.116	[-0.079 , 0.713]	0.317	(0.222)	0.153	[-0.118 , 0.752]
Meaningful board	0.201	(0.178)	0.258	[-0.147 , 0.550]	-0.034	(0.245)	0.889	[-0.515 , 0.446]
Teacher engaged	0.423	(0.215)	0.049	[0.001 , 0.845]	0.310	(0.227)	0.172	[-0.135 , 0.756]
Staff meetings					0.024	(0.209)	0.910	[-0.386 , 0.434]
Input weighted index	0.372	(0.223)	0.096	[-0.066 , 0.810]	0.244	(0.194)	0.209	[-0.137 , 0.624]
N. teachers employed	0.250	(0.129)	0.052	[-0.002 , 0.502]	0.142	(0.171)	0.408	[-0.194 , 0.478]
Teachers transferred to school	0.394	(0.288)	0.171	[-0.170 , 0.958]	0.223	(0.214)	0.297	[-0.196 , 0.641]
Students per uniform	0.031	(0.243)	0.898	[-0.445 , 0.508]	-0.214	(0.211)	0.310	[-0.626 , 0.199]
Students per book	0.276	(0.185)	0.135	[-0.086 , 0.638]	0.124	(0.231)	0.593	[-0.330 , 0.577]
Students per pencil	0.099	(0.254)	0.696	[-0.398 , 0.596]	0.226	(0.203)	0.266	[-0.172 , 0.623]
Performance weighted index	-0.180	(0.184)	0.329	[-0.541 , 0.181]				
Enrollment	0.018	(0.116)	0.878	[-0.209 , 0.244]				
% PLE Grade 1	0.052	(0.370)	0.889	[-0.673 , 0.776]				
% PLE Grade 2	-0.304	(0.134)	0.023	[-0.567 , -0.042]				
PLE pass rate	-0.106	(0.165)	0.520	[-0.429 , 0.217]				

In columns 2-5 we report short-term effects (1 year), and in columns 6-9, long-term effects (year 2). Indices are constructed using the approach developed by Anderson (2008). Standard errors are corrected by combining estimation results using Seemingly Unrelated Regression estimation; p-values are two-sided.

Table 5: Education outcomes analysis (with covariates adjustments)

	Short-term				Long-term			
Variable	Coef	SE	P-val	CI	Coef	SE	P-val	CI
Monitoring weighted index	0.276	(0.208)	0.185	[-0.132 , 0.684]	0.124	(0.289)	0.666	[-0.441 , 0.690]
DEO calls	0.240	(0.222)	0.279	[-0.194 , 0.675]	-0.010	(0.221)	0.963	[-0.444 , 0.424]
Inspector calls	0.402	(0.245)	0.101	[-0.078 , 0.882]	-0.189	(0.213)	0.375	[-0.607 , 0.229]
DEO visits	0.097	(0.188)	0.606	[-0.272 , 0.465]	0.241	(0.290)	0.405	[-0.327 , 0.809]
Inspector visits	-0.152	(0.190)	0.425	[-0.525 , 0.221]	-0.064	(0.244)	0.792	[-0.543 , 0.415]
Effort weighted index	0.268	(0.195)	0.170	[-0.115 , 0.651]	-0.080	(0.224)	0.720	[-0.520 , 0.359]
% Teachers present (records)	-0.330	(0.180)	0.066	[-0.683 , 0.022]	0.021	(0.193)	0.915	[-0.357 , 0.398]
% Teachers present (observed)	0.202	(0.212)	0.340	[-0.213 , 0.617]	0.241	(0.218)	0.267	[-0.185 , 0.668]
Meaningful board	0.324	(0.195)	0.097	[-0.059 , 0.708]	-0.199	(0.256)	0.437	[-0.700 , 0.303]
Teacher engaged	0.340	(0.214)	0.111	[-0.078 , 0.759]	0.202	(0.215)	0.348	[-0.219 , 0.622]
Staff meetings					-0.145	(0.178)	0.415	[-0.495 , 0.204]
Input weighted index	0.352	(0.172)	0.040	[0.015 , 0.689]	0.116	(0.205)	0.570	[-0.285 , 0.518]
N. teachers employed	0.269	(0.116)	0.021	[0.041 , 0.497]	0.120	(0.173)	0.487	[-0.219 , 0.459]
Teachers transferred to school	0.422	(0.266)	0.112	[-0.099 , 0.942]	0.102	(0.205)	0.617	[-0.299 , 0.504]
Students per uniform	0.116	(0.241)	0.629	[-0.355 , 0.588]	-0.163	(0.182)	0.372	[-0.520 , 0.194]
Students per book	0.215	(0.205)	0.295	[-0.187 , 0.617]	0.029	(0.230)	0.900	[-0.422 , 0.480]
Students per pencil	0.002	(0.234)	0.994	[-0.456 , 0.460]	0.010	(0.191)	0.959	[-0.364 , 0.384]
Performance weighted index	-0.174	(0.160)	0.277	[-0.487 , 0.139]				
Enrollment	0.034	(0.109)	0.755	[-0.180 , 0.248]				
% PLE Grade 1	-0.111	(0.238)	0.641	[-0.577 , 0.355]				
% PLE Grade 2	-0.210	(0.157)	0.182	[-0.517 , 0.098]				
PLE pass rate	-0.086	(0.170)	0.614	[-0.420 , 0.248]				

In columns 2-5 we report short-term effects (1 year), and in columns 6-9, long-term effects (year 2). Indices are constructed using the approach developed by Anderson (2008). Standard errors are corrected by combining estimation results using Seemingly Unrelated Regression estimation; p-values are two-sided.

Table 6: Health outcomes analysis (no covariates)

	Short-term				Long-term			
Variable	Coef	SE	P-val	CI	Coef	SE	P-val	CI
Monitoring index	-0.140	(0.127)	0.272	[-0.389 , 0.110]	-0.175	(0.122)	0.149	[-0.414 , 0.063]
DHO visits	-0.122	(0.262)	0.641	[-0.635 , 0.391]	-0.128	(0.256)	0.617	[-0.629 , 0.373]
DHO calls	-0.361	(0.257)	0.161	[-0.865 , 0.144]	-0.227	(0.125)	0.071	[-0.472 , 0.019]
Inspector calls	-0.257	(0.254)	0.312	[-0.756 , 0.242]	-0.124	(0.276)	0.652	[-0.665 , 0.416]
Inspector visits	-0.057	(0.279)	0.839	[-0.603 , 0.490]	-0.146	(0.277)	0.599	[-0.688 , 0.397]
Inspection reports	-0.019	(0.055)	0.731	[-0.127 , 0.089]	-0.033	(0.095)	0.731	[-0.218 , 0.153]
Effort index	-0.184	(0.167)	0.270	[-0.510 , 0.143]	-0.060	(0.138)	0.667	[-0.331 , 0.212]
% Staff Present	0.063	(0.280)	0.822	[-0.486 , 0.613]	0.298	(0.282)	0.290	[-0.255 , 0.852]
% unauthorized absent	-0.014	(0.276)	0.960	[-0.555 , 0.527]	0.185	(0.243)	0.447	[-0.292 , 0.662]
Register book	-0.301	(0.283)	0.287	[-0.856 , 0.254]	-0.301	(0.283)	0.287	[-0.856 , 0.254]
N. Outreach events	-0.527	(0.282)	0.062	[-1.079 , 0.026]	-0.379	(0.304)	0.212	[-0.974 , 0.216]
Input index	0.064	(0.148)	0.668	[-0.227 , 0.354]	0.055	(0.135)	0.686	[-0.210 , 0.319]
Days w/o antimalarials	0.335	(0.247)	0.174	[-0.148 , 0.819]	0.962	(0.227)	0.000	[0.518 , 1.407]
Days w/o ORS	0.151	(0.275)	0.583	[-0.388 , 0.691]	0.219	(0.246)	0.374	[-0.264 , 0.701]
Funds received (millions)	0.005	(0.370)	0.989	[-0.720 , 0.731]	0.093	(0.375)	0.804	[-0.641 , 0.828]
Antimalaria SO					0.056	(0.280)	0.841	[-0.493 , 0.605]
ORS SO					-0.174	(0.268)	0.516	[-0.699 , 0.351]
Total SO					-0.203	(0.241)	0.398	[-0.675 , 0.268]
Utilization index	0.005	(0.127)	0.967	[-0.243 , 0.253]	0.015	(0.093)	0.875	[-0.168 , 0.198]
Out patients	0.256	(0.205)	0.212	[-0.146 , 0.658]	-0.253	(0.306)	0.410	[-0.853 , 0.348]
N. patients visiting clinic	-0.125	(0.094)	0.183	[-0.309 , 0.059]	0.070	(0.142)	0.619	[-0.207 , 0.348]
OP referrals	-0.106	(0.176)	0.545	[-0.450 , 0.238]	-0.005	(0.302)	0.988	[-0.596 , 0.586]
OP diagnoses	0.040	(0.104)	0.702	[-0.164 , 0.244]	0.189	(0.164)	0.247	[-0.131 , 0.510]
Tetanus doses	0.159	(0.184)	0.388	[-0.202 , 0.520]	-0.073	(0.195)	0.706	[-0.455 , 0.308]
Children immunized	0.411	(0.329)	0.212	[-0.235 , 1.056]	-0.119	(0.212)	0.573	[-0.534 , 0.295]
IPT doses	0.122	(0.225)	0.588	[-0.319 , 0.563]	-0.047	(0.163)	0.771	[-0.367 , 0.272]
Iron acid	-0.013	(0.280)	0.962	[-0.562 , 0.535]	-0.130	(0.217)	0.548	[-0.556 , 0.295]
Free ITN	-0.001	(0.247)	0.998	[-0.485 , 0.484]	-0.370	(0.237)	0.119	[-0.834 , 0.095]
Syphilis test	-0.268	(0.214)	0.210	[-0.687 , 0.151]	-0.162	(0.295)	0.583	[-0.741 , 0.417]
Maternity admission	-0.180	(0.194)	0.353	[-0.560 , 0.200]	-0.144	(0.139)	0.299	[-0.417 , 0.128]
Maternity delivery	-0.248	(0.174)	0.155	[-0.590 , 0.093]	0.175	(0.332)	0.597	[-0.475 , 0.825]
Vitamin A (mothers)	-0.398	(0.165)	0.016	[-0.722 , -0.074]	-0.216	(0.189)	0.253	[-0.585 , 0.154]
Post natal	-0.127	(0.132)	0.337	[-0.385 , 0.132]	0.087	(0.246)	0.724	[-0.395 , 0.569]
Vitamin A (children)	0.036	(0.306)	0.907	[-0.564 , 0.636]	0.235	(0.303)	0.438	[-0.358 , 0.829]
Deworming doses	0.090	(0.378)	0.812	[-0.651 , 0.830]	-0.215	(0.175)	0.218	[-0.557 , 0.127]

In columns 2-5 we report short-term effects (1 year), and in columns 6-9, long-term effects (year 2). Indices are constructed using the approach developed by Kling et al., (2007). Standard errors are corrected by combining estimation results using Seemingly Unrelated Regression (SUR) estimation.

