WITHIN-HOUSEHOLD SELECTION: IS ANYBODY LISTENING?

Kathleen Carr and Joan Hertvik The Ohio State University
Kathleen Carr, 130 Neil Hall; 1634 Neil Ave, Columbus, OH 43210

Key Words: Selection, Household, Sample

The disintegration of the family, the reintegration of the family, the alarmingly high divorce rate, the recent drop in the divorce rate, people getting married later, children remaining in the family household longer, extended family households increasing, divorced adult children with children of their own moving back into the traditional family home, increasing number of female headed households-how many times have we opened up the newspaper to these types of headlines. Our conclusion? The world is constantly changing, our social relationships are changing and our households are changing. The changes in household structure are theoretically interesting, but for those of us who attempt to gauge public opinion these changes present real practical problems in obtaining a representative sample. Can we still use the procedures based on the traditional married couple households of the 1950s to obtain a representative sample in the 1990s?

The problem we address in this paper results from the uneven distribution of gender across today's households and the resulting bias that may occur when using our within household selection procedures. The problem of patterned gender bias was first identified in 1975 by Barbara Bryant. She found that male unrepresentativeness was not only a nonresponse problem but with the increasing number of female headed households that it was also a gender distribution problem. Single female households were more prevalent increasing the probability that a female would be interviewed. She suggested that we change our selection procedures to slightly oversample males. We are concerned about this type of adjustment because, although it does make our numbers look more accurate, if one of the problems is that we are missing young adult males then how is oversampling males in marital couples going to obtain a more representative sample?

Much of the more recent research in the area compares different types of within household respondent selection techniques to determine which of the procedures elicit the most accurate sample (O'Rourke and Blair 1983; Hagan and Collier 1983; and Czaja et. al. 1982). One of the more promising within household procedures has been the most recent or next birthday selection method (Salmon and Nichols 1983). The birthday method is a two stage random selection procedure in which the first stage (we like this part the best) is the actual birth of the respondent and the second stage is whether the individual has the most recent (or the next) birth date in the distribution of birth dates among adult household members. The birthday selection method tends to be less intrusive and elicits a higher response rate than other more intrusive methods such as the Kish (1949) or Trodahl-Carter (1964) methods which ask the respondent to enumerate the number of males and females in the household. The problem of undersampling males, however, may not be effectively addressed with the birthday selection method. Selection procedures which are less intrusive increase the probability of including single females but should not have an affect on male response rates. It is the interaction between household nonresponse, respondent nonresponse, and uneven distribution of gender and age across households that presents the biggest problem to researchers who attempt to obtain a representative sample.

This paper looks at the various aspects of within-household random selection procedures, particularly the birthday method and the Kish method to determine who is not being accurately represented in our samples. We will look at the differences in nonresponse and the distribution of gender and age in comparison to population distributions.

METHODOLOGY

This research pulls together several studies conducted by the Polimetrics Laboratory for Political and Social Research but is primarily based on a survey of 525 adults in the state of Ohio. The topic of the survey was telephone usage. The questionnaire took approximately 15 minutes to administer. The within-household selection procedure used was the birthday method. Additional research used consist of a study of State Parks in Ohio which utilized the Kish method of selection but altered so that all potential respondents were enumerated by their gender and

age ordering within the household but actual age was not obtained. All surveys used in this paper contacted potential households 6-plus to obtain an interview.

To assess the accurateness of the birthday method telephone survey informants were asked additional questions to identify all adults in the household. In addition to our regular demographics we tacked on a series of questions at the end of the survey to simulate the Kish within-household method. In so doing we obtained a listing of all adults, their gender, and age in the household. From this listing we were able to determine the person who would have been chosen if the Kish form would have been used. We are not interested in whether the birthday method chooses the exact same respondent as the Kish method but which method obtains the most accurate distribution across respondents. Also, it must be remembered that the gender and age distribution would probably differ between the two methods within the Telephone survey because the Kish method would have elicited a higher nonresponse rate then the birthday method. To access the impact of nonresponse, we include data from the Park/Kish study whenever possible.

