This essay tackles the methodological challenge of developing a 5-year survey study to track the Northwood community’s recovery process utilizing a random sample. The essay includes a step-by-step discussion of the primary design issues as well as the rationale for design decisions. The primary design issues addressed include type of survey, instrument design, topics in the survey, how the survey will measure community recovery, and sampling.

Type of Survey

There are tradeoffs associated with the choice of either of the two types of surveys typically used in social research—telephone surveys and mail surveys. A few of the primary advantages and disadvantages of the two types of surveys are summarized in Table 1.

Table 1. Primary advantages and disadvantages of telephone and mail surveys.

<table>
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<tr>
<th>Survey Type</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td>Telephone</td>
<td>Can be faster and more efficient than mail survey (Jones, 1987)</td>
<td>Excludes those without telephone (Wright, 1979)</td>
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<td></td>
<td>Unintimidating (Bernard, 2000)</td>
<td>People do not want to be bothered (Dillman, 2007)</td>
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<td></td>
<td>Inexpensive (Bernard, 2000)</td>
<td>Have to keep it short (Bernard, 2000)</td>
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<td></td>
<td>Can avoid interviewer bias by monitoring (Bernard, 2000)</td>
<td>Growing number of cellphone-only users</td>
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<td>Mail</td>
<td>Potentially able to collect a lot of data from a large group on people in one or more mailings (Bernard, 2000)</td>
<td>Cannot control who receives and fills out the survey (Bernard, 2000)</td>
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<td>Everyone gets identical questions (Bernard, 2000)</td>
<td>Low response rates (Bernard, 2000; Wright, 1979)</td>
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<td></td>
<td>Conducive to complex questions (Bernard, 2000)</td>
<td>Can exclude the blind and illiterate (Bernard, 2000)</td>
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<td></td>
<td>Can include long batteries (Bernard, 2000)</td>
<td>Sampling issues (Bernard, 2000)</td>
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<td></td>
<td>No response effects (Bernard, 2000)</td>
<td>Ordering effect (Dillman, 2007)</td>
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Presumably the salience of this survey would be quite high, and therefore, it is anticipated that both a telephone and mail survey would be well received by the community (Jones, 1985; Groves, Presser, & Dipko, 2004; Nachmias & Nachmias, 1987). And yet, a telephone survey is recommended to study Northwood community recovery for several key reasons. One advantage of telephone surveys is that they do not exclude the blind, illiterate, and many of the disabled from participation; Northwood’s small population makes it even more important that no one be excluded from the survey. Another advantage of doing a telephone survey is that the survey
could be conducted and completed relatively quickly with whoever answers the telephone as long as the individual is over the age of eighteen. In other words, there is more control over who participates and how quickly they complete their participation in a telephone survey, whereas in a mail survey the researcher has no control over who opens the mail and answers the survey or when they return the survey.

Perhaps the primary advantages of telephone surveys are that they are relatively low cost, and the time for project completion is less than mail surveys (Jones, 1985). One reason telephone surveys can be both more efficient and affordable than mail surveys is because computer assisted telephone interviewing (CATI) software can be used to facilitate interviews. CATI “employs interactive computing systems to assist interviewers and their supervisors in performing the basic data-collection tasks of telephone interview surveys” (Groves, Biermer, Lyberg, Massey, Nicholls, & Waksberg, 1988, p. 377). The use of CATI allows telephone interviews to benefit from some of the advantages commonly associated with mail surveys, namely, that all respondents receive identical questions. If the sample size were large or geographically dispersed or if the interview instrument were going to be long, then the benefits of the telephone survey would be outweighed by the costs (Frey, 1988).

Writing questions and constructing a questionnaire for a computer assisted telephone interview is not altogether different from the process for developing a mail survey (Frey, 1989; Groves et al., 1988). Several guidelines for the development of questions—irrespective of method of delivery—are listed in Table 2.

Table 2. Guidelines for developing survey questions.