Table 7: Heath outcomes analysis (with covariates adjustment)

	Short-term				Long-term			
Variable	Coef	SE	P-val	CI	Coef	SE	P-val	CI
Monitoring index	-0.220	(0.158)	0.163	[-0.529 , 0.089]	-0.231	(0.192)	0.228	[-0.606 , 0.145]
DHO visits	-0.104	(0.350)	0.767	[-0.791 , 0.583]	-0.142	(0.313)	0.649	[-0.755 , 0.471]
DHO calls	-0.495	(0.353)	0.161	[-1.187 , 0.196]	-0.407	(0.184)	0.027	[-0.768 , -0.046]
Inspector calls	-0.566	(0.314)	0.071	[-1.182 , 0.049]	-0.327	(0.423)	0.438	[-1.156 , 0.501]
Inspector visits	-0.454	(0.362)	0.209	[-1.164 , 0.255]	-0.337	(0.366)	0.357	[-1.054 , 0.381]
Inspection reports	0.010	(0.053)	0.846	[-0.094 , 0.114]	0.018	(0.092)	0.846	[-0.162 , 0.197]
Effort index	-0.274	(0.262)	0.296	[-0.788 , 0.240]	-0.059	(0.131)	0.654	[-0.315 , 0.197]
% Staff Present	0.063	(0.391)	0.872	[-0.703 , 0.830]	0.294	(0.272)	0.280	[-0.239 , 0.827]
% unauthorized absent	0.047	(0.504)	0.926	[-0.942 , 1.035]	0.202	(0.248)	0.415	[-0.283 , 0.688]
Register book	-0.363	(0.351)	0.302	[-1.052 , 0.326]	-0.192	(0.254)	0.450	[-0.689 , 0.306]
N. Outreach events	-0.892	(0.353)	0.012	[-1.585 , -0.200]	-0.552	(0.346)	0.111	[-1.231 , 0.126]
Input index	-0.059	(0.143)	0.681	[-0.339 , 0.221]	-0.029	(0.157)	0.855	[-0.336 , 0.279]
Days w/o antimalarials	-0.011	(0.235)	0.963	[-0.472 , 0.450]	0.770	(0.258)	0.003	[0.265 , 1.275]
Days w/o ORS	-0.082	(0.363)	0.821	[-0.794 , 0.630]	0.247	(0.246)	0.317	[-0.236 , 0.730]
Funds received (millions)	-0.223	(0.389)	0.566	[-0.987 , 0.540]	-0.131	(0.514)	0.799	[-1.138 , 0.876]
Antimalaria SO					-0.244	(0.377)	0.518	[-0.983 , 0.495]
ORS SO					-0.241	(0.246)	0.327	[-0.723 , 0.241]
Total SO					-0.507	(0.264)	0.055	[-1.025 , 0.011]
Utilization index	0.123	(0.129)	0.343	[-0.131 , 0.376]	-0.022	(0.096)	0.815	[-0.210 , 0.165]
Out patients	0.490	(0.212)	0.021	[0.075 , 0.906]	-0.024	(0.298)	0.936	[-0.608 , 0.560]
N. patients visiting clinic	-0.235	(0.108)	0.029	[-0.446 , -0.024]	0.061	(0.155)	0.693	[-0.242 , 0.364]
OP referrals	-0.091	(0.148)	0.541	[-0.382 , 0.200]	0.018	(0.307)	0.953	[-0.583 , 0.619]
OP diagnoses	-0.013	(0.115)	0.908	[-0.238 , 0.212]	0.161	(0.182)	0.376	[-0.195 , 0.517]
Tetanus doses	0.173	(0.220)	0.431	[-0.258 , 0.605]	-0.208	(0.201)	0.299	[-0.601 , 0.185]
Children immunized	0.337	(0.418)	0.420	[-0.483 , 1.156]	0.019	(0.211)	0.927	[-0.394 , 0.433]
IPT doses	0.410	(0.244)	0.092	[-0.067 , 0.888]	-0.084	(0.139)	0.544	[-0.356 , 0.188]
Iron acid	0.380	(0.304)	0.212	[-0.216 , 0.976]	0.038	(0.205)	0.853	[-0.365 , 0.441]
Free ITN	0.243	(0.301)	0.419	[-0.346 , 0.832]	-0.116	(0.265)	0.663	[-0.635 , 0.404]
Syphilis test	0.029	(0.187)	0.878	[-0.338 , 0.395]	-0.143	(0.350)	0.682	[-0.830 , 0.543]
Maternity admission	0.079	(0.202)	0.695	[-0.317 , 0.476]	-0.334	(0.131)	0.011	[-0.591 , -0.078]
Maternity delivery	0.001	(0.176)	0.996	[-0.344 , 0.346]	0.035	(0.345)	0.919	[-0.642 , 0.712]
Vitamin A (mothers)	-0.183	(0.139)	0.187	[-0.456 , 0.089]	-0.506	(0.158)	0.001	[-0.815 , -0.196]
Post natal	0.176	(0.130)	0.178	[-0.080 , 0.431]	0.180	(0.232)	0.437	[-0.274 , 0.634]
Vitamin A (children)	-0.212	(0.337)	0.529	[-0.872 , 0.448]	0.104	(0.386)	0.788	[-0.652 , 0.860]
Deworming doses	-0.110	(0.277)	0.692	[-0.653 , 0.433]	-0.430	(0.260)	0.098	[-0.940 , 0.080]

In columns 2-5 we report short-term effects (1 year), and in columns 6-9, long-term effects (year 2). Indices are constructed using the approach developed by Kling et al., (2007). Standard errors are corrected by combining estimation results using Seemingly Unrelated Regression (SUR) estimation.

Table 8: Water outcome analysis

	Parts and services		Village requests	
	(1)	(2)	(3)	(4)
Treatment	0.386	0.427	0.079	0.122
	(0.318)	(0.330)	(0.107)	(0.120)
Constant	0.000	-0.043	-0.000	-0.047
	(0.083)	(0.118)	(0.080)	(0.078)
Controls	no	yes	no	yes
Period	post	post	post	post
R2	0.17	0.19	0.03	0.07
N	243	243	243	243

Notes: DV: Water services.
p<0.10, ** p<0.05, *** p<0.01

ANNEX V: DATA COLLECTION INSTRUMENTS

INTRODUCTION					
Rationale	**Number**	**Question**	**Responses**	**Question Lugbara**	**Responses Lugbara**
Date and time	qa1	Start time / End time / Date			
	qa2	Enumerator ID:	Pull down menu (Enumerator Names)		
Location	qa4	Enumerator: What is the name of the village in which you are conducting the survey?	Pull down menu (Village Names)		
	qa5	[Enumerator: is the survey being conducted in English or Lugbara?]	1. English, 2. Lugbara		
Consent	Your village has been randomly selected to participate in a study and we are asking to interview all adults in your village, including you. In total, we will be in 14 villages across Arua and speaking to approximately 3,000 people. The study may help the investigators better understand how people in villages in Arua communicate and share information with one another. If you agree to participate in the study, you will be asked to provide answers to some questions about yourself and who you interact with in your village. We will also ask you to participate in a short interactive exercise. Three American researchers lead the study: Jonathan Rodden and Melina Platas Izama of Stanford University and Guy Grossman from the University of Pennsylvania. The results of this survey will be used for academic purposes only Participation in this study will involve about 40 minutes of your time. Confidentiality of your responses will be strictly maintained. Your name and identity will not be shared with anyone except for the research team. This research may help the investigators better understand how people in Uganda communicate with each other. There are no known risks associated with your participation in this research. Your participation in this survey is entirely voluntary—you do not have to participate if you do not want to. You can also decline to answer any question at any time.				

	qa10	Would you like to participate in the survey?	1. No--> [Enumerator: Thank respondent for their time]		
			2. Yes		
Contact	If you later decide you would like to contact the researchers, you can do so by contacting the Field Manager for the study and she will convey your message to the researchers in the United States. His name is Alex Tusiime and his phone number is 0772 565 103. Thank you for taking the time to talk to us today. Again, all of your answers will be kept strictly confidential.				
Identifiers	resid	[Enumerator: Please locate the ID of the respondent]	Prompts a process to confirm identify of respondent		
	Please list the names of all adults (age 18 or above) who reside in this household and their relation to you.				
	qa13a1	Name_____	1. Spouse or partner		
	qa13a2	Relation to respondent: _____	2. Father or mother		
	qa13b1	Name_____	3. Sibling		
	qa13b2	Relation to respondent: _____	4. More distant family		
	qa13c1	Name_____	5. Friend		
	qa13c2	Relation to respondent: _____			
	qa14a	How many girls below the age of 18 live in this household?			
	qa14b	How many boys below the age of 18 live in this household?			
SOCIO-DEMOGRAPHIC					
Rationale	**Number**	**Question**	**Responses**	**Question Lugbara**	**Responses Lugbara**
Migration	qb2	Were you born in this village?	0. No		
			1. Yes --> *skip to qb4*		
	qb3	How old were you when you first moved to this village?	[------] years old		

Status in HH	qb4	What is your marital status?	1. Single		
			2. Married or co-habiting with present spouse		
			3. Married -- spouse not living in household		
			4. Married (polygamous, living with at least one spouse)		
			5. Married (polygamous, not living with any spouse)		
			4. Divorced or widower		
Income level	qb5	In comparison to other typical households in this village, how would you describe your household's economic situation?	1. Much worse		
			2. Somewhat worse		
			3. About the same		
			4. Somewhat better		
			5. Much better		
Education	qb6	What was the last year of school you attended?	Dropdown menu None, P1….S6…University/postgrad		
Literacy	qb7	Can you write in any language?	1. No		
			2. Yes, with difficulty		
			3. Yes		
Own phone	qb8	Do you or anyone else in your household own a working mobile phone?	1. No		
			2. Yes [Respondent owns phone]		
			3. Yes [Another member of the HH owns a phone]		
Mobile voice Usage	qb9	In the past one month, how often did you personally use a mobile phone (yours or someone else's) to make or receive a voice call?	1. Never		
			2. Daily or almost daily		
			3. A few times a week		
			4. A few times a month		
Mobiler SMS Usage	qb10	In the past one month, how often did you personally use a mobile phone (yours or someone else's) to send an SMS (text message)?	1. Never		
			2. Daily or almost daily		
			3. A few times a week		
			4. A few times a month		

CONNECTIONS					
Rationale	**Number**	**Question**	**Responses**	**Question Lugbara**	**Responses Lugbara**
PROMPT: In each of the following questions, we will ask you to identify the people in your community who you think apply. List ALL names listed by the household in each case. [Enumerator: If the respondent names someone who does not appear in the list, please ask him or her if the person uses an alternative name. If the name still does not appear, please write the name under "other"]					
Immediate Family HH	qc1	[Question C1]: Think about up to five family members in this village not living in your household with whom you most frequently spend time. For instance, you might visit one another, eat meals together, or attend events together. How many family members meeting this criteria would you like to name?			

