Using mobile phone surveys to track resilience and post-disaster recovery: a how-to guide

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Front cover photo: Bobby Neptune for DAI/Flickr
December 14, 2018: Mugumu, Tanzania: With USAID support, communities use mobile phones to create first-time digital maps of the northern Serengeti District of Tanzania using the free, crowd-sourced OpenStreetMap as part of a project implemented by the NGO Humanitarian OpenStreetMap Team (HOT).

1. Introduction

Close to 70% of the world's population use mobile phones (GSMA, 2019). Around the world, increasing access to mobile technologies is making it easier (and cheaper) to gather information about people's lives and livelihoods, allowing it to inform development and humanitarian activities. As such, use of mobile phone surveys is becoming an ever-popular way of carrying out household survey data in developing countries, increasingly complementing traditional face-to-face interviews and, in some cases, even replacing them entirely (Dabalen et al., 2016; Hoogeveen et al., 2014; Demombynes et al., 2013; Jones et al., 2018; Etang et al., 2015).

One of the many opportunities for mobile surveys to support the development sector comes in tracking resilience and post-disaster recovery. Collecting information in disaster-affected regions is often dangerous, costly and time consuming. This is where mobile surveys have a real advantage: offering cheaper ways of remotely contacting individuals, often in near-real-time. Mobile surveys remove many of the logistical and safety challenges of coordinating large household survey exercises (which are crucial for fragile and conflict affected areas). They can also make it much easier to reach people who are on the move, such as pastoral communities or those fleeing a shock-event.

The growth in popularity of mobile phone surveys, for both Monitoring and Evaluation (M&E) and research efforts, has led to a rise in studies dealing with the methodological and logistical questions facing this new form of applied social research (Dabalen et al., 2016; Gibson et al., 2017; Greenleaf et al., 2017; L'Engle et al., 2017; Mahfoud et al., 2015; Leo et al., 2015). Many of these insights empirically build on the experiences and lessons from recent large-scale mobile phone surveys. Prominent examples include the World Banks's Listening to Africa (2017) and Listening to Central America initiatives (Ballivian et al., 2015), as well as the World Food Programme (WFP)'s numerous mobile Vulnerability Analysis and Mapping (mVAM) projects (2019).

In this how-to guide, we highlight the advantages and opportunities presented by mobile surveys in collecting information on post-disaster recovery and resilience in developing countries. Recognising the growing political interest in resilience-building, we target our guide specifically at the development and humanitarian actors tasked with monitoring and evaluating resilience outcomes (either for their own projects or those of others). In particular, we expect this guide will be helpful to those considering using phone surveys in their work, but unfamiliar with the pros and cons of this relatively novel mode of data collection. We base our insights on our first-hand experiences from the Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) programme – which ran a high-frequency mobile phone survey in Myanmar between 2017 and 2019 – as well as our review of the wider literature.

In particular, we cover the following:

- what to consider before setting-up a phone survey
- options for how it can be conducted
- how to tailor phone surveys to tracking resilience or post-disaster recovery
- tips and tricks for successful delivery.

Above all, we hope this guide will help others decide whether mobile phone surveys could be of use to them, whether in the context of M&E or other forms of research. Furthermore, we hope it will inspire others to carry out, document and share their experiences in conducting remote surveys for tracking resilience and post-disaster recovery.

2. What to consider before setting up a mobile phone survey

Before starting a mobile phone survey, a number of important decisions have to be taken. Decisions about use, resourcing and timing will have important implications for the design of mobile surveys and require careful reflection. In this section, we go through a number of key questions that need to be considered upfront.

Why run a mobile phone survey?

Researching post-disaster recovery has traditionally meant conducting face-to-face interviews, often requiring considerable investments in time and money. Yet, mobile phone surveys now offer development actors a cost-effective and scalable method of gathering reliable and timely information among their target populations. As we will discuss below, phone interviews come with a set of limitations regarding the quantity and type of data that can be gathered. Nonetheless, they are becoming an increasingly popular mode of data collection in international development. This is particularly true in settings where lack of access or acute security risks prevent field interviewers from physically reaching respondents. It is often precisely during such times of crisis that the need for timely and robust data is most pronounced. In such circumstances, conducting interviews via mobile phones may be the only viable option.