<table>
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<tr>
<th>Things to Avoid</th>
<th>Things to Ensure</th>
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<tr>
<td>Do not require people to get more information to answer questions (Babbie, 2001)</td>
<td>Use equal number of positive and negative choices (Dillman, 2007, p. 57)</td>
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<tr>
<td>Do not allow for misunderstanding or different interpretations (Babbie, 2001; Dillman, 2007)</td>
<td>Account for possible contingencies (Babbie, 2001; Nachmias &amp; Nachmias, 1987)</td>
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<tr>
<td>Avoid double-barreled questions (Babbie, 2001)</td>
<td>Make sure choices are mutually exclusive (Dillman, 2007)</td>
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<tr>
<td>Avoid double negatives (Babbie, 2001)</td>
<td>Use simple vocabulary (Babbie, 2001; Dillman, 2007; Jones, 1985)</td>
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<tr>
<td>Avoid requiring too much precision (Dillman, 2007)</td>
<td>Keep questions short (Babbie, 2001; Dillman, 2007)</td>
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<tr>
<td>Avoid vague quantifiers (Dillman, 2007, p. 54)</td>
<td>Pay attention to ordering effects (Babbie, 2001; Nachmias &amp; Nachmias, 1987)</td>
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<tr>
<td>Avoid using biased words (Babbie, 2001; Nachmias &amp; Nachmias, 1987)</td>
<td>Everyone has a “ready-made” answer to questions (Dillman, 2007, p. 35; Nachmias &amp; Nachmias, 1987)</td>
</tr>
<tr>
<td>Avoid vague terms or categories (Dillman, 2007; Jones, 1985)</td>
<td>Ensure people will be motivated to answer (Dillman, 2007; Jones, 1985)</td>
</tr>
<tr>
<td>Avoid leading questions (Jones, 1985; Nachmias &amp; Nachmias, 1987)</td>
<td>Have justification for each question asked (Babbie, 2001)</td>
</tr>
<tr>
<td>Know the kind of information you are trying to get is it about attitudes, beliefs, behavior, or attributes (Jones, 1985)</td>
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</tbody>
</table>

The survey instrument would be developed within the guidelines presented in Table 2. In addition, it is anticipated that the majority of survey questions will be close-ended with ordered and unordered response categories (Dillman, 2007).

Topics to be Covered in the Survey

The City Council of Northwood wanted the survey to measure the community’s progress toward recovery. Recovery for the purposes of this research will be understood to be the “activity to return the affected community to pre-disaster or, preferably, improved conditions” (McEntire, 2007, p. 480). The topics to be covered in the survey would be found in the disaster literature related to recovery. The literature indicates that there are many variables related to actual and/or perceived community recovery. A sampling of some of the variables cited includes:

- literal impacts and economic hardship (see for example: Stimpson, 2005);
- impacts of disaster on and reconstruction of businesses where community members bank, shop, and recreate (see for example: Nigg, 1995);
- rate, extent, and quality of recovery from impacts of disaster (see for example: Golec, 1983);
- whether individuals received aid, what kind, and for how long (see for example: Erickson, Drabek, Key, & Crowe, 1976; McDonnell, Troiano, Barker, Noji, Hlady, & Hopkins, 1995);
• the need to seek and the availability of shelter/housing (see for example: Bolin & Stanford, 1991; Bolin & Stanford, 1998);

• resources of residents, perceptions of pace of recovery (see for example: Green, Baters, & Smyth, 2007);

• personal support network (see for example: Drabek & Key, 1976; Hall & Landreth, 1975);

• characteristics of individuals, their personal network contexts, and their local community context (see for example: Beggs, Haines, & Hulbert, 1996);

• impact on resources, dislocation, aid receipt, socioeconomic status, place in the life cycle, and kin network (see for example: Bolin, 1976);

• trust in leaders, opportunities to participate, individuals role in recovery decisions, satisfaction with leadership, satisfaction with progress (see for example: Kewit & Kweit, 2004); and,

• employment continuity, aid, impact, access to resources, and income recovery (see for example: Bolin & Bolton, 1983).

A more thorough literature review would be undertaken to expand on this initial list of variables, and, where available, the survey instruments used in previous studies would be consulted. Ideally, a pre-existing survey would be found that measured community recovery and demonstrated both reliability and validity. If a pre-existing survey instrument was not found, then a comprehensive list of questions would be generated based on the literature review and then the comprehensive list would be refined.

It is anticipated that the survey instrument would contain three scales—one measuring how the tornado impacted the individual being surveyed, one measuring actual progress toward recovery, and one measuring perceived progress toward recovery. The instrument would ask individuals about their individual/household recovery as well as the recovery of their neighborhood, local businesses, and the community as whole. Where possible, data would be collected at an interval level, or interval level proxy (e.g. 5-point Likert scales), because it would
allow for the strongest and most sophisticated statistical analysis (Blaikie, 2006, p. 26), and because it would allow measurement of the “amount or quantity of change rather than simply whether they have changed or not” (de Vaus, 2001, p. 154).

A pre-test with 32 or more people would normally be desirable prior to administering a survey study (Bordens & Abbot, 2005) because a standard normal distribution typically emerges with 32 or more respondents (Rathge, 2007). In this case, the population is so low that, preferable though it may be, engaging in this step cannot be afforded. On the other hand, the survey could and would go through a peer review process and a focus group (5-10 people) would be held with Northwood community members to ensure that the survey instrument is free of error, omission, grammatical issues, vague or confusing wording, missing options, offensive or biased wording, and any other problems.

Measurement

In order to ensure sample precision and accuracy, certain demographic information about the sample (e.g. age, income, education, race, and marital status) would have to be collected from respondents. This data allows the researcher to determine if there is a difference in the distributions of characteristics between those who participated in the survey and the population of Northwood as a whole. As Bernard (2000) said, “representative sampling is the key to external validity” (p. 180).