Best friends	qc2	[Question C2]: Think about up to five of your best friends in this village. By friends I mean someone who will help you when you have a problem or who spends much of his or her free time with you. If there are less than five, that is okay too. How many best friends would you like to name?			
Borrow money	qc3	[Question C3]: Think about up to five people in this village that you would ask to borrow a significant amount of money if you had a personal emergency. You can name less than five people, too. How many people would you like to name?			
Make a Call	qc4	[Question C4]: Imagine there is a problem with public services in this village. For example, you			

		might imagine that a teacher has not come to school for several days or that a borehole in your village needs to be repaired. Think about up to five people in this village whom you would be most likely to approach to help solve these kinds of problems. You can name less than five people, too. How many people would you like to name?			
Community Leader	qc5	[Question C5]: When it comes to solving issues in the village and getting things done, who would you consider the most effective leader of this community? Please note that this person does not need to have a formal leadership position.			
Religious Leader	qc6	[Question C6]: When it comes to religious matters, who do you consider your spiritual leader in this village?			
Ethnicity	qc7	What is your ethnic community or tribe?			

Religious community	qc8	Please name the church / mosque that you attend most regularly, if any			
Clan	qc9	Could you tell me which clan, if any, you belong to?			
U-BRIDGE					
Rationale	**Number**	**Question**	**Responses**	**Question Lugbara**	**Responses Lugbara**
Prior knowledge of U-Bridge	qd1	U-Bridge is a mobile-phone based service that is available for people in Arua. It allows people to send anonymous SMS messages to Arua district government officials about public service problems. U-Bridge also allows you to respond to questions from the government. Have you heard of U-Bridge?	1. No (Skip to "Politics")		
			2. Yes		
Prior knowledge of U-Bridge	qd2	From what you've heard about U-Bridge, who do you think operates the service? (Select all that apply)	1. Local NGO		
			2. International NGO		
			3. District government		
			4. Other [Please Specify]		
Prior knowledge of U-Bridge	qd3	Do you happen to know the short code to send a message via U-Bridge on a mobile phone? [*correct answer is 8500*]	1. No [or respondent gives incorrect answer]		
			2. No, I have forgotten [respondent knew previously]		
			2. Yes [Respondent gives correct answer of 8500]		
Several community meetings have been held as part of the U-Bridge program. There were two types of meetings held. In the first, representatives from an organization called GAPP came to tell people about U-Bridge. In the second, district officials came to talk about U-Bridge with communities.					
	qd4a		1. No, I did not know about the meetings		

U-Bridge: Meeting Attendance		Did you ever attend a community meeting about U-Bridge with either GAPP or district officials?	2. No, I knew about the meetings but could not attend		
			3. Yes, I attended at least one meeting with GAPP		
			4. Yes, I attended at least one meeting with district officials		
			5. Yes, I attended both types of meetings		
U-Bridge: Source(s) of Knowledge	qd4b	Please name all the sources through which you came to hear about the U-Bridge service [select all that apply]?	a. Regular village meeting(not GAPP or district government)		
			b. Community meeting (organised by GAPP)		
			c. Community meeting (organised by Arua District Government)		
			d. Community leader (e.g., LC1)		
			e. Neighbour(s)		
			f. Family member(s)		
			g. Friend(s)		
			h. Media (radio show/newspaper article)		
			i. Other [Please Specify]		
	qd4c	Have you ever spoken about U-Bridge with someone in your village or community?	1. No		
			2. Yes		
	qd4d	[If qd4c = yes] With whom did you speak about U-Bridge?	[Drop down list of names in village]		
Now, I'd like to ask you about how, if at all, you have used U-Bridge to send text messages to the Arua District Government about problems you've faced with public services like health, education or access to water in your community.					
	qd5	Thinking of the past 12 months, approximately how many text messages did you personally send to the Arua District Government through U-Bridge?	integer [0 and up]		

	qd6	Thinking of the past 12 months, approximately how many times did you go to someone in the village and ask him or her to send a text message to the Arua District Government on your behalf?	integer [0 and up]		
	qd7	Thinking of the past 12 months, approximately how many times did anyone in the village ask you to send a text-message to the Arua District Government on their behalf?	integer [0 and up]		
	qd8	Thinking of the past 12 months, approximately how many times have you contacted the Arua District Government through a means other than U-Bridge? [For example, visiting in person, writing a letter, making a phone call, etc.]	integer [0 and up]		
FOR THOSE WHO HAD ANSWERED "0" TO Q5 and Q6:					
	qd9	What are the main reasons you chose not to contact the Arua District Government using a text message and U-Bridge? [Enumerator: do not read answers aloud, but select all that apply]	a. I did not know sending an SMS through U-Bridge was possible		
			b. I did not know how to send an SMS		
			c. I don't easily have access to a phone		
			d. I did not believe it was worth my time and/or I did not believe anything would change as a result		
			e. I have other ways of contacting the Arua District Government		

FOR THOSE WHO DID SEND A MESSAGE TO THE GOVERNMENT: You said earlier that you used U-Bridge to send *[total from qd5]* text messages yourself to the Arua District Government and *[total from qd6]* from someone else's phone on your behalf. I'd like to ask you about each of those messages. If you don't remember much about them, that's okay too.					
	qd10	You said earlier that you used U-Bridge to communicate with the Arua District Government. What issues in your community did you raise in your messages? Enumerator: [Select all that apply.]	1. Education		
			2. Infrastructure, like roads and bridges		
			3. Security, like the police and military		
			4. Healthcare		
			5. Agricultural development		
			6. Energy supply		
			7. Access to clean water		
			8. Direct assistance to the poor (food, cash)		
			9. Other [Please Specify]		
			999 I don't know/ I don't remember		
			888 Refused to answer		
	qd10a	Ater sending your SMS through U-Bridge, how often did you hear back from the District Government? [Enumerator: read options aloud]	1. I never heard back 2. I mostly didn't hear back 3. I mostly heard back 4. I always heard back		
	qd10b	How much improvement did you see on the issues you raised in your messages? [Enumerator: read options aloud]	1. I saw no improvement 2. I saw some improvement 3. I saw much improvement		
	qd10b	How satisfied are you with how the Arua District Government responded to your messages?	1. Very unsatisfied		
			2. Unsatisfied		
			3. Neither satisfied nor unsatisfied		
			4. Satisfied		

		[Enumerator: Read option choices aloud]	5. Very satisfied		
POLITICS					
Rationale	**Number**	**Question**	**Responses**	**Question Lugbara**	**Responses Lugbara**
Now, I have a few questions for you about the quality of public services in your community and your opinion of the Arua District Government. Again, all answers are confidential and will not be shared outside the research team.					
Quality of services	qe1	How would you rate the overall quality of the [...] that services members of your community? Would you say that it is/they are [...]?	1. Very bad		
			2. Somewhat bad		
			3. Just ok		
			4. Somewhat good		
			5. Very good		
	qe1a	UPE schools			
	qe1b	Government health clinic			
	qe1c	Access to clean water			
	qe1d	Feeder roads			
District responsiveness	qe2	People have both positive and negative opinions about how responsive the Arua District Government is to providing public services. In your opinion, how responsive would you say the Arua district government is regarding service delivery? [Enumerator: read option choices]	1. Very responsive		
			2. Somewhat responsive		
			3. Neither responsive nor unresponsive		
			4. Somewhat unresponsive		
			5. Very unresponsive		
District Responsiveness to Change	qe3	Thinking about the last 12 months, do you think the responsiveness of the Arua	1. Much worse		
			2. Worse		
			3. About the same		

		District Government to public service problems has become ...? [Enumerator: read option choices]	4. Better		
			5. Much better		
District Capacity	qe4	Some people think the Arua district government has the capacity to improve public services, others think they cannot improve services. In your opinion, how capable would you say the Arua district government is to improve service delivery? [Enumerator: read option choices]	1. Very capable		
			2. Somewhat capable		
			3. Neither capable nor incapable		
			4. Somewhat incapable		
			5. Very incapable		
District Capacity to Change	qe5	Thinking about the past 12 months, do you think the capacity of the Arua District Government has become ... ? [Enumerator: please probe answer]	1. Much worse		
			2. Worse		
			3. About the same		
			4. Better		
			5. Much better		
Political Efficacy	qe6	Some people think that citizens can positively influence the behaviour of the district government to provide better services, other think citizens cannot. What do you think?	1. Citizens cannot influence the district government to improve services		
			2. Citizens can influence the district government to improve services, but only a little		
			3. Citizens can somewhat influence the district government to improve services		
			4. Citizens can strongly influence the district government to improve services		

		[Enumerator: read option choices]			
Policy Priorities	qe7	If the Arua district government could increase its spending, which of the following areas do you think should be the top priority for additional investment? [Enumerator: read option choices aloud]	1. Education		
			2. Infrastructure, like roads and bridges		
			3. Security, like the police and military		
			4. Healthcare		
			5. Agricultural development		
			6. Energy supply		
			8. Access to clean water		
			9. Direct assistance to the poor (food, cash)		
			10. None of the above [Do not read]		
GAME					
Rationale	**Number**	**Question**	**Responses**	**Question Lugbara**	**Responses Lugbara**
Contribution Game	Protocol for Contribution Game				
	qf1	[Enumerator: how much did the participant allocate to the community?]			
	qf2	[Enumerator: how much did the participant allocate to their personal pocket?]			
I am now going to ask some questions about the exercise you just participated in. These answers will not affect the decisions you have already made.					
Post-Contribution Game	qf3	Thinking about the other people in your village, how much do you think most people will contribute to the community? Remember, we will be doing this activity with every adult in your village.	[Write in]		
	qf4	Thinking about all the money given towards the village pot from everyone in your village, what do	[Write in]		

		you think will be bought with this money?			
	qf5	Thinking about the person you elected to receive the money on behalf of the village, how likely do you think it is that this person will also be named by most other people in your village? [Read Aloud]	1. Very unlikely 2. Somewhat unlikely 3. Neither unlikely nor likely 4. Somewhat likely 5. Very likely		
Next, I have one more activity for you to participate in.					
Dictator Game	Protocol for Dictator Game [Show images of strangers in Arua]				
	qf6	[Enumerator: how much did the participant allocate to the stranger?]			
	qf7	[Enumerator: how much did the participant allocate to their personal pocket?]			

