Method of tracking the displaced: A lesson from The Study of the Aftermath of Tsunami and Recovery in Indonesia**

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On December 26, 2004 a massive earthquake struck in the Indian Ocean, creating a tsunami that slammed into the nearby island of Sumatra some 45 minutes later, resulting in unparalleled devastation.

The Study of the Tsunami Aftermath and Recovery (STAR), provides scientific evidence on the magnitude of this shock in Indonesia, as indicated by an array of social, economic and health indicators.

The goal of the STAR survey, is to provide information on the impact of the tsunami by re-interviewing SUSENAS (National Socio-Economic Survey) 2004 respondents who were living on the coast where the tsunami struck (as well as in comparison areas inland and further down the coast) and collecting, in 2005, the same information on the health, socio-demographic and economic status of each individual that was collected in 2004. The follow-up survey locates about 10,000 households and 41,000 individual respondents who were interviewed in the 2004 wave of SUSENAS in coastal districts of Aceh and North Sumatra. We follow those who have moved away from the origin communities as well as those who remain in the origin communities. While the vast majority of movers have remained in Aceh and North Sumatra, some in temporary

quarters and camp sites we have tracked movers across the islands of Sumatra and Java and some of them back to the origin communities from which they started. In the first follow up survey STAR was able to follow up 93% of households that were interviewed in 2004. The success of the follow up surveys results from the special design of tracking method that have been used in identifying and re-contacting respondents who have scattered as a result of the disaster.

The goals of this paper are to document and describe our efforts in determining whether respondents are alive or dead and finding respondents that have scattered throughout the tsunami affected areas and sought opportunities outside the damaged zone. Ascertaining survival status is one of the important goals of Star in order to estimate the level of mortality after the disaster. The paper will further illuminate our success at completing interviews and differences in the results between the tsunami affected areas versus the non tsunami areas. The reasons underlying the success at tracking under difficult conditions will be discussed, and we will demonstrate the contribution of long distance tracking in increasing the chance of finding and interviewing respondents. Additionally this paper will also show the special procedures developed and implemented in STAR, namely the use of multiple informant reports. We will document the advantages in tracking the displaced in comparison to the regular method of tracking with single informant.

Data

The data used in this paper is the first round of the follow up survey of STAR conducted between May 2005 (five months after the tsunami) and April 2006. STAR tracked 41,515 respondents resided in 9,970 households in 646 communities in coastal Aceh and North Sumatra. All of these households were followed-up with 93 % success. The second and the third follow up survey have been conducted with similar rate of success.

Discussion

A. Ascertaining Survival Status

Constructing a more accurate count is important for determining the size of the disaster and implementing appropriate long-term responses (Fleck 2005). Our approach to the task of quantifying these outcomes is much more systematic than most efforts because our starting point was lists of households and individuals enumerated in February

2004 by BPS. Whenever possible we ascertained survival status for individuals by identifying a living member of the original household and asking him or her about each of the original household members.

Perhaps the greatest challenge has arisen when we are unable to find a 2004 respondent or any of the members of his or her 2004 household. In those cases, we are obtaining information about the person from multiple sources, including the village leaders, the person's immediate relatives and former neighbours, and other people in the community. This information includes the informant's assessment of the individuals' current survival status and whereabouts, a note for additional information (such as whether the person was seen alive recently, or whether the body was seen after the tsunami), and a place for the interviewer to assess his or her confidence in the informant. We also draw on village-level records of who survived and who did not, which have been compiled in order to facilitate the disbursement of survivor benefits, and on centralized records maintained by the Indonesian Red Cross. Combining all this information together allows us to identify those confirmed as dead, as well as associate a probability of survival with those who are thought to have died based on the information collected and the confidence with which the informant reported the status of the individual.

Overall 98.5% of the respondents in the survey could be classified their survival status. As expected the rate is higher in the non tsunami areas compared to the tsunami areas. The lower rate in the tsunami affected area is as a result of higher percentage of movers that could not be located (7.2%). The reason for failure to ascertain survival status of respondents mostly either because they are lost or missing in which case informants were not certain about their whereabouts. We went a great length to verify the existence of the 2004 household and individuals that were not known by asking the village head, neighbours and the former 2004 interviewers before we close the case as don't know cases.