FINDINGS

Gender Distribution

It is generally the case that our surveys oversample females and undersample males. The following table shows a comparison between the 1990 census, the telephone usage survey, and the Parks survey conducted at the Polimetrics Laboratory. The telephone survey is compared on the original birthday method and the "after the fact" Kish method. The numbers in parentheses show the percent difference from the Census determinations.

As is usually the case, both methods tend to oversample females but the birthday method is slightly more accurate in obtaining a gender distribution closest to the 1990 Census estimates (1.1% difference compared to 3.2%). It is interesting that the Kish form (Parks survey) oversamples female more than the birthday method particularly since the Kish method is more intrusive and should make females less likely to participate. Along the same line, the Kish method should have nothing to do with male nonresponse but the method appears to be more likely to undersample males. If males are simply harder to pin down for

	1990 CENSUS OF OHIO	PARKS SURVEY	TELEPHONE USAGE SURVEY	
			BIRTHDAY METHOD	KISH
FEMALE	52.8%	56.0% (+3.2)	53.9% (+1.1)	51.0% (-1.8)
MALE	47.2%	44.0% (-3.2)	46.1% (-1.1)	49.0% (+1.8)

TABLE 1: Distribution of Gender

an interview than both methods should have similar percentages (of course we are only talking about 2.1% certainly not a significant difference).

Within the telephone survey the birthday method elicits a gender distribution that is very similar to the "after the fact" Kish method. It appears that it is not the Kish procedure itself that obtains a less accurate gender distribution but perhaps the nonresponse bias attributed to the use of the Kish method instead.

A slightly different way of looking at the gender distribution is to change the unit of analysis in the telephone usage survey from the individual to the household. If we count all adults in the household we have a distribution of 50.6% males and 49.4% females. We are underidentifying females and overidentifying males in our total household sample. This overidentification of males should not be the result of male nonresponse unless we assume that households where a male was chosen but not interviewed have fewer males than other households. If we assume that our interviewers are not taking females when they should be interviewing males, either females have more recent birthdays than males, females are more likely to just do the survey and say they have had the most recent birthday, or males are clustered together in certain types of household more often than females. If there is male clustering, since we only take one interview per household, males have a lower probability of being chosen from across households. If this is true the combination of more female headed households, male clustering, and male nonresponse patterns produce an even larger nonresponse bias than first imagined.

We were unable to determine household composition on the Parks/Kish survey but a somewhat similar pattern emerges on a survey conducted concerning political networking. A total

of 400 telephone interviews were conducted using the Kish method of within-household selection. For this survey we sampled 56.8% females and 43.2% males. However, when looking at the adults in the household we can identify 786 adults with 50.5% females and 49.5% males. Using the Kish method limits the amount of discretion on who gets interviewed for both the interviewer and respondent than the birthday method. Therefore, a more likely candidate for the overidentification of males is that males are grouped in households forming clusters more than are females.

Distribution of Adults within Households

To determine if there are certain types of households in which males are more likely to be found, we divide households by the types of relationships between adult members. Table 2 presents the distribution of the 1990 Census, the Parks/Kish study and our Telephone/Birthday method survey distributions across basic family types: married couple, male-no female present, and female-no male present. As is evident, both Kish and birthday method surveys overidentify married couple households. These households may be easier to reach because some one is more likely to be home when there are two adults in a household than when there is one adult. In addition for a married couple we have another adult to give us information on when the respondent is home decreasing the probability of nonresponse.

Although we were not able to determine male or female noncouple households with the Park/Kish survey we can see that we are much more likely to underidentify female-no male households than male-no female households using the birthday method, but both are underrepresented in our sample. This is an interesting finding since one of the reasons that has been suggested for undersampling males is that there are more female headed households. Of course, even with the oversampling we still have a difference between single male headed and female headed households but we can imagine that the Kish form would actually increase the amount of undersampling since single women are more likely to be suspicious of this method.