SMS for Better Governance: Health Center Audit Form

Section 1: Health Center Identification

1. Date: DD/MM/YY: |___|___|/|___|___|/|___|___|
2. Enumerator name:
3. Facility Number:
4. District
5. Sub-county:
6. Parish:
7. Village:
8. Facility Name:
9. GPS Coordinates:
10. Arrival time: |___|___|:|___|___| AM/PM *(If before 12pm skip to Section 2)*

Note: It's after 12 pm please call your team lead before continuing.

Section 2: Health Center Observation

Complete this section of the survey as soon as you enter the health center compound. All the health center audits should take place first thing in the morning and all should be done before 12pm. Check with field manager for approval if it is not before this time.

11. What is the primary material used in the construction of the health center roof?
    1) Thatch
    2) Iron Sheets
    3) Tiles
    4) Other (Specify)_____
12. How many people are waiting to be served by the clinic staff *(Enum: including all people, treated or not)*? |___|___|___|
13. Is there a sign visible from the outside of the clinic indicating its operating hours?
    1) No
    2) Yes
14. Was the Health Center open when you arrived?
    1) No
    2) Yes **(Skip to Section 3A)**

15. If the Health Center is closed, can patients get it to open if necessary in a reasonable amount of time? *(Enum: If facility CANNOT be opened after trying for 30 min and you've exhausted the following options: asking patients, investigating if staff live nearby, checking for posted contact information, sending someone to retrieve the staff then call your supervisor.)*
    1) No **(Stop Survey, Call Supervisor)**
    2) Yes

16. How can patients get it to open? *(Select all that apply)*
    a) Phone number is posted
    b) Staff lives nearby
    c) Someone can be sent to inform staff
    d) Other (Specify)_____

17. How long does it take patients to get the clinic open using the method described in Q16?
    |___|___| hours |___|___| minutes

Section 3A: Senior Staff Member Survey

(Enum: Ask to speak with the "in-charge" or the most senior staff on duty. Find a place that is quiet and private. Be sure to not disrupt or stop other staff from working by conducting the interview in the main operating area. If you need to interview the in-charge outside of the facility, ask him/her to bring staff attendance register and visitors book.)

Informed consent: "*Hello, my name is* **[Enum: insert your name]**. *I am working with IPA, a nongovernmental organization (NGO), based in the United States. IPA studies development and economics throughout the world. In Uganda we are based in Kampala but work throughout Uganda. We are currently conducting a research study for Social Impact, an International- based development company to do an evaluation of a USAID funded project called GAPP. GAPP is a program working with local governments in Uganda to improve services to citizens. We are working with the local government in Arua and they have provided us with permission to conduct our research (show letter from CAO and DHO). I would like to ask you a few questions about public service delivery in Uganda. The survey will take 35 minutes. All of your responses will be anonymous. The district government and others will NOT learn about any of the answers you share with us here today.*

Questions & Concerns: Please ask us anything you want to know about this project now or later on the details below *(Enum: Please provide Consent Contact Form to participant)*:

Questions concerning the research:		Questions concerning your rights as a participant:
Innovations for Poverty Action: *Plot 9 Naguru Drive Close Kampala, Uganda* *Field manager: Tusiime, Alex* *Tel: +256 704 854 865* *Research Manager: Kyle Halloway* *Tel :+256 777 953 655*	**Research Team & Social Impact, Inc.** *Project Manager:* *Jon Helfers* *Tel: +256 777 813 670*	**Uganda National Council for Science and Technology** *P.O. Box 6884, Kampala* *Tel: +256 414 705 513* *Website: www.unsct.go.ug*

18. Are you willing to participate and begin the interview?

1) No **(Call Supervisor Note)**
2) Yes

(Enum: Only continue to the survey if consent is obtained. If consent is not obtained then call your supervisor before you leave the facility.)

Section 3B: Respondent Information & Operating Hours

"I would like to start by confirming I'm at the correct location and speaking to the most senior level staff member at this facility."

19. Survey start time: |___|___|:|___|___| AM/PM

20. What is your name?_____ *("It's nice to meet you.")*

21. What is the name of this health center? _____ *(Enum: Ask how to spell the name.)*

22. What is your job title at the clinic?

1-Clinical Officer
2-Enrolled Mid Wife
3-Enrolled Nurse
4-HMIS Assistant
5-Health Assistant
6-Health Inspector
7-Lab Assistant
8-Lab Attendant
9-Lab Technician
10-Medical Officer
11-Nursing Assistant
12-Nursing Officer
13-Nursing Officer Psychiatry
14-Nursing officer Midwifery
16-Records Assistant
17-Senior Clinical Officer
19-Other (specify)_____
888) Refused to Answer

23. I am going to read a list of healthcare duties and functions. Please let me know which of these duties do you perform in this clinic even if it is not necessarily your job title? *(Enum: Select all that apply)*
    a) Clinical Officer
    b) Enrolled Mid Wife
    c) Enrolled Nurse
    d) HMIS Assistant
    e) Health Assistant
    f) Health Inspector
    g) Lab Assistant
    h) Lab Attendant
    i) Lab Technician
    j) Medical Officer
    k) Nursing Assistant
    l) Nursing Officer
    m) Nursing Officer Psychiatry
    n) Nursing officer Midwifery
    o) Records Assistant
    p) Senior Clinical Officer
    888) Refused to Answer

24. How many years have you been working as a health provider? |___|___| Years.

25. Who owns this facility?
    1) Government (Public)
    2) Private not-for-profit/NGO
    3) Private not-for-profit/Faith based
    888) Refused to Answer
    999) Don't know

26. Who mainly pays the salaries of the healthcare staff in this facility?
    1) Government (Public)
    2) Private not-for-profit/NGO
    3) Private not-for-profit/Faith based
    4) Other (Specify)_____
    888) Refused to Answer
    999) Don't know

27. Who mainly pays for the medical supplies for this facility?
    1) Government (Public)

2) Private not-for-profit/NGO
3) Private not-for-profit/Faith based
4) Other (Specify)_____
888) Refused to Answer
999) Don't know

28. What is the traveling time by car to the district headquarters? |___|___|:|___|___| HH/MM

29. What time did the clinic open today to accept patients? |___|___|:|___|___| AM/PM
1) Clinic does not close (24/7)
888) Refused to Answer
999) Don't know

30. How many days per week is this facility open for patients? |___|___|

Section 3C: Infrastructure
"Now I would like to ask you some questions about the infrastructure of the health center."

Does this health center **(II or III)** have:
31. An Outpatients Department?
1) No
2) Yes
888) Refused to Answer
999) Don't know
32. A maternity area?
1) No
2) Yes
888) Refused to Answer
999) Don't know
33. What method of sterilization does this facility use?
1) No method of sterilization
2) Stoves
3) Other (Specify)_____
888) Refused to Answer
999) Don't know

34. What is the ***main*** source of power or electricity for the facility?
1) No power supply
2) Electric power grid
3) Fuel operated generator
4) Battery operated generator
5) Solar system

6) Other (specify)_____
888) Refused to Answer
999) Don't know

35. How many ***times*** in the past three days has the power gone out? (Enum: *Make sure to clarify we are asking about the number of times the power went out NOT the number of days.)*
|___|___|___|
777) Not Applicable
888) Refused to Answer
999) Don't know

36. What is the ***main*** source of water for the facility?
1) No water source
2) Piped into facility
3) Piped onto facility grounds
4) Public tap/standpipe
5) Tube well/borehole
6) Protected dug well
7) Unprotected dug well
8) Protected spring
9) Unprotected spring
10) Rainwater
11) Bottled water
12) Cart w/small tank/drum
13) Tanker truck
14) Surface water
15) Other (specify)_____
888) Refused to Answer
999) Don't know

37. What is the average walking time, in minutes, from the clinic to its main source of water—including waiting time?
|___|___|___|minutes
888) Refused to Answer
999) Don't know

38. During the past 3 days, how many times was the water supply from this source interrupted for more than two hours at a time? (Enum: *Make sure to clarify we are asking about the number of times the water went out NOT the number of days.)* |___|___|
888) Refused to Answer
999) Don't know

39. What type of toilet/latrine(s) are available for use by patients? *(Select all that apply) (Enum: Prompt)*
    a) No functioning toilet
    b) Bush
    c) Flush toilet
    d) Flush toilet (but no water)
    e) VIP latrine
    f) Covered pit latrine (no slab)
    g) Covered pit latrine (w/slab)
    h) Uncovered pit latrine no slab
    i) Uncovered pit latrine w/ slab
    j) Composting toilet
    k) Other (specify)_____
    888) Refused to Answer
    999) Don't know

40. How many of the mentioned patient toilets/latrines (counting each stance) are currently functioning? |___|___|
888) Refused to Answer
999) Don't know

Section 3D: Staffing and Health Center Management

"Now I would like to ask you some questions about the staff and the structure of the health center management."

41. Excluding you, how many full-time healthcare staff works at this health center--whether they are present or not today? By healthcare staff I mean nurses and technician, but not housekeeping helpers, such as drivers and cleaners |___|___| (*Enum: Make sure the respondent includes employees even if not in the registry*)
    888) Refused to Answer
    999) Don't know

42. How many non--health workers are employed is this facility? By non-healthcare staff I mean housekeeping personnel such as drivers and cleaners and all other support personal that do not perform any health related services. |___|___|

43. Do you have an attendance register book? *(Enum: Ask to see the register book.)*
    1) No attendance register exists **(Skip to Q45)**
    2) Attendance register exists but was not available **(Skip to Q45)**
    3) Yes but not filled out today.
    4) Yes and filled in today
    888) Refused to Answer

999) Don’t know

44. *Enumerator: Write down the number of healthcare staff members that have signed in after checking the register book. Make sure to clarify that we are only interested in attendance of healthcare staff and not housekeeping personnel*.
    a) Today: |___|___|___|
    b) Last Monday: |___|___|___|
    c) Last Wednesday: |___|___|___|
    d) Last Friday: |___|___|___|

“Now I am going to ask you about each of the healthcare staff. Let’s start with the highest ranking staff member (other than yourself) and then continue by rank through each staff member.”