For example, during the ongoing civil war in Yemen, the security situation on the ground prevented the World Food Programme from deploying field enumerators to gather data on food security in the most heavily affected regions. A mobile phone panel survey was therefore set up from outside the country. Using a method called Random Digit Dialling (explained in detail below), the World Food Programme (WFP) team succeeded in building up a sizable panel, who were called at regular intervals. More than one third of those panel members were Internally Displaced Peoples (IDPs) – a group of people who, before the advent of mobile phone surveys, were very difficult to track across time. Similarly, at the height of the 2014 Ebola epidemic in Western Africa, mobile phone surveys proved the only viable method of assessing the economic and social impacts of the crisis on Liberian households in real-time (Liberia Institute of Statistics and Geo-Information Services (LISGIS), World Bank and Gallup, 2014).

More recently, under the BRACED programme, a mobile phone panel survey was set-up among farmer communities in rural Myanmar, to gather real-time data on households' post-disaster recovery (Jones, 2018; Jones et al., 2018). At the beginning of the monsoon season, a team of field interviewers were deployed to conduct face-to-face surveys with 1,200 respondents. During these baseline interviews, mobile phones and solar chargers were handed out. A call centre was set up in Yangon, with follow-up phone interviews conducted at regular intervals, in order to track how households were coping in the aftermath of the devastating floods that had hit their communities. As noted above, this how-to guide very much draws on experiences from BRACED's Rapid Response Research (RRR), as both authors were closely involved in its design and delivery.[1]

As a relatively new method of data collection in development contexts, mobile phone surveys have also proved valuable when trying to gather information from groups of people who would otherwise be impossible to track using face-to-face surveys. For example, Etang et al. (2015) first conducted face-to-face surveys with displaced populations in Mali, Mauretania and Niger. They then used mobile phone interviews to track the living situations of these vulnerable groups long after most of them had left the camp to return home or flee elsewhere. Such projects showcase the immense potential of mobile surveys to meet acute data needs in situations of serious security concerns and/or lack of access to target populations.

1 For more information and data visualisations from the project, see: http://www.braced.org/resources/i/resilience-dashboard

Which mode of data collection?

Mobile phone surveys come in many different shapes and sizes. While most mobile phone survey projects use live interviews, it should be noted here that this is by no means the only method of data gathering. Alternative modes of mobile data collection include:

- Interactive Voice Response (IVR), where the respondent is asked to use their number pad to give responses to pre-recorded questions
- making use of the Short Message Service (SMS) to send questions and receive responses from respondents
- deploying an online questionnaire that can be accessed by mobile phones with an internet connection
- using the Unstructured Supplementary Service Data (USSD) protocol that allows for a series of short questions sent to a respondent and answered instantaneously.

While each of these modes comes with its own advantages and disadvantages, we will focus our how-to guide solely on use of live interviews. (For more on these other methods see also Dabalen et al., 2016, pp. 8-10; Greenleaf et al., 2017.) Past research and experience have shown that it is much easier to keep respondents engaged, and non-response rates low, when respondents are interviewed by people (rather than automated alternatives). In general, most respondents will prefer actual human interactions to typing numbers into their phone or sending text messages. Importantly, personal interviews also allow respondents to 'talk back' and ask for clarifications when needed. What is more, interviewers are able to register any signs of hesitation or irritation from respondents, and probe these to find out what might be behind them. Lastly, in contrast to other alternative modes of mobile data collection (such as IVR, SMS, USSD and via the web) phone interviews can be conducted without having to make any assumptions about the respondent's literacy and numeracy levels.

How often should data be collected?

One key decision for any survey (mobile or otherwise) is deciding whether to collect information through one-off survey rounds (cross-sectional design) or to repeatedly approach the same individuals over time (panel design). While panel data has traditionally been difficult and expensive to collect in development contexts, the widespread adoption of mobile phone technology now enables organisations to follow the same group of respondents for extended periods. Indeed, most of the mobile surveys that we have mentioned so far have made use of a panel design.

Compared to one-off cross-sectional surveys, such panel projects are much more suitable when trying to move beyond statements on correlation and explore causal relationships. With panel data, it is possible to consider the temporal sequence of changes in different indicators, and therefore to disentangle the nature of cause-and-effect processes. In turn, such longitudinal data can potentially provide valuable insights into some of the causes and implications of conflict, climate hazards or other dramatic changes in living conditions. Indeed, given that resilience is itself dynamic and constantly evolving over time, one-off surveys on resilience often tell us little about how people are responding to changing conditions on the ground (see also Jones et al., 2018).