B. Completing Interview

Completion rates and interviewing rates (conditional on live respondents) obtained in the first follow up survey of STAR shows that STAR was able to identify 93% of the household interviewed in the 2004 SUSENAS. The rate of refusals is less than 1 % but slightly more than 6 % of 2004 households could not be contacted for

several reasons. Roughly about 2.5% were movers for whom adequate information on new locations was not available, others, about 2.5%, were households that could not be contacted because none of the household members were found because of the tsunami or for other reasons such as sick, travelled (1%). This completion rate places STAR in the same league of previous longitudinal surveys in Indonesia.

The interviewing rate (conditional on live respondents) at the household level was 93%. As expected the interviewing rate in the tsunami affected area is lower (90%) than what was obtained in the non-tsunami area (95%) because of higher rates of movers and no household members were available because of tsunami. The completion rate at the individual level showed a similar pattern, but at a lower rate. This suggests that although the household could be contacted, we were not always successful in interviewing every member of the household entirely.

C. Tracking under difficult condition

There are various factors underlying the success of previous longitudinal survey in Indonesia, but the most important factor is the success in following up respondents who have moved away from their original location. This is also true in STAR. The task in re-contacting STAR respondents is even more challenging. It involves not only finding and interviewing those still alive but also verifying information about those who are missing or those dead or thought to have died. Obtaining information about death is important to enable us to estimate mortality after the disaster.

The extent of our effort to follow up households and individuals in various locations shows that overall about 90.1% of households were enumerated in their original location in which 83.5% were successfully interviewed. The other 9.9% were interviewed through long distance tracking. The fraction of households located and interviewed during the tracking phase is higher in the tsunami affected area (15.7%) than in the non tsunami area (7.4%).We went to a great length to locate movers in the tsunami area by going to barracks, tents, public places (mosques, schools, village halls, etc) and other temporary houses.

Overall tracking could contribute to increasing interviewing rate by 8.5%. The increase in interviewing rate due to tracking in the tsunami affected area is twice higher

than in the non tsunami that is 14% and 6% respectively. Could this suggest the success of tracking respondents in the tsunami area and if yes, why is that so?

STAR used special tracking procedures that utilized multiple informants. This method proved useful in identifying the whereabouts of respondents in destroyed areas where the original place of residence was deserted because of the disaster. How this method works and contributed to the success of re-contacting respondent will be described in the next section.

D. The Use of Multiple Informants

For tracking and finding respondents where at least one member of the household is located we can easily collect information about other members of the household from that particular person. We obtained information about movers from any person who was listed in the household roster and subsequently found. However in situations where the area had been damaged by tsunami and no single member of household could be found in the original location require special effort to find information about the whereabouts of each person. In this situation STAR implemented a mini roster that listed every member of the household and used multiple informants to obtain their current status and location. If any household member was thought to be alive by an informant, information on the new location and other tracking information should be obtained from each of the informant (new address, address of work place, school attended by their children etc). On the other hand if all members of the household were thought to have died, information on the date of death was collected. Interviewers were asked to rate the level of confidence of information from each informant.

The need to have multiple informants is greater in following up members residing in the tsunami affected area. Indeed two third of these individuals were found in the same village, where no informant apart from members of the household is required to find them, but the majority of others that can not be located in the same area need tracking information from more than two informants.

The success of a survey in a disastrous area such as STAR is not only determined by the success in finding and interviewing respondents. Determining survival status is equally important in evaluating the success of the survey. Controlling for sex, age and relationship to the head of household, the role of multiple informants is more prominent

in determining the survival status of respondent. The degree of confidence in the information provided is very high since 97% of information on survival status reported is the same across informants. Neighbours and village leaders are more likely to play the role as informants in the tsunami affected area than family who play an important role in giving tracking information in the non tsunami area. This is understandable, particularly in areas badly affected by the tsunami where houses have been destroyed and deserted by the occupants.

The data also reveals the difference in the quality of information the informant could provide. While in the non tsunami area informants could provide more detailed information on addresses, in the tsunami area the percentage of informants that could give detailed address is lower, but a higher percentage of those could give a location note. Having more informants therefore is necessary in the tsunami affected area to get more location information. Multiple informants significantly increase the probability of obtaining more detailed address information, hence increasing the probability of interview.

Conclusion

The paper has demonstrated that tracking has a significant role to play in increasing the re-contact rate in STAR, particularly in the tsunami affected area. The contribution of tracking in increasing the interviewing rate is twice higher in the tsunami areas compared to the non tsunami areas. The success rate of STAR is also determined by its success in identifying those who died and in this case the role of multiple informants could not be over emphasized. Using multiple informants is more likely to get detailed information on movers such as new home address, work place in the new location, address of school attended by mover's children, which increase the likelihood of finding and interviewing them.

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