(Repeat Q31-36 based on Q28)

45. Excluding yourself, what is the name of the subsequent highest ranking healthcare staff member?_____

46. What is the official job title of this individual at this clinic?
    1) Clinical Officer
    2) Enrolled Mid Wife
    3) Enrolled Nurse
    4) HMIS Assistant
    5) Health Assistant
    6) Health Inspector
    7) Lab Assistant
    8) Lab Attendant
    9) Lab Technician
    10) Medical Officer
    11) Nursing Assistant
    12) Nursing Officer
    13) Nursing Officer Psychiatry
    14) Nursing officer Midwifery
    15) Porter
    16) Records Assistant
    17) Senior Clinical Officer
    18) Askari (security Guards)
    19) Other (specify)_____
    888) Refused to Answer
    999) Don’t know

47. Does **[insert: Q31]** perform any of the following duties or functions of the following positions even if it is not necessarily their job title? *(Select All that Apply) (Enum: Prompt)*
    a) Clinical Officer
    b) Enrolled Mid Wife
    c) Enrolled Nurse
    d) HMIS Assistant
    e) Health Assistant
    f) Health Inspector
    g) Lab Assistant
    h) Lab Attendant
    i) Lab Technician
    j) Medical Officer
    k) Nursing Assistant
    l) Nursing Officer
    m) Nursing Officer Psychiatry
    n) Nursing officer Midwifery
    o) Records Assistant
    p) Senior Clinical Officer
    888) Refused to Answer
    999) Don't know

48. Please give me your best estimate of how many years **[*insert Q31*]** has been working as a health provider? |___|___| Years.

49. Is **[*insert Q31*]** currently in the facility? (*Enum: you must make visual confirmation—you must see the person.)*
    1) No
    2) Yes **(Skip to Q37 or if there are more staff repeat from Q28)**
    888) Refused to Answer

50. Why is this person not present at work today? *(Enum: Prompt* whether this person's absence has been authorized*)*
    1) Authorized
    2) Unauthorized
    (888) Refused to Answer

Authorized	**Unauthorized**
Away on official health related duty (training, meeting, outreach, etc.)	Not here yet

Away on official non-health duty (census, elections, voter registration, etc.)	Not sure where s/he is today
Assigned elsewhere/transferred/ Suspended	On strike
Authorized time-off (personal issues, burials, family celebrations, vacation)	Absent without excuse
Expected to arrive later/ had to leave early/ called sick	
Works today/this week in a different shift	

51. Since **[Insert date of 3 months before]**, how many full time healthcare staff have:
    a) been transferred TO your Health Center ? |___|___|
    b) been hired? |___|___|
    c) been transferred FROM your Health Center to another? |___|___|
    d) been fired? |___|___|
    e) left voluntarily? |___|___|
    f) Other (Specify)_____
    888) Refused to Answer

52. Again thinking from **(Insert date of 3 months before)** to now, how many requests has this Health Center submitted to the DHO:
    a) To hire or add healthcare staff? |___|___|
    b) To fire healthcare staff? |___|___|
    888) Refused to Answer
    999) Don't know

53. And how many of them have been granted? **(Enum: Only ask if Q52 is not = 0)**:
    a) of the ones to hire? |___|___|
    b) of the ones to fire? |___|___|

888) Refused to Answer
999) Don't know

Section 3D: Stock outs

"Next, I would now like to ask you few questions about the rate of stock outs for several medications. Could you get the stock cards where this information is collected to answer the following questions? Also, can you please take me to the location where your drug stocks are stored?" (Enum: you will need to physically see the stocks of medication).

54. Is the stock card currently available?
    1) No

2) Yes **(Skip to Q41)**

55. May I ask why is the stock card not currently available?
    1) Don't keep stock cards updated
    2) Missing
    3) Don't currently have access to them (e.g., locked in store room, at home, etc.)
    4) Other (Specify):_____

"I would like to know if any of following medicines are available today in this facility. I would also like to observe the medicines that are available. If any of the medicines I mention is stored in another location in the facility, please tell me where in the facility it is stored so I can go there to verify." (Enum: if store room is not accessible or it is not possible to make visual confirmation please ask respondent to make their best estimate.)

56. 1st line antimalarials
    1) At least on observed (AND non-expired)
    2) At least one observed (BUT expired)
    3) Available BUT not observed (non-expired)
    4) Non available today
    5) Never available

57. In the past 30 days how many days have 1st line antimalarials been out of stock |___|___| days *(Enum probe: if not sure give best estimate)*

58. Depo-Provera
    1) At least on observed (AND non-expired)
    2) At least one observed (BUT expired)
    3) Available BUT not observed (non-expired)
    4) Non available today
    5) Never available
59. In the past 30 days how many days have Depo-Provera been out of stock |___|___| days *(Enum probe: if not sure give best estimate)*

60. Suphadoxine/pyrimethamine
    1) At least on observed (AND non-expired)
    2) At least one observed (BUT expired)
    3) Available BUT not observed (non-expired)
    4) Non available today
    5) Never available
61. In the past 30 days how many days have Suphadoxine/pyrimethamine been out of stock |___|___| days *(Enum probe: if not sure give best estimate)*

62. Measles vaccine
    1) At least on observed (AND non-expired)
    2) At least one observed (BUT expired)
    3) Available BUT not observed (non-expired)
    4) Non available today
    5) Never available

63. In the past 30 days how many days have Measles vaccine been out of stock |___|___| days *(Enum probe: if not sure give best estimate)*

64. ORS
    1) At least on observed (AND non-expired)
    2) At least one observed (BUT expired)
    3) Available BUT not observed (non-expired)
    4) Non available today
    5) Never available

65. In the past 30 days how many days have ORS been out of stock |___|___| days *(Enum probe: if not sure give best estimate)*

66. Cotrimoxazole
    1) At least on observed (AND non-expired)
    2) At least one observed (BUT expired)
    3) Available BUT not observed (non-expired)
    4) Non available today
    5) Never available

67. In the past 30 days how many days have Cotrimoxazole been out of stock |___|___| days *(Enum probe: if not sure give best estimate)*

<u>Section 3E: Outreach Campaigns</u>
"I would now like to briefly talk to you about outreach campaigns conducted by the Health Center."

68. How many outreach campaigns/events did the clinic undertake since **[Insert date of 3 months before]**, like a visit to a rural village or an immunization drive? *(Enum: Prompt)*
    1) None
    2) Less than once a month
    3) About once a month
    4) About once a week

5) Several time a week
6) Every day
888) Refused to Answer
999) Don't know

Section 3G: Structure and management

"Now I would like to ask you about the structure of the management."

69. Since **(Insert date of 3 months before**), how many full staff meetings have been held to discuss goals and strategies and how to achieve these goals?
    1) None
    2) Between 1 and 3
    3) More than 3
    888) Refused to Answer
    999) Don't know

70. Does the health center have a Health Unit Management Committee?
    1) No (Skip to Section 3H)
    2) Yes, but inactive
    3) Yes, active
    888) Refused to Answer
    999) Don't know

71. Does any government official belong to the HUMC? *(Select all that apply) (Enum: Prompt)*
    a) None
    b) LC1 chairperson
    c) LC2 chair
    d) LC3 chairperson
    e) Sub County Chief
    f) District councilor
    g) Special woman district councilor
    h) MP
    i) Health officer
    j) Religious leader
    k) Other (Specify)_____
    888) Refused to Answer
    999) Don't know

Section 3F: Communication with district

"Next, I would like to ask you a couple questions about how you communicate to district officials when you have issues regarding service delivery."

72. Does this facility have a functioning landline phone that is available to call outside when need arise?
    1) No
    2) Yes

73. Does this facility have a functioning mobile phone, whether private or public, that is supported by the facility?
    1) No
    2) Yes

74. Does this facility have a functioning computer?
    1) No
    2) Yes

75. Is there access to email or Internet within the facility today?
    1) No
    2) Yes

76. When this health center has an issue it would like to communicate to the local district government, what is the effective method for communicating these issues*: (Enum: Prompt and make sure to distinguish Local Government from Ministry of Health*)
    1) Call / SMS / email the DH Office
    2) Fill in a form that is sent monthly to the DH office
    3) Personal visit to the district HQ
    4) Wait till the next visit by a district official
    5) Mtrac
    6) U-Bridge
    888) Refused to Answer

77. As you may know, Mtrac is a government led initiative to digitize the transfer of Health Management Information System (HMIS) data via mobile phones. How often do you use mTrac in your communication with the district health office?
    1) Never
    2) A few time a year
    3) About monthly
    4) About weekly
    5) Almost daily

"The District Health Officer is Dr. Patrick Anguzu. I would like to ask you a question about him."

78. Do you have a visitor's book? *(Enum: Ask to see the visitor's book.)*

1) No visitor's book exists
2) Visitor's book exists but is not available (not retrievable).
3) Yes
888) Refused to Answer

79. Could you please use your visitor's book to tell us how many times Dr. Patrick Anguzu has visited the health center since **[Insert date of 3 months before]**? |___|___| *(Enum: In case of no visitors book ask them to make best estimate.)*

888) Refused to Answer

80. Thinking about the time between **[Insert date of 3 months before]** and now, what is the frequency that Dr. Patrick Anguzu has called the clinic? *(Enum: Prompt, estimate if they don't know)*
    1) Never
    2) Less than once a month
    3) About once a month
    4) About once a week
    5) Several time a week
    6) Every day
    888) Refused to Answer

"Now I am going to ask you questions about the District Health Inspectors. The Arua district health inspectors are*: Anzuku Manaseh, Bakole Mathew, Atridra Ronald, Aluma Zodiac, Ondoma Denis, Andema Clement and Eyotaru Stella)*

81. Again looking at the visitor's book, how many times has a health inspector (either regional or Senior Inspector) been here since **[Insert date of 3 months before]**? |___|___| *(Enum: In case of no visitor's book ask them to make best estimate.)*
    888) Refused to Answer

82. How many times since **[Insert date of 3 months before]** has a health inspector (either regional or Senior Inspector) called the health center? |___|___| *(Enum: Prompt, estimate if they don't know)*
    888) Refused to Answer

83. Again looking at the visitor's book, how many times has someone from the district other than the District Health Officer or District Health Inspector been here since **[Insert date of 3 months before]**? |___|___| *(Enum: In case of no visitor's book ask them to make best estimate.)*
    888) Refused to Answer

Section 4A: Network Coverage

"Next, I would like to ask you about network coverage in this area."