From a technical perspective, panel designs also offer substantial statistical advantages compared to repeated cross-sectional surveys, as they are more likely to detect even slight changes over time and can account for any time invariant confounders (with individual traits remaining static over time). Considering these advantages and the small marginal costs of each additional phone survey round (detailed below), it is unsurprising that most mobile phone surveys projects in development contexts have aimed to repeatedly track the same respondents.

However, it remains that panel surveys come with their own unique set of challenges. As we will see below, keeping response rates high and panel retention low over extended periods of time requires careful planning and reflection on how to leverage internal and external incentives. Furthermore, is it important to note that, particularly in times of crisis, panel retention is not simply caused by declining motivation, but also by respondents misplacing or changing SIM cards, and losing access to electricity and mobile network coverage.

Box 1: List of selected large-scale mobile phone panel projects

Project	Organisation	Resources
BRACED RRR (Myanmar)	BRACED	BRACED (2018) and Jones et al. (2018)
Sauti za Wananchi (Tanzania, Uganda and Kenya)	Twaweza	Twaweza (2019)
Listening to Africa projects (Senegal, Malawi, Madagascar and Lomé)	World Bank	World Bank (2017)
Listening to Tajikistan	World Bank	World Bank (2018)
mVAM projects (various countries)	World Food Programme	WFP (2019)
Wasemavyo Wazanzibari (Zanzibar)	ILPI	*Website offline*
Displaced People Survey (Mali)	World Bank	Etang et al. (2015)
Listening to LAC (Honduras/Peru)	World Bank	Gallup (2012)
South Sudan Experimental Phone Survey	World Bank	Demombynes et al. (2013)
Economic Impact on Ebola Survey (Liberia)	World Bank	LISGIS, World Bank and Gallup (2014)

Cost considerations and changing data needs

One of the biggest determinants of survey design is cost. More often than not, M&E and research budgets are limited (and under-resourced), restricting the level of ambition that projects can dedicate to survey exercises.

In this context, it is important to consider how much time is needed to carry out a given survey. This is where mobile phone surveys can have real advantages. Once a survey is set up, data can be gathered with considerable pace. This becomes particularly useful in post-disaster contexts, where information needs to feed back to development and humanitarian actors in near-real-time. For example, when parts of Malawi were hit by severe flooding in January 2015, the Listening to Malawi team was able to quickly run an additional survey round, gathering timely data on the impact on people's livelihoods. Similarly, data gathered by the BRACED Myanmar mobile phone panel were used to document, in near real-time, the extent of damages from heavy monsoonal flooding, as well as changes in self-evaluated resilience over 18 months (see Jones et al., 2018).

As a general rule, mobile phone surveys can be much more cost-effective compared to traditional face-to-face surveys when considering the costs per interview. Given the substantial costs involved in deploying teams of interviewers into the field – including salaries, transport and accommodation – this will come as no surprise. Indeed, when leaving aside the costs of setting up a face-to-face baseline survey, which many mobile phone surveys rely on to start their panel, the costs per interview can be between a third and a fifth of that of in-person interviews, depending on the set-up.

However, mobile surveys come with considerable time restraints, as calls are often limited to 15 minutes in length. In contrast, many of the international large-scale face-to-face interview projects, such as the Demographics and Health Survey (DHS), or the World Bank's Living Standards Measurements Study (LSMS), typically take several hours to complete. As a consequence, when considering the costs per question, these more extensive surveys generally come out to be more cost-effective than mobile phone surveys.[2]

Takehome messages:

1. Mobile phone surveys are particularly suitable for collecting valuable panel data. This allows for repeated access to the same individuals over time.
2. Where possible, live interviews should be used in conducting mobile surveys, while SMS and IVR can be useful alternatives in certain circumstances.
3. Remote surveys make it much easier to access people in post-disaster or conflict affected areas.
4. As a general rule, mobile phone surveys are cost-effective when interviews are designed to be short and where high-frequency data is required.

2 For useful overviews of cost estimates of mobile phone panel projects in development contexts, see also Ballivian et al. (2015) and Dabalen et al. (2016).

