REF 792 – Special Topics: Survey Research

Project 1 – Sampling Plan

March 22, 2015

Target Population: Residential Contractors

The degree to which a sample is representative of a population is dependent, in part, on the accurate definition of the sampling frame from which the sample is chosen; therefore, it is important to have a good understanding of the population. For this project, the target population was residential contractors. To gain an understanding of this population, an internet search was conducted. It was found that the Federation of the National Association of Homebuilders (NAHB) represents and supports residential contractors at the state and local levels. There are over 140,000 members of this organization. An operational definition of the population is necessary in order to know what parameters will be used in choosing the sample. For the project, the operational definition of the target sample is:

- residential contractor
- member of NAHB
- currently working full-time as a residential contractor
- gender, age, and geographical location will be considered only as a way to ensure a representative sample

For the research questions to be asked in this project, no further breakdowns of the target population were necessary. As discussed below, adjustments will be made in sampling to reduce coverage error and assure that an adequate number of respondents will be found in order to complete analysis of the data collected.

The NAHB consists of state and local chapters through which e-mail distribution of an online questionnaire may be completed. In addition, the members of NAHB are active on social media sites, with the NAHB Facebook page having over 46,000 “likes,” a Twitter account with over 32,000 followers, and a YouTube channel (NAHB, 2014). Following the initial distribution

of the questionnaire, NAHB members will be sent a reminder via e-mail, an announcement will be posted on the NAHB Facebook page, and Twitter followers will be tagged. A second reminder will be sent to non-respondents.

Alternative survey methods may include telephone or U. S. Mail, or a combination of these methods. With a large sample size such as the one needed for this project, time and cost to hire interviewers may be viewed as prohibitive for telephone surveying. In the same way, the cost of a hard-copy questionnaire would be very expensive as compared to a completely electronic distribution method. NAHB members are accustomed to the use of computers and the internet; therefore, it is likely they will respond to an online survey instrument. Additionally, electronic questionnaires may be personalized easily with the potential respondent's first and last names if these are obtained from NAHB.

Survey Focus, Research Questions, and Sample Size Needed

The focus of this project is to determine residential contractors' attitudes about online dating. The research questions are:

1. What is the overall attitude of residential contractors regarding online dating?
2. Are there differences in attitudes based on gender? (male, female)
3. Are there differences in attitudes based on age? (20-29, 30-39, 40-49, 50-59, 60-69, 70 and over)
4. Are there differences in attitudes based on geographical location? (United States Census Bureau, 2014)

A maximum of six groups will be used for any one research question (age differences). By using an online sample size calculator (Relevant Insights, 2014), it was determined that, with a confidence level of .95, a response percentage of 50%, maximum margin of error of 5%, and

population size of 140,000, the required sample size per group is 383. For six groups, the total sample size needed is 2,298. It is impossible to guarantee that the sample chosen will be representative of the population; however, the best the researcher can do to attempt to achieve a representative sample is to use random selection in a simple random procedure, and over-sample under-represented groups, such as female residential contractors.

Probability Sampling

The technique of probability sampling is one that allows the researchers to have the most assurance that the sample is not biased (Fowler, 2014). This technique consists of four steps:

1. define target population using the operational definition,
2. determine the sampling frame,
3. determine the sample size,
4. specify the sample plan.

Since it is best if the sample looks like the population along certain characteristics as defined by the research questions, proportional stratified sampling will be used in this study. This type of sampling allows the researcher to achieve a sample that is representative of the population and minimize the chances that the sample is biased or is not representative of the population, therefore reducing sampling error estimates. A certain amount of bias is unavoidable, but this technique is one way to minimize bias.

In order to conduct proportional sampling, the researcher much determine the proportion of residential contractors that falls into each of the groups that will be used: percentage of men vs women, percentage in each age category, and percentage in each geographical location. Next, the researcher will determine the number of individuals in each category that will be required for analysis. If there is a low-incidence group, such as women who are residential contractors, it

may be necessary to over-sample in order to make sure the low-incidence group is large enough for valid analysis.

Once the number of participants needed is known, stratified random selection will be employed. In order to complete stratified random selection, the researchers must have a complete list of the population. One assumption in this study is that such a list will be available through NAHB or through its state and/or local affiliates.

Error

There will always be a certain amount of error associated with sampling. It is the responsibility of the researcher to minimize error as much as possible. There are four sources of error in survey research, and three of these, coverage error, sampling error, and non-response error, are related to sampling. The fourth type, measurement error, is connected with the instrument used. With a large sample, such as the one that will be used in this project, it is expected that the sample will have a normal distribution. In this case, it is expected that 95% of all responses will fall within 1.96 standard deviations of the mean for each question.

Coverage error has to do with the accuracy of the sampling frame. Problems occur in this area when the sampling frame is not an accurate representation of the population. In addition, the researcher must make sure each potential participant has an equal, non-zero chance of being selected for the sample. As in the current project, when there may be under-represented categories, weighting is a procedure that can correct for the condition that every will not have an equal chance of being selected. It is assumed that there are significantly fewer female residential contractors than male residential contractors; therefore, a higher percentage of females will be selected than males. This will be calculated once the actual percentage of female contractors in each geographical area is known.

When a survey is implemented, it is impossible to know who will respond and who will not respond. Bias occurs when survey respondents are not representative of the population as a whole. Non-response error could make the sample non-representative of the population, therefore introducing bias into the project. Depending on the type of survey method employed, there are ways to reduce non-response error. With telephone surveys, it is helpful to send a letter in advance of telephoning. The interviewer must be able to make telephone calls at night and on the weekends. Interviewers must be able to clearly state the purposes of the survey and must be able to guide the interview based on responses from the subject. For mail surveys, questionnaires should be presented in a professional and clear manner. Instructions should be direct and easy to follow. Reminder cards are helpful in increasing response rates. For internet surveys, the principles remain similar to those of mail surveys, in that the presentation of the questionnaire should be attractive and easy to follow.

Mixed-mode surveys allow the researcher to use more than one way to reach potential respondents and collect data. The instrument used must be consistent across each mode used. Questions that are difficult to communicate to potential respondents on the telephone, for example, should not be used in other modes even though they may be easy to answer in other modes.

Expenses

E-mail was chosen as a distribution method for this survey since the pool of potential respondents is so large. There may be a cost associated with obtaining an e-mail list of residential contractors from NAHB. Other costs include instrument development and administration of local focus groups.

References

Fowler, F. J. (2014). *Survey Research Methods*. Los Angeles: Sage Publications, Inc.

National Association of Homebuilders. (2014). *Our organization*. Retrieved from http://www.nahb.org/page.aspx/generic/sectionID=89d

Relevant Insights. (2014). Research tools. Retrieved from http://www.relevantinsights.com/research-tools

United States Census Bureau. (2014). *Census regions and division of the United States*. Retrieved from https://www.census.gov/geo/maps-data/maps/pdfs/reference/us_regdiv.pdf