84. How would you rate the MTN network coverage in this village?
    1) No coverage in village
    2) Some coverage in village
    3) Full coverage in village
    888) Refused to Answer
    999) Don't know

85. How would you rate the Orange (Africell) network coverage in this village?
    4) No coverage in village
    5) Some coverage in village
    6) Full coverage in village
    888) Refused to Answer
    999) Don't know

86. How would you rate the Airtel (Warid) network coverage in this village?
    7) No coverage in village
    8) Some coverage in village
    9) Full coverage in village
    888) Refused to Answer
    999) Don't know

87. How would you rate the UTL network coverage in this village?
    10) No coverage in village
    11) Some coverage in village
    12) Full coverage in village
    888) Refused to Answer
    999) Don't know

Section 4B: U-BRIDGE

88. Have you heard of the SMS service named U-Bridge? (*Enum: this is not the same as Ureport, Mtrac*)
    1) No **(Skip to Section 5)**
    2) Yes
    888) Refused to Answer

89. Can you tell me the short code for the U-Bridge SMS service (the number to send messages to)?
    (Enum: If they don't know or guess incorrect inform them the correct answer is 8500.)
    1) Incorrect answer / don't know
    2) Correct answer
    888) Refused to Answer

(Program: Skip to End if in Control Area)

90. Thinking about the time between since **[Insert date of 3 months before]** and now, what is the frequency that you or someone at this facility has used the U-Bridge service?

91. Are you a registered member of U-Bridge who has been receiving periodic SMS messages?
    1) No **(Skip to Section 5)**
    2) Yes
92. How satisfied are you with your experience using U-Bridge? *(Enum: Prompt)*
    1) Not satisfied
    2) Somewhat satisfied
    3) Satisfied
    4) Very satisfied
    888) Refused to Answer

Section 5: Registration

(Enum: If the respondent has not heard of U-Bridge provide a handout of the U-Bridge flier and provide read short description below.)

U-Bridge is an initiative of GAPP—Governance Accountability Participation and Performance—project and your Arua local government to improve the quality of service provision in Uganda. I work for IPA who is helping to gather information on the impact of U-Bridge and is assisting in the registration of users.

The U-Bridge program allows you to send anonymous text messages for free to your Arua local government officials about issues at your local health center, schools and other public facilities. The program also sends you SMS messages with questions about service delivery at public facilities. The program will also send messages with information about Uganda's national standards for health and education.

We would like to register you into this program. Those who are registered into the program are anonymous. This means that we are not collecting the names of people who register, and all of your answers to my questions here today are kept private and confidential. If you agree, we would like to ask you some basic information such as your age. The information we collect will not be shared with government officials or anyone other than U-Bridge and the Social Impact research team.

If you have any questions about the U-Bridge you can ask me now or you may contact Social Impact at the address and phone number below with any problems or questions you may have (Enum: present the contact information to the participant):

93. Would you like to register and join U-Bridge? *(Enum: for the participant to register they need to know a phone number or have their phone with them for you to assist them to retrieve their number)*.
    1) No
    2) Yes

94. What is your phone number? |_0_|___|___|___|___|___|___|___|___|___|(Enum: If respondent doesn't know and has a phone with them type *135*8# for MTN users and *197# for all other users to determine respondents phone number)
95. Enum do not ask: What is the gender of the respondent?
    1) Male
    2) Female
96. What is your age? |___|___|

"Thanks for registering into U-Bridge. U-Bridge will begin sending you messages in the coming weeks. Now, I would like to continue with the survey…"

97. If there was a message that you could send to patients or residents of this health center using U-Bridge, what would be the single most important message you would like to tell them? (*Enum: Remind the respondent that messages sent by U-Bridge go out to many residents across the community and this would be an opportunity to inform those who regularly come to the HC and those who do not about any topic of the respondents choice*)
    13) Specify_____

98. If there was specific information that you would ask patients or residents of this health center using U-Bridge, what would you like to ask them?
    1) Specify_____

99. Is there a poster explaining how to use U-Bridge currently visible to patients at this health center? (*Enum: Please ask to see the poster personally to verify. If there is no poster, please ask to hand one in a spot visible to patients*)
    1) No
    14) Yes

<u>Section 6: The End</u>

"This concludes the survey. Thank you very much for your willingness to answer my questions. The research team very much values your thought and input. We wish you all the best."

100. GPS
101. Survey end time: |___|___|:|___|___| AM/PM

SMS for Better Governance: Government Primary School Audit Form

Section 1: Primary School Identification

2. Date: DD/MM/YY: |___|___|/|___|___|/|___|___|
3. Enumerator name:
4. School ID:
5. District:
6. Sub-county:
7. Parish:
8. Village:
9. School Name:
10. GPS Coordinates:
11. Arrival time: |___|___|:|___|___| AM/PM *(If before 12:30pm skip to Q11)*

Note: It's after 12 pm please call your team lead before continuing.

Section 2: School Observation

Complete this section of the survey as soon as you enter the school compound. All school audits must take place before 12:30 PM in order to accommodate class visits.

12. Is the school rural, urban or semi-urban/ rural?
    1) Rural
    2) Semi-urban
    3) Urban

13. What is the primary material used in the construction of school roofs?
    1) Thatch
    2) Iron Sheets
    3) Tiles
    4) None
    5) Other (specify)_____

14. Did you arrive at the school during a break time?
    1) No
    2) Yes **(Enum: find the Head Teacher or the one in charge and skip to Section 3: Inform consent)**

15. How many children are playing or hanging out outside classrooms, unattended and not doing any work? (*Enum: Estimate the number by looking at the school compound)* |___|___|

16. How many teachers do you see outside the classroom? |___|___|

Section 3: Introduction and Roster Construction

(Enum: find the Head Teacher or the next highest ranked staff member; Deputy Head Teacher, Senior Teacher, Assistant Teacher. Once you are sure you have found the most senior level individual at the school begin the consent and introduction.)

Informed consent: "*Hello, my name is* **[Enum: insert your name]**. *I am working with IPA, a nongovernmental organization (NGO), based in the United States. IPA studies development and economics throughout the world. In Uganda we are based in Kampala but work throughout Uganda. We are currently conducting a research study for Social Impact an International based development company to do an evaluation of a USAID funded project called GAPP. GAPP is a program working with local governments in Uganda to improve services to citizens. We are working with the local government in Arua and they have provided us with permission to conduct our research (show letter from CAO and DEO). I would like to ask you a few questions about public service delivery in Uganda. The survey will take 35 minutes. All of your responses will be anonymous. The district government and others will NOT learn about any of the answers you share with us here today.*

Questions & Concerns: Please ask us anything you want to know about this project now or later on the details below *(Enum: Please provide Consent Contact Form to participant):*

Questions concerning the research:		Questions concerning your rights as a participant:
Innovations for Poverty Action: *Plot 9 Naguru Drive Close Kampala, Uganda* *Field manager: Tusiime, Alex* *Tel: +256 704 854 865* *Research Manager: Kyle Halloway* *Tel :+256 777 953 655*	**Research Team & Social Impact, Inc.** *Project Manager:* *Jon Helfers* *Tel: +256 777 813 670*	**Uganda National Council for Science and Technology** *P.O. Box 6884, Kampala* *Tel: +256 414 705 513* *Website: www.unsct.go.ug*

17. Are you willing to participate?
    3) No (Skip to Call Supervisor Note)
    4) Yes

(Enum: Only continue to the survey if consent is obtained. If consent is not obtained then call your supervisor before you leave the facility.)

"I'd like to start by asking a couple quick question about you and the school and then continue by creating a roster of the teachers at this school."

18. Just to confirm, are you the Head Teacher?
    1) No
    2) Yes **(Skip to Q20)**

19. Why is the head teacher not present today?
    1) Official teaching related duty (training, meetings, etc.) **(Skip to Q20)**
    2) Official non-teaching duty (census, elections, voter registration, health campaign etc.) **(Skip to Q20)**
    3) Assigned elsewhere/transferred
    4) Authorized time-off (personal day, vacation) **(Skip to Q20)**
    5) Expected to arrive later/Not here yet **(Skip to Q20)**
    6) Left early **(Skip to Q20)**
    7) Sick **(Skip to Q20)**
    8) Suspended **(Skip to Q20)**
    9) Post of head teacher is vacant
    10) Other (Specify)_____

888) Refused to Answer
999) Don't know

20. Since when has this post been vacant? MM/YY: |___|___|/|___|___|

21. What is your name? _____ *(Enum: It's nice to meet you.)*
    888) Refused to Answer

22. Please confirm that the official full name and spelling of this primary school is **[Insert Q8]**?
    1) Name does not match (*Enum: Please consult team supervisor*)
    2) Name matches perfectly
    3) Name matches but spelling is incorrect (*Enum: insert correct spelling*): _____

23. Enum**:** What is the respondent's gender?
    1) Female
    2) Male

24. What is your position at this school?
    1) Head Teacher
    2) Deputy Head Teacher
    3) Principal Education Assistant
    4) Senior Education Assistant
    5) Classroom Teacher
    6) Senior Woman Teacher
    7) Senior Man Teacher
    8) Other Specify: _____
    888) Refused to Answer

25. Do you teach any classes at this school?
    1) No **(Skip to Section 4A)**
    2) Yes

26. Are you a full time or part time teacher?
    1) Full-time
    2) Part-time

27. How many years of teaching experience do you have? |___|___|Years

SECTION 4A: CREATE ROSTER OF TEACHERS

"Please allow me to ask a few questions about the teachers who are working in this school (inc. pre-school and special needs) starting with you if you teach. Could you give me the name of all the teachers currently teaching including government, contract and volunteer teachers? Teachers ONLY." (Enum. If the respondent has access to the "yellow book" have them use this as a reference but also include any teachers not recorded in the book if they meet the description given above.) "Let's start with the highest ranking teacher and then continue with each subsequent teacher till we have discussed each teacher at this school."

28. Last Name (Surname)? _____
29. First Name (Giving name)?_____

30. What is **[insert Q27]** gender?
    1) Male
    2) Female
31. What is **[insert Q27]** position at this school?
    1) Owner/Director
    2) Head teacher/ principal
    3) Deputy head teacher
    4) Senior teacher
    5) Teacher (government
    6) Teacher (paid contract)
    7) Teacher (volunteer)
    8) Other (Specify)_____
32. Is **[insert Q27]** a full time or part time teacher?
    1) Full time
    2) Part time
33. How many years of teaching experience does **[insert Q27]** have? |___|___|Years.