3. How to tailor mobile panel surveys to post-disaster settings

Once a mobile phone survey has been identified as the most suitable option, evaluators then have to consider how to design it. Again, this leads to a large number of questions and considerations, many of which are unique to post-disaster contexts.

Sampling of phone numbers

The first consideration is how to establish contact with potential survey respondents. Typically, these respondent lists are collected during a face-to-face baseline survey, or generated by Random Digit Dialling (RDD): where automated trial-and-error calls are made to a large set of randomly generated phone numbers or where a computer randomly dials all possible numbers in a country's phone listing.

Most large-scale mobile survey panels in developing countries have relied on face-to-face surveys. For example, all of the World Bank's *Listening to Africa* projects first conducted extensive in-person interviews to gather basic sociodemographic information – including phone numbers of respondents and other household members – and build up trust and goodwill. BRACED's RRR in Myanmar also started with an extensive face-to-face baseline survey before rolling out remote phone surveys. Feedback received from the Myanmar survey team highlighted how important these face-to-face encounters are: respondents were much more invested in the project and willing to remain in the panel even after multiple survey rounds.[3]

In certain circumstances, it might also be possible to create a database of phone numbers based on previously gathered information. For example, many development projects routinely collect beneficiary phone numbers as part of their M&E activities. In principle, any recent survey that recorded phone numbers from the target population could be used for this purpose (though there are issues of consent and other ethical issues to consider, which we explore below).

In contrast, RDD has been used in situations where target populations are difficult or impossible to reach through other channels. As mentioned above, the World Food Programme (WFP) used RDD to gather food security survey data in 2015 during the Yemen civil war. As the security situation rendered face-to-face survey work within Yemen impossible, calls were placed from outside of the country and RDD was used to create a panel database of 2,400 respondents, who were called in regular intervals. A similar approach was used by the WFP during the height of the 2015 Ebola outbreak in West Africa.[4] It is interesting to note that, in this case, RDD proved an effective method of identifying eligible respondents, as virtually the whole country had somehow been affected by the crisis. As RDD does not allow one to distinguish between geographical regions, this technique is generally less effective when trying to target respondents in a specific area that has been affected by a disaster. It can also be harder to keep survey respondents engaged over multiple panels, given the lack of direct contact with enumerators from the outset.

Reaching respondents during times of crisis

One of the main issues to contend with as part of a post-disaster phone survey is the state of critical communication infrastructure. Even if mobile phone networks are functional within the target area, people's access to electricity may be limited.

In previous projects, this problem has often been addressed by handing out mobile solar chargers, with this option only available to survey modes that start with a physical face-to-face interview. This was the strategy used by the World Bank's Listening to Africa, as well as BRACED's RRR panel survey in Myanmar. WFP's

3 For a more detailed discussion of the advantages of this design, see Dabalen et al. (2016).

4 For detailed methodological discussions of using RDD in large-scale mobile surveys in developing countries, see Leo, et al. (2015) and L'Engle et al. (2018).

mVAM teams have followed different approaches. For example, while running a panel survey in an Internally Displaced Peoples' camp in eastern Democratic Republic of Congo, they installed solar panels at local kiosks to provide cost-free phone charging points to panellists, along with such provision for non-panellists (for a small fee). More broadly, choices on how to deal with electricity access are largely connected to contextual factors, as well as any resource constraints of the project.

Besides access to electricity, weak or intermittent network coverage is a critical issue across much of the Global South, even in non-disaster contexts. In agricultural communities, this can mean that respondents have coverage when they are at home, but not when they are working in the fields during the daytime. In fact, this was one of the key issues faced by the BRACED survey team in Myanmar. More broadly, information about local coverage gathered during the baseline visits can help anticipate and prepare for such issues. Using this to inform calling schedules, such as dialling in the evenings rather than during the day, can greatly help increase response rates.

However, respondents having coverage and having their phones switched on, does not mean they can be easily reached. In many developing countries, people own more than one SIM card, as calls between people on the same network provider tend to be substantially cheaper and the network quality of different providers can differ substantially between regions. During the BRACED programme's 2017–2019 mobile phone survey in Myanmar, the fact that many respondents were switching SIM cards proved to be one of the most difficult challenges facing the interviewer team. Considerable efforts had to be invested into tracking down respondents through other household members, neighbours or community leaders. It should be noted that this was only possible because these 'secondary' contact details had been collected for each respondent during the face-to-face baseline survey. In the case of RRR, this strategy was effective, with response rates consistently above 95% per round.

