Review article

Household respondent selection techniques-An over view

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Abstract:

Household constitutes the unit of data collection in social surveys, which is the major source of socio demographic data in country like India. The household surveys provide a feasible alternative to full scale enumeration for timely data collection and more relevant in understanding of social and demographic events. In order to get results which are representative of the general population, probability sampling procedures are often in use for sampling unit selection. Survey process usually assumes probability sampling of households and a second stage of random selection of the respondents with the household (1). However elements of bias may enter primarily because the sampling units (Individuals) are not clearly defined or the definition of the sampling units fit more than one member of the household. The "Respondent Selection Problem" thus arise is a common problem which often faced by social investigators in the field settings. This paper aims at highlighting some of the keynotes of various techniques which are currently being used for respondent selection along with their drawbacks. It is hoped that incorporation of such respondent selection procedure would make house hold survey more probabilistic and increase the external validity and reliability of the survey.

Key words: Social research, Respondent selection, Household Survey, KISH Grid

Introduction:

In most of the social surveys, household form a focal point of data collection and as such is a major source of socio demographic data. Household surveys provide a cheaper alternative to full scale enumeration for timely data collection and are more relevant in understanding the social and demographic issues of that particular region. House hold surveys are used for collecting varied data pertaining to the conditions under which the people live, their well being, day to day activities, demographic features, cultural aspect and socioeconomic changes.

In order to get results which are representative of the population, it is advised that probability sampling procedures to be followed while conducting, Social surveys. Survey research usually assumes probability sampling of respondents within households to represent characteristics of the adult population (1, 2). All though probability methods are preferable, there is often increased rate of non response due to noncooperation of the selected respondents. Quasi probability and non probability techniques have been devised to increase cooperation and decrease costs, time and effort though they scarify the advantage of randomness (3). As such many sampling literature recommends use the of cluster sampling for household selection for better results in social surveys. Cluster sampling is the procedure in which the elements of the population are randomly selected in naturally occurring groups called clusters. The heterogeneity within the cluster and homogeneity in between the clusters are the fundamental pre requisite for a good sampling procedure (4). Cluster sampling inevitably leads to a multi-stage sampling process

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because the initial selection is of clusters and the subsequent selection is that of the sampling units within the cluster.

The element of bias primarily occurs when the sampling unit is ill-defined or the definition of sampling unit fits for more than one member of the household. This "Respondent Selection Problem" is a common problem which is often faced in field. Solution commonly used for this problem is to select the available member of that house hold at the time of interview, which leads to bias as womenfolk, children and older adults are the ones who get selected the most because their ease of availability. Another problem which occurs is that there is a possibility of reduced cooperation of the respondent- as the person who is contacted first may not be the desired respondent (5, 6). To overcome these problems as a whole numerous techniques have been developed which are commonly known as "Within household respondent selection procedure".

In this paper it is tried to overview of these techniques along with their merits and demerits.

The respondent selection procedures:

1. Probability Methods:

Probability methods often provide the advantage of having consistent, nearly unbiased estimate of the survey population characteristics. The following are some of most common methods used by field investigator

The Kish Method:

The "kish" selection procedure has developed by Hungarian born American scientist *Lesile Kish* (1910-2000). Once a household is selected, the interviewer would create a listing of all the eligible persons in that household for the interview process. The listing include name of the person, age, gender and their relationship with the head of the household. Once the listing is done each member is assigned a unique number. Then using a random table, particular members are being selected for the interview.

Proportions of the Asssigned table	Table Number	If the number of the adult in household					
		1	2	3	4	5	6 or more
		Select Adult numbered					
	A	1	1	1	1	1	2
	B1	1	1	1	1	2	2
	B2	1	1	1	2	2	2
	C	1	1	2	2	3	3
	D	1	2	2	3	4	4
	E1	1	2	3	3	3	5
	E2	1	2	3	4	5	5
	F	1	2	3	4	5	6

Table no 1: The Kish Grid

The use of kish grid leads to a random sample of the household members and decrease bias in the survey. However the procedure increases the time required for the interview as the selected respondent may not be available in the house at the time of the interview. The amount of time required for the training of the interviewer is also high. Due to complexity of the process some interviewer may bypass the entire process. The use of kish grid may also leads to resistance of the respondent as the initial person selected may feel neglected and may not provide the desired help once he knows that he is not the person to be interviewed (6,7).

The Age Order Procedure:

The age order procedure is a variation which helps in random selection of a respondent from a group. In this procedure the investigator asks the question "How many adults live in the household and can be reached here?". The interviewer then lists the members present in ascending order of age, generates a random number from 1 to the total present in the household and then chooses the individual to whom the number corresponds.

This method has a significant advantage because it leaves the absent members at that time for interview process. It is very easier to administer and does not need extensive training. Failure to produce gender stratification is one of its disadvantages (8, 9).