Unfortunately, the reliability and validity of measurement would not be able to be ascertained until after data had been collected. Conducting a pre-test or using a pre-existing survey can help in achieving reliability and validity, but are not a guarantee. The reliability of the survey instrument would be checked in two ways. First, the survey would be checked for interitem reliability. Because different versions of the same indicator would have been used, it is
anticipated that the surveys would evidence internal consistency and that the survey items would be closely associated (Chambliss & Schutt, 2006). Second, the survey data would be checked for interobserver reliability. Because all participants in the survey would receive the same questions about the same topic, it is anticipated that they will rate items within the recovery scales similarly.

The survey instrument would also have to demonstrate measurement validity, or “how well your indicators measure what they are intended to measure” (Chambliss & Schutt, 2006, p. 71). There are four types of validity pertaining to measurement: face, content, criterion, and construct (Chambliss & Schutt, 2006). The survey would meet face validity as it would rely on preexisting literature and the indicators used in previous studies on actual and/or perceived recovery. The survey’s content validity would be increased because it would expand measurement indicators beyond those traditionally used to fill in the gaps, or address the issues, noted by the literature. Assuming no agreed upon criterion for actual or perceived recovery existed against which to analyze the survey data, then construct validity would be sought. The combination of the aforementioned scales of actual and perceived recovery are assumed to together make up the concept of recovery; and, therefore, the two scales should correlate. If the scales correlate, then one can deduce that the survey instrument truly measures “recovery” and hence that the survey meets the standard for construct validity.

Sampling

In order to generalize to, or make inferences about, the recovery process of the Northwood community as a whole, random sampling will have to be attempted (Chambliss & Schutt, 2006). In a random sample “every person in the population must have an equal chance of being chosen for the study” (Bordens & Abbott, 2005, p. 157-158), but before drawing a sample
a couple of important steps must be taken. The word community must be defined; and the population for study must be specified; the sample unit and sampling frame must be determined; and, the confidence interval and tolerance for sampling error must be decided.

The word community, as it is conceived for this study, indicates all individuals over the age of eighteen who reside in the community of Northwood; and, therefore, the population for this study would include all individuals over the age of eighteen in Northwood. The U.S. Census Bureau estimates that Northwood’s population in 2007 was 880 people (U.S. Census Bureau, 2007). The sample size, however, cannot be calculated based on this estimate because it includes young people under the age of eighteen. There was no estimate of the proportion of youth under the age of eighteen for 2007 through the U.S. Census Bureau, however, data from the 2000 Census can be used as an estimate. The 2000 Census indicated that approximately 22% of the population nineteen years of age or younger. If one assumes that the proportion of young people remained the same in 2007, then the population needs to be reduced by 22%. This reduction results in a population of approximately 686 individuals. Individuals would be the sampling unit for this research; and, the sampling frame would be a list of all individuals above the age of eighteen in Northwood.

An acceptable margin of error, or confidence interval, in the social sciences is 5% and a typical confidence level is 95% (Bernard, 2000, pp. 529-530). Using a sample size calculator, and the aforementioned tolerance for error and confidence interval, it was initially determined that a sample of 246 individuals would have to be drawn (Creative Research Systems, 2008). Even though the researchers can anticipate having to make as many as 20 callbacks per phone number (Chambliss & Schutt, 2006), the literature indicates that non-response and refusal rates for telephone surveys will still vary from 30-65% (Bernard, 2000; Curtin, Presser, & Singer,
2005; Groves, Presser, & Dipko, 2004; Ketter, Miller, Kohut, & Groves, 2000). Therefore, out of caution the sample to be drawn will be increased by 65% resulting in a new intended sample of 406 individuals.

Because a goal of this study is to deal with change overtime in actual recovery and/or perceptions of recovery over time either a panel study or cohort study would have to be utilized (Jones, 1985). The best choice for this study would be a cohort study because “in a cohort study, different samples from a given population are contacted” in each wave (Jones, 1985, p. 188). This type of study has an underlying assumption that there will be “no changes in the general population” during the time-period of the study (Jones, 1985, p. 188). This longitudinal approach indicates that only aggregate, or in this case community level, change will be measured as opposed to individual change (de Vaus, 2001, p. 154).

Each year for the five-year study period, a sample would have to be purchased. A random digit dial sample for this study would be purchased from the reputable Survey Sampling International, LLC (SSI). SSI describes their random digit dialing service as “a process by which SSI builds a series of databases from which to generate probable working residential phone numbers in proportion to the households present” (SSI, 2008). SSI charges $.345 per record.

This project would cost approximately $4,700.07 each year assuming the following cost equation: (406 x $.345) + (406 x $10 (labor, facilities, long distance)) + $500 (data analysis and report writing) = $140.07 + $4560 = $4,700.07. The anticipated total cost for the 5-year project would be $24,000.35. This total cost includes a one-time $500 charge for survey design.

References