Often, small financial incentives in the form of mobile money or credit top-ups are offered to respondents after each interview. While experience shows that monetary incentives alone are not enough to keep respondents engaged and motivated, the available evidence suggests they can indeed help reduce non-response (Ballivian et al., 2015; Dabalen, et al., 2016; Leo et al., 2015). Nonetheless, maintaining high response rates can be particularly challenging in the aftermath of disasters.

In this context, it is important to note that keeping as many respondents in the panel throughout the lifecycle of the project is not simply a matter of ensuring sufficient sample sizes. In any time of crisis, it is those who are most vulnerable and most affected who are more likely to stop participating, leading to a bias in the data.

Dabalen et al. (2016) show that both wealth and education level are among the most robust factors for predicting continued panel participation: more affluent/educated households tend to be less likely to drop out. Similarly, during the Myanmar RRR BRACED panel, households with a higher poverty risk score were more difficult to reach. Unsurprisingly, households who had already owned one or more phones before the project were also more easily reached.

Take home messages:

1. Where possible, collect phone numbers and build up respondent buy-in by running a face-to-face baseline survey, and then carrying on with mobile phone rounds.
2. In instances where access to a target audience is not possible (such as a conflict zone), consider RDD.
3. To make sure respondents can be more easily accessed, consider handing out solar chargers, setting up convenient call-time protocols, collecting numbers from family and neighbours.
4. Consider how socioeconomic factors may affect your participant retention in surveys, and therefore the survey results.

4. Tips for maintaining post-disaster mobile phone surveys

By running the BRACED mobile phone survey through 14 separate data collection rounds across two survey sites, we have accumulated a huge amount of information regarding what works and what doesn't in this method. In compiling this knowledge, we identified a number of tips and tricks that we believe are relevant to others seeking to trial phone surveys in other contexts. Below, we lay out seven key suggestions for running a successful resilience or post-disaster recovery phone survey.

Tip 1: Keep questionnaires short and simple

In order to keep respondents motivated and ensure high data quality, mobile phone surveys must be kept relatively short. Even well-trained interviewers will find it difficult to keep a respondent's attention for an extended period of time over the phone. While no clear guidelines exist, past projects have typically limited mobile phone survey rounds to between 15 and 20 minutes.

This is particularly true when people's everyday lives have been severely disrupted after a disaster. It is important to appreciate that answering a survey will not be a high priority when one's livelihood is at stake. Indeed, we strongly recommend that care and consideration be taken in:

- deciding if and when respondents should be contacted (using extensive local consultative exercises)
- explaining the purpose of the exercise and providing clarity on any time commitment
- clarifying opportunities for people to discontinue panel participation if they wish.

In addition, certain types of survey questions are more difficult – or even impossible – to pose on the phone. In particular, complex and lengthy survey modules – such as those typically used to measure objective resilience – are less suitable to phone administration. To account for this, BRACED's RRR survey in Myanmar chose to track resilience through a subjective module made up of just nine self-evaluated questions. We strongly recommend limiting the number of questions to between 10 and 15 in total, depending on their complexity and length (see Dabalen et al., 2016). Also, while show cards can be a helpful tool to clarify response options for many surveys, these visual aids are evidently not available for phone interviews.

Lastly, it is worth noting that phone surveys are generally not well suited to anthropometric measurements, such as those used to assess acute undernourishment in children. While respondents might be instructed in simple anthropometric measurements (such as mid-upper arm circumference in small children) and in reporting results, the risk of human error will evidently be much higher than with trained professionals.

Box 2: Objective and subjective evaluations of resilience

As the concept of resilience continues to be high on the agendas of policy-makers and development actors alike, the question of how to measure it in the field has received much heated debate.

In the traditional approach, operationalisations of resilience have been based on sets of 'objective' household characteristics such as assets, income or education levels. Recently, however, subjective resilience measurements have drawn increasing attention (Clare et al., 2018). Rather than tasking technical experts with identifying indicators of resilience, the subjective resilience approach assumes that people themselves can assess their levels of resilience much more accurately (Jones, 2019a).