Full enumeration:

All adult members assigned a random number generated from a random table each by the investigator. This allows maximum randomness to occur in the procedure hence each adult member has the equal probability to get selected in the process. If the random number generated is three, for a four member household the third respondent from the list would be selected (10).

2. Quasi probability methods (Birth Day Methods):

In these procedures allocation of the respondents is not totally random rather items with a special characteristics, like birthday are being selected by interviewer.

Next Birth Day/Last Birth Day Methods:

Salmon and Nicolas (1983) had proposed this method; the researcher has to ask simply the family members about next Birthday member. Theoretically it allows equal probability for all members. This method is the easiest and least time consuming in terms of training required and administration (8, 9, 11). The main disadvantage of this process is in many scenarios the variable of interest may have a relation with the birthday itself like in voting process a person more than 18 yrs can vote on his/her next birthday hence restricting the randomness. In many cases the family members may not recall their next Birthday date, hence the researcher can ask about the last Birth day (The most recent Birthday) observed or celebrated in the family.

3. Non Probability/ Quota/ Targeted selection methods:

In order to reduce the cost and time of the research process the investigator may have to follow non random methods in field. The intended outcome many a times approximate the general population in age and gender distribution, although they sacrifice randomness (12).

The Troldahl –Carter (CT) Procedure:

It requires administration of two questions viz." Including yourself how many persons 18yrs or older living in this household" and "How many of them are women". Based on their responses four choices are there for the interviewer-oldest man, oldest woman, youngest man and youngest woman. The ease of

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administration made the T-C Procedure extreme popular and successful in field survey (13). However zero probability for inclusion of other members is one of its disadvantages. Several modified procedures are very popular now a day's one of them is "Barbara E Byrants correction for too many females" also known as Troldahl-Carter-Byrant Grid. This grid can be depicted as follows.

Number of women in the household	Number of adults in the house			
	1	2	3	4 and More
0	Man	Youngest man	Youngest man	Oldest man
1	Woman	Woman	Oldest man	Woman
2		Oldest woman	Man	Oldest Man
3			Youngest woman	Man
4 and more				Oldest woman

Table no 2: The Troldahl-Carter-Byrant Grid

This correction came about because of the fact that young males were increasingly more likely to be away from home as compared to female (3). Hence representation of present females is more likely to be increased, introducing bias in end results.

The YMOF Procedure:

This procedure is commonly known as youngest male, oldest female procedure. This method is two step procedure in which at first level all members present in the household and available are listed. Subsequently the researcher asks about the youngest male present and oldest female, present at home for conducting interview. If either of the member absent or a refusal happens, then the interview is terminated or rescheduled (14). This procedure is extremely easy to administer, reduces non response biases by age and gender. It gives accurate results if equal number of males and females are there in the family.

Arbitrary convenient method:

In selection of respondents within a household, the most widely method used is non probabilistic convenient methods. In this method, any respondent, who is present (or is more cooperative) in the household is chosen it for the interview. In practice, these methods obtain a higher response rates and reduce cost of data collection; but they introduce a higher rate of bias in collection of data which restricts the generalization of the results (15). This method lack representativeness because the most cooperative and available person is being interviewed often the older adults and women.

A Comparative Note:

Many comparative studies have been carried out regarding comparability of all above methods, but they are confined to population of United States only

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under the aegis of American Association Of Public Opinion Research (AAPOR).

Studies have found that both the Age order and kish samples tend to over represent females (16). However another research states that kish method has the superiority as far as inclusion of women is concerned (8). In comparison of the T-C Procedure and kish method it was found that T-C method (especially T-C-B) procedure has an advantage in gender representation. The T-C-B has a better completion rate and is less intrusive than kish method (17). Higher cooperation rate is observed for last birday method than kish method in many research (18). Rosa and Scott in 1987 stated that, Last birthday method found to be more economical in comparison to kish method. The pre-selection refusal rate is higher in kish method than last birthday method (19). Praire Research Asoociates 2001 report states that no significant differences in kish, last birthday/next birth day method as far as demography data representation is concerned (18, 20, 21). Inspite of modification of kish grids, it is the most popular method because it is a near probability method (22, 23). Experience, well trained and efficient interviewer tend to get better result with kish procedure to get better representation. Other procedures tend to have an advantage over kish procedurein terms of cooperation and cost but none comes close to being a probability method (24, 25).

It should be noted that in advanced country like United States most of the research are now Computer Based Telephonic Interview (CATI) using Random Digit Dialing (RDD) which is yet to gain popularity in developing countries like India. As such there is hardly any study in India to describe the efficiency of any of the method over others as far as cost, time and completion rate is concerned hence above discussion should be extrapolated with caution.

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