Section 4B: Classes and Streams

34. How many streams per class does this school have:
    a. P1? |___|___|
    b. P2? |___|___|
    c. P3? |___|___|
    d. P4? |___|___|
    e. P5? |___|___|
    f. P6? |___|___|
    g. P7? |___|___|

888) Refused to Answer

"I'd like to ask you about the names of each stream."

35. What is the name of the streams in:
    a. P1? _____
    b. P2? _____
    c. P3? _____
    d. P4? _____
    e. P5? _____
    f. P6? _____
    g. P7? _____

888) Refused to Answer

[Program: SAMPLE THREE TEACHERS FROM THE LIST BASED ON RANDOM TABLE GENERATOR, AND ASK TO VISIT THESE CLASS ROOMS + P4 SURVEYED LAST TIME. IF P4 TEACHER IS SAMPLED THERE NEEDS TO BE A REPLACEMENT]

Enumerator: visit these classes.

P4 stream:_____ **[Random Selection]**
P___ **[Random Selection]** Stream_____ **[Random Selection]**
P___ **[Random Selection]** Stream_____ **[Random Selection]**

Section 4C: Class Observation

"I'd now like to visit a couple classes. After I visit the classes I'd like to come back and ask you a few more questions. Can you please send me in the direction of the classrooms."

[Program: Repeat Q26-37 four time. Begin with P4. Then repeat 3 times selecting randomly from roster]

(Enum: only visit classes during sessions, not during BREAK. First, introduce yourself to the teacher and explain that you are collecting some basic information about the school. Ask the teacher for their assistance in organizing students but count and observed the class yourself.)

36. *Enum: Are the students in the classroom?*
    1) No
    2) Yes **(Skip to Q37)**

37. *Enum: if you did not find the students in the classroom, what are the students doing? (you may need to ask a nearby staff member or student)*?
    1) Doing meaningful activity outside class – scheduled **(Go to next class or Section 5A)**
    2) Doing meaningful activity outside class – but unscheduled **(Go to next class or Section 5A)**
    3) Not doing any meaningful activity **(Go to next class or Section 5A)**

Not meaningful activity	**Meaningful - unscheduled**	**Meaningful - scheduled**
In playground/field	Were put into another class	Scheduled out of class activities: • Mass at church/other prayers • Sports class • Gardening
Sent back home	Doing homework outside class	
	Sent to work in garden, do art, or play sports	

38. *Enum: Is the teacher in the classroom?*
    1) No **(Skip to Q46)**
    2) No, but came shortly after I arrived
    3) Yes

*"Good morning sir/madam, my name is **[Insert Q2]**. I am working with IPA. I've just met with the head teacher. We are currently conducting a research study to improve services to citizens. I would like to ask you a few questions about public service delivery in Uganda. I would like to ask you a few questions and observe this class."*

39. What is your name? _____

40. How long have you been teaching at this school?
    |___|___| years |___|___| months
    888) Refused to Answer
    999) Don't know

41. What is the highest level of education you have received?
    1) Senior Four
    2) Certificate Primary Education

3) Senior Six
4) Diploma in Primary Education
5) Degree in Education
6) Master's Degree
7) Other (Specify)_____
888) Refused to Answer
999) Don't know

42. Did you sign the attendance log book/register today?
    1) No
    2) No attendance register exists
    3) Attendance register exists but was not available.
    4) Yes
    888) Refused to Answer
    999) Don't know

43. From your point of view, what is the most important aspect the government needs to address in this school?
    1) Improve condition of school building (roofs, walls, playground, etc.)
    2) Improve school equipment: blackboards, chalks, library books, etc.
    3) Increase number of working latrines
    4) Increase number of desks per student
    5) Improve staff quarters
    6) Improve water source
    7) Improve teacher quality
    8) Reduce teacher absenteeism
    9) Reduce class size
    10) Reduce hidden school fees (e.g. school meals fees)
    11) Other [*write in*]: _____
    888) Refused to Answer
    999) Don't know

"Thank you for your willingness to speak with me. I wish you all the best. I would like to make a few observations around the class that I may need some assistance with you organizing." (Enumerator DO NOT leave the class till you complete this entire section).

44. Enum: Did the teacher seem engaged in teaching or did he seem disengaged (not really teaching) when you arrived to class?
    1) Disengaged
    2) Engaged

Engaged	Not engaged
• Writing on the board • Monitoring student work • Actively explaining a lesson	• Teacher sleeping or taking tea • Students working independently and teacher is not passing around to help • Students are idle

45. Enum: Is something meaningful written on the board for today?

1) Yes, a lot is written.
2) Yes, a little is written.
3) No, the writing is from a different day.
4) No, nothing is written.
5) There is no board.

46. Enum: Does it seem to you that most of the students in the class are engaged in actual learning?
    1) Not engaged in real learning
    2) Engaged in real learning

Not engaged in real learning	**Engaged in real learning**
• Not working just sitting quietly • Not doing anything pedagogically (e.g., playing, sleeping)	• Working on an assignment • Listening tentatively to a lecture

47. Enum: How many students are present in this class today? |___|___|___|

48. Enum: How many students in this class have a uniform today (top and bottom)? |___|___|___|

49. How many students in this class have their own exercise book? |___|___|___|

50. How many students in this class have their own writing utensil? |___|___|___|

(Enum: Move to the next class and thank the teacher if they were present) Thank you for letting me visit your classroom.

Section 5A: Head Teacher School Infrastructure

(Enum: After completing four class visits go back to the head teacher's office and complete the following questions.)

"Thank you for letting me visit the classes. Now, I would like to complete this survey with you. I'd like to start by asking you some questions about the school."

51. What is the school ownership type?
    1) Public
    2) Private not for profit (NGO /faith based)
    3) Private for profit
    4) Other (specify): _____

52. What is the grade of this school (government designated quality of infrastructure)?
    1) Grade I
    2) Grade II
    3) Grade III
    4) Grade IV
    999) Don't know

53. What is the school type?

1) Day school
2) Boarding school
3) Both
4) Special needs education school
5) Other (specify): _____

54. What is the school category?
    1) Boys only
    2) Girls only
    3) Mixed gender school

55. Could you tell me the number of physical classrooms this school has for each class?
    a. P1? |___|___|
    b. P2? |___|___|
    c. P3? |___|___|
    d. P4? |___|___|
    e. P5? |___|___|
    f. P6? |___|___|
    g. P7? |___|___|
    888) Refused to Answer
    999) Don't know

56. Could you please tell me, out of **[Sum of answers from Q54a-g]** classrooms, how many of them…"
    a) Are covered sufficiently so lessons can continue when it rains? |___|___|
    888) Refused to Answer
    999) Don't know

    b) Have functional blackboards; that is a blackboard that the teacher can easily use to write on? |___|___|
    888) Refused to Answer
    999) Don't know

    c) Have sufficient, chairs or desks such that all pupils can sit at a desk? |___|___|
    888) Refused to Answer
    999) Don't know

"Now let's talk about facilities,"

57. How many boys' toilets (latrines)—counting each stance—does the school have that are in working condition? |___|___|
    888) Refused to Answer
    999) Don't know

58. How many girls' toilets (latrines)—counting each stance—does the school have that are in working condition? |___|___|
    888) Refused to Answer
    999) Don't know

59. Are there separate toilets (latrines) for teachers?

1) No **(Skip to Q60)**
2) Yes
888) Refused to Answer
999) Don't know

60. How many teacher toilets (latrines) (counting each stance) does the school have that are in working condition? |___|___|
888) Refused to Answer
999) Don't know

"Now I would like to talk to you about the number of students and the services and programs available for them in the school. Let's start with the number of students. Please check your records.

61. Could you please tell me how many pupils are there in each class?
    a. P1 Boys: |___|___|___| Girls: |___|___|___| Total: |___|___|___| (Program: Total)
    b. P2 Boys: |___|___|___| Girls: |___|___|___| Total: |___|___|___| (Program: Total)
    c. P3 Boys: |___|___|___| Girls: |___|___|___| Total: |___|___|___| (Program: Total)
    d. P4 Boys: |___|___|___| Girls: |___|___|___| Total: |___|___|___| (Program: Total)
    e. P5 Boys: |___|___|___| Girls: |___|___|___| Total: |___|___|___| (Program: Total)
    f. P6 Boys: |___|___|___| Girls: |___|___|___| Total: |___|___|___| (Program: Total)
    g. P7 Boys: |___|___|___| Girls: |___|___|___| Total: |___|___|___| (Program: Total)

62. I want to ask about the cost for parents to send their child to the P4 class at this school. What are the total expenses (in UGX) parents are asked to pay to the school (or PTA/SMC) per pupil for the 2015 academic year, for the following categories?
    1) Meals: _____ UGX
    2) Uniforms: _____ UGX
    3) Textbooks, stationary (pencil, papers, etc.): _____ UGX
    4) (PTA) Teacher housing: _____ UGX
    5) (PTA) Teachers' salaries: _____ UGX
    6) Other (specify): _____ UGX

"Now that we know the number of students in the school, let's talk about the services and programs available for them."

63. Do you have a lunch program for students in the school?
    1) No **(Skip to Section 5B)**
    2) Yes
    888) Refused to Answer
    999) Don't know

64. Out of **[Sum of the answers from Q60a-g.]** pupils how many receive solid food or porridge for lunch through the school lunch program? |___|___|___|
    888) Refused to Answer
    999) Don't know

<u>Section 5B: Staffing and School management</u>

"Now I would like to ask you questions about the staff of this school."