Those interested in this debate, along with the practicalities of subjective resilience measurement, should refer to the *How to guide for subjective evaluations of resilience* (Jones, 2019b). In this document, we will remain agnostic on the issue of objective Vs subjective resilience. We argue above that objective resilience is 'less suitable to phone administration'.

Tip 2: Understand local contexts and build up relationships with respondents (beyond incentives)

As with any research effort, sound knowledge of the local context is a prerequisite for success. Such insights help guide choices on the language and tone interviewers should use, as well as the type of devices (if any) that should be distributed to respondents. In certain conservative communities, it might also be considered inappropriate for a male enumerator to call a female respondent, as was the case in the large-scale Wasemavyo Wazanzibari mobile panel in Zanzibar. Similarly, while questions about a given domain of life might be considered unproblematic within some cultures, they could be seen as highly inappropriate in others.

In a post-disaster setting, knowledge of how severely the targeted communities have been affected can also help anticipate a) how difficult it will be to reach respondents on their phones and b) whether additional interviewers should be brought in to cope with the additional workload.

Building a trusting relationship with respondents is equally important. Here, experience has shown that monetary incentives are only part of the reason that respondents continue to answer their phones and answer questions about their life; people often appreciate having their voices heard and want to contribute to supporting relief and recovery efforts as well. Just as crucial is investing sufficient time into explaining the purpose of the survey to the respondents in a way that makes sense to them and highlights the important roles they play when they provide information. Whenever possible, concrete outcomes of the project should also be communicated back to respondents. For example, throughout the *Listening to Dar* project – a public opinion mobile phone panel in Dar es Salaam, Tanzania – respondents were informed when the news media had picked up findings from previous rounds. This clearly helped maintain respondent engagement and goodwill throughout the lifecycle of the panel.

Many mobile panel projects – such as most of the World Bank's Listening to Africa panels – have also tried to match respondents to interviewers throughout the duration of the project. While this can create some logistical burdens, it can be an effective strategy for keeping non-response low and data quality high. In fact, during the BRACED RRR survey in Myanmar, this strategy of assigning the same enumerator proved to be enormously important for creating a sense of familiarity and trust, keeping respondents engaged throughout the survey's duration. Seeing an interview as nothing but an activity of data 'gathering' neglects the fact that, above all, it is a moment of social interaction between two people. Only if that interaction is perceived by respondents as pleasant (or possibly even interesting/rewarding) can we hope that they will continue to actively invest their efforts and participate truthfully.

Tip 3: Be creative and persistent in tracking respondents

As we stressed above, contacting respondents on their phones during times of crisis can be challenging. To achieve acceptable response rates, interviewers have to be both persistent and creative. Respondents who cannot initially be reached should be called again on different days and at different times. Typically, the number of successful interviews drops substantially towards the end of a survey round, as only the difficult-to-reach respondents remain in the pool. This can lead to some frustration among interviewers.

When the Myanmar Braced RRR team conducted a survey round promptly after the panel communities had been hit by massive flooding, it took more than three days of attempts before one in five respondents could be interviewed. However, the interviewers' perseverance paid off: despite the particularly difficult circumstances of that round, 92.3% of the panel could eventually be interviewed.

The Sauti za Wananchi survey project – a nationally representative mobile phone panel in Tanzania with around 2,000 respondents – took the novel approach of using a small specialised task force of highly motivated interviewers to track down as many of these 'high hanging fruit' respondents as possible in the last days of each survey round.

As we have noted above, calling schedules should be adapted to respondents' availability as far as possible. This often means conducting interviews outside regular business hours. However, in any post-disaster

situation, a subset of respondents may remain unreachable on their phone number(s) even after numerous attempts. This is when interviewers need to start tracing respondents by calling family members, neighbours or other individuals in the panel who live in the same community. This underlines the importance of investing substantial efforts into gathering as many phone numbers as possible from the respondents' family circles and social networks during the baseline visits.

In certain contexts, it can even be feasible, during the baseline phase, to identify one or more designated 'tracing agents' who live in the same community and can assist with finding and pressuring respondents that cannot be reached.

Tip 4: Be aware of possible mode effects

We have argued above that conducting a face-to-face baseline interview prior to the mobile phone rounds offers a number of advantages. However, in taking this step, it is important to be aware of possible 'mode effects'. Here, these relate to any impact that the mode of data collection (such as face-to-face or phone interview) has on people's responses.