For the Telephone/birthday method survey we collected enough information to categorize households into a number of very specific types. Categories are based on the relationship of adults in the household. Although some of these were guesses (it is hard to define a household with three males ages 76, 52, and 40 and two females ages 74

and 79) most households fall into easily recognizable categories. The distribution is displayed in Table 3. The number of cases in some of the cells are quite small but this may give us an indication of household distributions in our sample.

	1990 CENSUS OF OHIO	PARKS SURVEY	TELEPHONE USAGE
MALE/NO FEMALE	15.3%	****	13.7% (-1.6)
FEMALE/NO MALE	28.6%	****	19.8% (-8.8)
MALE/FEMALE COUPLE	56.1%	62.0% (+5.9)	64.9% (+8.8)

****Unable to determine gender 38% is the combined total

TABLE 2: Distribution of Surveys by Household Type

	%	N
MARRIED NO ADULT CHILDREN	50.3%	264
MALE NO ADULT CHILDREN	10.7%	56
FEMALE NO ADULT CHILDREN	17.9%	94
MARRIED ADULT CHILDREN	14.7%	77
MALE ADULT CHILDREN	1.3%	7
FEMALE ADULT CHILDREN	1.7%	9
2+ ROOMMATES	0.8%	4
2 ROOMMATES SAME SEX	1.1%	6
EXTENDED FAMILY	1.5%	8
TOTAL	100%	525

TABLE 3: Specific Breakdown of Household Type for Telephone-Birthday Method

Over 50% of our households consist of married couples without adult children living in the home. The additional 14%, of our total of 64% married couples, are adult couples that live with adult children in the household. Approximately 11% of the sample were single males (no female present) with no other adults in the household while (not surprisingly) a larger 18% were females without any other adult present. Although there are

more females living without an adult male in the household than males without an adult female the difference was a lot less than expected. The number of male or female adults with an adult child living in the household is fairly similar both around 1%.

When viewing these statistics one would expect to have a slightly higher percentage of females in the sample because of the higher percentage of females living alone but this does not give us a clue as to why we have an overidentification of males in our households. To determine if there is male clustering in households we counted the number of adult males and females in each household type. Table 4 presents the results.

	MALE	FEMALE
MARRIED NO ADULT CHILDREN	264	264
MALE NO ADULT CHILDREN	56	0
FEMALE NO ADULT CHILDREN	0	94
MARRIED ADULT CHILDREN	141	118
MALE ADULT CHILDREN	20	1
FEMALE ADULT CHILDREN	11	16
2+ ROOMMATES	12	1
2 ROOMMATES SAME SEX	10	2
EXTENDED FAMILY	11	16
TOTAL	525	512

TABLE 4: Total Number of Adults in Specific Household Type by Gender

As you can see there is a larger number of males then females in some of the categories. The largest discrepancy is in the married couple with adult children category. Here we find 141 males to 118 females. This indicates that young adult males are more likely to stay in the home than young adult females.

Male clustering is also evident when we look at all households with more than one adult. A total of 25 households had 1 adult male while 41 households had 1 adult female. In contrast, forty-one households have 2 males as compared to 32 with 2 females. Finally 11 households have three or more males compared to 4 for females.

In addition to the clustering in the married couple with adult children households we also see a trace of male clustering in the roommate categories. Although not significant, only 1 of the 6 households with roommates of the same gender were female and only one of the 2+ roommate situations had a female member (this household had 2 males and 1 female) so we see some indication that roommate situations may be more likely to be males as well.

Although we have the problem of more females headed households (94 to 56 for male headed households) we have been able to identify a second reason, perhaps even more troublesome to our selection procedures, that of male clustering within households. Males living in clusters do not have an equal chance at being chosen to participate as others in the population even though they have an equal chance of being chosen within the household.

Conclusion

The findings show that there is a need for some modification of our within household selection procedures. Male nonresponse, the number of female headed households, and a tendency for male clustering within households has combined so that inaccurate gender distribution in our samples is a significant problem in obtaining a representative sample. Although for different reasons, we agree with Barbara Bryant that we need to adjust our procedures to properly represent males in our within household selection procedures.

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