65. Does the school have an attendance register for teachers? (*Enum: If YES ask to see the registry)*
    1) No **(Skip to Q66)**
    2) No attendance register exists **(Skip to Q66)**
    3) Attendance register exists but was not available. **(Skip to Q66)**
    4) Yes
    888) Refused to Answer

66. Enumerator please write down the number of <u>teachers</u> (not cleaning staff or drivers) that have signed in:
    a) Today: |___|___|___|
    b) Last Monday: |___|___|___|
    c) Last Wednesday: |___|___|___|
    d) Last Friday: |___|___|___|

[Program Repeat Q66 for all teachers in Q37 = 1]

"I'd like to focus on the classes I visited today…"

67. [**Class Stream**] teacher was not in class when I had visited it earlier. Would you consider his/her absence authorized and legitimate or unauthorized and illegitimate? Please note that your responses will be kept completely confidential.
    1) Unauthorized
    2) Authorized and legitimate
    888) Refused to Answer

Unauthorized	**Authorized**
• Absent without seeking a previous approval • Taking tea or napping outside class • On school premise, but actual location is unknown	• Absence was approved in advance (teacher had a legitimate reason not to come to school, like sickness, burial, training)

68. I now wish to ask about changes in the number of teachers since our last visit. Since **[Insert date of 3 months before]**, how many full or part-time teachers have been:
    a) Transferred TO your school from another school? |___|___|
    b) Newly hired by the school/ PTA/ SMC? |___|___|
    c) Newly hired by Arua district local government? |___|___|
    d) Transferred FROM your school to another? |___|___|
    e) Terminated or fired? |___|___|
    f) Left voluntarily? |___|___|
    g) Other (Specify)_____
    888) Refused to Answer
    999) Don't know

69. Thinking from **[Insert date of 3 months before]** to now, how many official request has the school submitted to the DEO's office:

a) to hire or add school staff? |___|___|
b) to terminate or fire school staff? |___|___|
777) Not Applicable
888) Refused to Answer
999) Don't know

70. And how many of them have been granted? **(If Q68 = 0, skip to Section 5C)**:
    a) of the ones to hire? |___|___|
    b) of the ones to fire? |___|___|
    777) Not Applicable
    888) Refused to Answer
    999) Don't know

Section 5C: School's relationship with district officials

"Now I wish to ask you some questions about the relationship of the school with the district education officer (DEO). The name of your District Education Officer is Acia, Marino. I would like to ask you some questions about him.")

71. Do you have a visitor's book? *(Enum: Ask to see the visitor's book.)*
    4) No visitor's book exists
    5) Visitor's book exists but is not available (not retrievable).
    6) Yes
    999) Don't know

72. Could you please use your visitor's book to tell us how many times Acia, Marino has visited the school since **[Insert date of 3 months before]**? *(Enum: If a visitors' book is not available ask respondent to give me your best estimate)* |___|___|
    888) Refused to Answer
    999) Don't know

73. Thinking about the time between **[Insert date of 3 months before]** and now please give me your best estimate of the frequency with which you have received a call from Acia, Marino? *(Enum: Prompt)*
    1) Never
    2) About once a month
    3) About once a week
    4) Several time a week
    5) Every day
    888) Refused to Answer
    999) Don't know

("Now I am going to ask you about the District School Inspectors. *The names of your District School Inspectors are Acema, Charles; Wadri, Henry; Dhinya, Joseph; Asiku, Jimmy Jino; Acema, Geoffrey.")*

74. Could you please use your visitor's book to tell us how many times any of the district school inspectors has visited the school since **[Insert date of 3 months before]**? *(Enum: If a visitors' book is not available please ask the respondent to give their best estimate)* |___|___|
    888) Refused to Answer
    999) Don't know

75. Thinking about the time between **[Insert date of 3 months before]** and now, please give me your best estimate of the frequency that you have received a call from any of the district school inspectors? *(Enum: Prompt)*
    1) Never
    2) About once a month
    3) About once a week
    4) Several time a week
    5) Every day
    888) Refused to Answer
    999) Don't know

"The next questions are related to the management structure of the school. There are usually two management structures in schools, the parent teacher association (PTA) and the school management committee (SMC). Let's talk about them separately. First let's talk about the PTA"

76. Does the school have a PTA?
    1) No **(Skip to Q77)**
    2) Yes, inactive
    3) Yes, active
    4) Yes, very active
    777) Not Applicable
    888) Refused to Answer
    999) Don't know

77. Does any government official belong to the PTA? **(Check all that apply)** *(Enum: Prompt)*
    a) None
    b) LC1 chairperson
    c) LC2 chairperson
    d) LC3 chairperson
    e) District Regular councilor
    f) District Special woman councilor
    g) MP
    h) Educational officer
    i) Religious leader
    j) Other (Specify)_____
    777) Not Applicable
    888) Refused to Answer
    999) Don't know

78. Does the school have a SMC?
    1) No **(Program: skip to Q79)**
    2) Yes, inactive
    3) Yes, active
    4) Yes, very active
    777) Not Applicable
    888) Refused to Answer
    999) Don't know

79. Does any government official belong to the SMC? **(Check all that apply)** *(Enum: Prompt)*
    a) None
    b) LC1
    c) LC2
    d) LC3
    e) LC5 Regular councilor
    f) LC5 Special woman councilor
    g) MP
    ~~h)~~ Educational officer
    i) Religious leader
    j) Other (Specify)_____
    777) Not Applicable
    888) Refused to Answer
    999) Don't know

80. Since **(Insert date of 3 months before**), how many full staff meetings have been held to discuss strategies to achieve its goals?
    1) None
    2) Between 1 and 3
    3) More than 3
    777) Not Applicable
    888) Refused to Answer
    999) Don't know

Section 5D: School Funding

"I would now like to ask you briefly about how support is mobilized for the school."

81. Other than government funds, local and central, who has provided the school funding since **[Insert date from 6 months before]**? **(Select all that apply)** *(Enum: Prompt)*
    a) None
    b) Parents
    c) PTA
    d) SMC
    e) LC1
    f) LC3
    g) LC5
    h) MP
    i) NGO
    j) Religious Organization
    k) Private Donation
    l) Fees
    m) Other (Specify)_____
    777) Not Applicable
    888) Refused to Answer
    999) Don't know

Section 6A: Network Coverage

"Next, I would like to ask you about network coverage in this area."

82. How would you rate the MTN network coverage in this village?
    1) No coverage in village
    2) Some coverage in village
    3) Full coverage in village
    888) Refused to Answer
    999) Don't know

83. How would you rate the Orange (Africell) network coverage in this village?
    1) No coverage in village
    2) Some coverage in village
    3) Full coverage in village
    888) Refused to Answer
    999) Don't know

84. How would you rate the Airtel (Warid) network coverage in this village?
    1) No coverage in village
    2) Some coverage in village
    3) Full coverage in village
    888) Refused to Answer
    999) Don't know

85. How would you rate the UTL network coverage in this village?
    1) No coverage in village
    2) Some coverage in village
    3) Full coverage in village
    888) Refused to Answer
    999) Don't know

Section 6B: U-Bridge [in both treatment / control]

"Next, I would like to ask you a couple questions about how you communicate to district officials when you have issues regarding service delivery."

86. Have you heard of an SMS service named U-Bridge?
    1) No **(If no, skip to Section 7B)**
    2) Yes
    999) Don't know

87. Can you tell me the short code for the U-Bridge SMS service (the number to send messages to)? *(Enum: Correct answer is 8500; in treatment areas, if they don't know or give an incorrect guess inform them of the correct number*)
    1) Don't know- did not try to even guess
    2) Incorrect guess
    3) Correct Number

888) Refused to Answer

88. Thinking about the time between **[Insert date of 3 months before]** and now, what is the frequency that you or someone at this facility has used the U-Bridge service? *(Enum: Prompt)*
    1) Never
    2) About once a month
    3) About once a week
    4) Several time a week
    5) Every day
    888) Refused to Answer
    999) Don't know

89. When this primary school has an issue it would like to communicate to the local district government, is U-Bridge an effective method for communicating these issues? (Enum: Distinguish Local Government from Ministry of Education) *(Enum: Prompt)*
    1) Not effective
    2) Somewhat effective
    3) Effective
    4) Very effective
    888) Refused to Answer
    999) Don't know

Section 7A: Registration

(Program: Skip to End if in Control Area)

90. Are you a registered member of U-Bridge who has been receiving periodic SMS messages?
    1) No **(Skip to Section 7B)**
    2) Yes
91. How satisfied are you with your experience using U-Bridge? *(Enum: Prompt)*
    5) Not satisfied
    6) Somewhat satisfied
    7) Satisfied
    8) Very satisfied
    888) Refused to Answer

Section 7B: Registration

(Enum: If the respondent has not heard of U-Bridge provide a handout of the U-Bridge flier and provide read short description below.)

U-Bridge is an initiative of GAPP—Governance Accountability Participation and Performance—project and your Arua local government to improve the quality of service provision in Uganda. I work for IPA who is helping to gather information on the impact of U-Bridge and is assisting in the registration of users.
The U-Bridge program allows you to send anonymous text messages for free to your Arua local government officials about issues at your local health center, schools and other public facilities. The program also sends you

SMS messages with questions about service delivery at public facilities. The program will also send messages with information about Uganda's national standards for health and education.

We would like to register you into this program. Those who are registered into the program are anonymous. This means that we are not collecting the names of people who register, and all of your answers to my questions here today are kept private and confidential. If you agree, we would like to ask you some basic information such as your age. The information we collect will not be shared with government officials or anyone other than U-Bridge and the Social Impact research team. You phone number will not be shared with the district and your identity will remain confidential.
If you have any questions about the U-Bridge you can ask me now or you may contact Social Impact at the address and phone number below with any problems or questions you may have (Enum: present the contact information to the participant):

92. Would you like to register and join U-Bridge? *(Enum: for the participant to register they need to know a phone number or have their phone with them for you to assist them to retrieve their number)*.
    1) No
    2) Yes

93. What is your phone number? |_0_|___|___|___|___|___|___|___|___|___|(Enum: If respondent doesn't know and has a phone with them type *135*8# for MTN users and *197# for all other users to determine respondents phone number)

94. Enum do not ask: What is the gender of the respondent?
    1) Male
    2) Female

95. What is your age? |___|___|

"Thanks for registering into U-Bridge. U-Bridge will begin sending you messages in the coming weeks. Now I'd like to finish the survey. I only have a couple more questions for you…"

96. If there was a message that you could send to parents or residents of this primary school using U-Bridge, what would you like to tell them? (Enum: Remind the respondent that messages sent by U-Bridge go out to many residents across the community and this would be an opportunity to inform both parents of children who attend this school and those who are not parents of children at this school about any topic of the respondents choice)
    1) Specify_____

97. If there was specific information that you could get from parents or residents of this primary school using U-Bridge, what would you like to ask them?
    1) Specify_____

98. Is there a poster explaining how to use U-Bridge currently visible to patients at this health center? (*Enum: Please ask to see the poster personally to verify. If there is no poster, please ask to hand one in a spot visible to patients*)

1) No
2) Yes

"Thank you for all of your help and cooperation. The research team very much values your thought and input."

GPS

99. Survey end time: |___|___|:|___|___| AM/PM

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