A number of studies have suggested that data gathered face-to-face might differ slightly from responses over the phone for certain types of questions (Dolan and Kavetsos, 2016; Kreuter et al., 2008). Much of this literature has focused on social desirability, namely the tendency of respondents to underreport behaviour or attitudes that are seen as problematic or shameful.

While social desirability will always influence responses to questions on sensitive topics, it seems that whether or not the interviewer is physically present during the interview is of importance here. Specifically, there is some evidence to suggest that social desirability is less of an issue with mobile phone surveys, as respondents might be more willing to give socially undesirable answers if they can't see the interviewer (Kreuter et al., 2008; Ballivian et al., 2015). During BRACED's Myanmar panel, respondents seemed to provide different responses to self-reported levels of resilience according to whether the interview was conducted face-to-face or in-person. In the Myanmar survey, resilience levels stated over the phone were systematically higher than those reported in person (Jones, 2019c). Nonetheless, it is important to note the considerable difficulty in gauging which of the two modes is a better reflection of a household's 'true' resilience: Are phone surveys too high? Are in person surveys too low? Or are both modes off-track? There needs to be further examination of the impacts and implications of mode effects in resilience measures.

Another point to consider is that studies looking at mode effects are still scarce and in some cases contradictory to the findings detailed here (such as suggesting stronger social desirability effects in mobile phone interviews).[5] There does, however, seem to be some agreement between researchers that questions related to taboo, shame and social undesirability should be treated with some caution in mobile phone survey projects. This is particularly the case where face-to-face surveys are being compared with phone responses.

One way of trying to overcome these issues is to track changes using the same mode of administration (i.e. comparing phone surveys with phone surveys). If any such biases are consistent over time, survey results may still allow for changes in resilience or recovery-levels to be attributed to external factors – whether a project intervention or other relevant activities.

Tip 5: Gain a fuller understanding through qualitative data

While most mobile phone surveys collect quantitative data using closed-ended questions such as Likert scales, this does not prevent qualitative insights from being gathered as well (or instead). Indeed, qualitative insights can provide rich contextual information about household and community dynamics that are relevant to resilience and post-disaster recovery.

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5 A review of the literature on mobile surveys in low- and middle-income countries suggests that the empirical evidence for differences of social desirability bias between phone and face-to-face interviews is still too limited to draw reliable conclusions. (Greenleaf et al., 2017)

Once a mobile phone survey has been set-up, the process of carrying out qualitative phone surveys is relatively straightforward. The first step is for the researchers to identify what type of questions they're interested in asking. While qualitative phone surveys can be used to collect similar data to face-to-face interviews, the biggest restriction comes in the form of time constraints. Open-ended questions are by their very nature slower to ask and gather, as they allow respondents to go in a range of directions; they also collect detailed insights that often take multiple minutes to answer for each question.

Given our previous suggestion of limiting phone surveys to 15 to 20 minutes in length, it is apparent that just a handful of qualitative questions can realistically be asked in a phone survey. One tip here would be to concentrate on a small number of semi-structured interview questions – with enumerators encouraged to press respondents to wrap up after two to three minutes. Another tip is to spread questions across multiple subsets of respondents. Qualitative questionnaires don't have to be the same for all individuals, meaning a large sample size of respondents can be asked a smaller number of questions, thereby increasing the number of responses for each dedicated query.

Another point to consider is how many people should be interviewed during the survey round. While qualitative data can be gathered from all respondents, this may not be necessary or feasible. Unlike quantitative data, which focuses on measuring differences in the structure of aggregated data, qualitative insights are more concerned with collecting richer details and linking them with emerging themes that arise among different groups of people. In many cases, qualitative insights can be gathered from a handful of thorough responses. However, this necessitates careful selection. Fortunately, a mobile panel survey set-up allows for easy respondent selection. In instances where evaluators want to gather representative views, quantitative interviewees can be randomly chosen from the pool of survey respondents, while those where the views of particular respondents are desired, the approach of identifying and targeting key informants, such as female headed households or villages leaders may be more appropriate.

Once a qualitative phone survey has been carried out, it should be processed in much the same way as a face-to-face interview. Recordings can be transcribed, translated where necessary, and then analysed with thematic or content analysis to identify particular themes or trends within the interviews.

Insights from the BRACED survey also suggest that carrying out a small number of qualitative interviews with key informants, alongside the main quantitative survey, can be of considerable value. This can help quickly gain a sense of any changes in the local environment, such as when the area has been affected by a hazard, or if other socioeconomic factors are affecting respondent communities. It can also provide insight into the people's reasons for dropping out a survey. Gathering these qualitative insights can provide considerable advantages in helping keep response rates high and making sure that respondents are eager and happy to participate.

Tip 6: On the ethics of data handling

One of the most important things to ensure in any survey is whether respondents are being treated with dignity, and whether their privacy and safety is being effectively safeguarded. This entails respondents being:

- made fully aware of the aims and objectives of the survey exercise
- provided with the opportunity to drop out at any time, with no costs or ramifications
- assured that their data will be stored and treated in ways that they knowingly consent to.

Above all, it is important to make sure respondents are safe. A key part of this is deciding how to handle and store survey information. In most cases, mobile phone survey data will be held in a central server, with access shared amongst survey administrators (or project staff). However, most survey data has sensitive elements allowing for individuals to be traced and tracked. This is particularly the case where opinions are sought on politically contentious issues, or where survey databases easily allow for households and individuals to be identified (which is the case for most surveys). Indeed, survey responses can be easily used to target vulnerable groups, particularly in fragile or conflict-affected areas.

We strongly advise that all shared data used in a phone survey is stripped of any variables that could tie a response to a particular individual. This could relate to evident information such as names, addresses and locations, but also applies to phone numbers themselves. In many countries, governments keep vast databases of phone numbers, often to track the activities of marginalised groups. There are considerable implications for individuals if survey responses can be linked to phone numbers (and, eventually, individuals themselves). One strategy to mitigate this risk is to allocate each respondent a unique ID number instead of a name or phone number. In instances where a central database of numbers and names need to be stored (as is often the case for panel datasets), care should be taken to encrypt it and limit access to those who require it. Similarly, any datasets that are eventually made public should be scrubbed of any identifying traits, in accordance with standard survey protocols, or aggregated to a level that makes it impossible to trace responses back to individuals.

5. Looking ahead, to the next generation of phone surveys

The field of mobile phone surveying is changing rapidly. New innovations are rapidly emerging, with potential applications to help track resilience and post-disaster recovery. New tools are starting to change the way that information is gathered and used for resilience-building. These include:

- tailored WhatsApp surveys (see United Nations Children's Fund (UNICEF), 2018)
- location tracking, using call-data-records (see Lu et al. 2016)
- photo validation of disaster impacts (see Chepkwony et al., 2018).

In designing this how-to guide, we hope that some of the mystique and intrigue surrounding mobile phone surveys has been replaced by clarity and inspiration. Our experiences in having run the BRACED RRR panel showcase just how powerful mobile phones can be in helping gather unique insights into resilience and post-disaster recovery. This is especially the case in contexts where political and socioeconomic conditions are changing rapidly, and where complex working environments have to be navigated.

We also hope this how-to guide has provided researchers who are thinking of using a mobile phone survey with insights into where the use of phones is appropriate, and how best to go about setting up such a survey. We also trust that others will be encouraged to share their experiences in running mobile phone surveys for resilience-building, thereby helping to increase the currently limited body of knowledge in this area.

Above all, we want to ensure that our experiences inspire others in trialling new innovations and exploring alternative ways of collecting information on resilience and post-disaster recovery. Such activity will be crucial in providing a more holistic understanding of resilience and ensuring that development and humanitarian interventions are targeting those most in need. Doing so is important in improving the design, targeting and evaluation of resilience-building interventions by development and humanitarian actors.

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BRACED
KNOWLEDGE MANAGER

The BRACED Knowledge Manager generates evidence and learning on resilience and adaptation in partnership with the BRACED projects and the wider resilience community. It gathers robust evidence of what works to strengthen resilience to climate extremes and disasters, and initiates and supports processes to ensure that evidence is put into use in policy and programmes. The Knowledge Manager also fosters partnerships to amplify the impact of new evidence and learning, in order to significantly improve levels of resilience in poor and vulnerable countries and communities around the world.

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