On Patterns of Refusals Conversion and Propensity of Converted Refusals to Respond at Later Waves in a Longitudinal Survey

O. M. Olayiwola (Corresponding author)
Department of Physical Sciences, Ajayi Crowther University
Oyo, Oyo State, Nigeria
E-mail: laniyimathew@yahoo.com

G.N. Amahia
Department of Statistics, University of Ibadan, Nigeria

A.A. Adewara
Department of Statistics, University of Ilorin, Nigeria

Abstract

When a selected sample member refuses to take part in a survey interview, the survey organization may not accept the refusal as a final outcome, but rather to make further attempts to convert the refusals into an interview. The aim of this study was to investigate the pattern of refusals conversion and the propensity of the converted refusals to respond at later waves in a longitudinal survey. A two-stage stratified randon sampling scheme was used with households in Oyo as the sampling unit. A sample of 750 households were randomly selected from the community and sub-divided into five equal groups with each group treated as a wave. The recording schedule was used to obtain information on demographic characteristics including survey process, external environment, age, gender, educational qualification, religion, employment status, family size, duration of interview and the type of questions. The data were collected through oral interview of the subjects. Summary statistics were constructed to look at the patterns of conversion of refusals. Logistic model was fitted to investigate the propensity of converted refusals to respond at later waves following a conversion. At wave 1 of the survey, 109 house heads were interview in households with a response rates (in percentage) of 72.67.The interview period was an average of 8 minutes per house head. The response rate at wave 2, wave 3, wave 4 and wave 5 were 82, 81.33, 82 and 80.67 respectively. Outcomes of a conversion attempt were a full interview and a proxy interview. Five house heads went through the conversion process at wave 1 and data were successfully collected on 2 of them (40%). All of them were interviewed again at wave 2 (100%). Those converted refusals at wave 1, 100% gave a full interview six months later. For house heads who were converted between wave 1 and wave 5 continued to give full interviews at every wave up to wave 5. For all other waves, the converted refusals participated throughout the survey. Logistic model showed that, those who were converted to a full interview rather than proxy interview were the most likely to give a full interview at subsequent wave. When we included in the model, information on the wave in which the initial conversion was took place and the time since conversion, we found that those whose initial conversions were in earlier and later waves were less likely to give a full interview compared with those were converted at wave 3. Adding demographic information suggested that male, people with their ages between ((30 – 50) years, respondents with primary education were likely to take part again following a conversion.

Keywords: Converted refusals, Logistic model, Longitudinal survey, Wave, Propensity

1. Introduction

When a selected sample member refuses to take part in a survey interview, the survey organization may not accept the refusal as a final outcome, but rather to make further attempts to convert the refusals into an interview. Such further attempts may result in contact either with the same person who refused the first time or with another household member. In the formal situation, refusal conversion will consist of attempting to persuade the person who refused to change their mind; in the later situation, it is possible that the newly contacted person will be more co-operative than the person who originally refused. With samples of named individuals, the former situation will be more prevalent among refusal conversion attempts.

The extent to which surveys rely on refusal conversions to maintain response rates can be considerable. Lynn et al. (2002) showed that converted refusals constituted between $1.2o/o$ and $8.0o/o$ of completed interviews across six UK face to face surveys that were carried out between 1995 and 1998. On a Wisconsin telephone survey that was reported by Lin and Schaeffer (1995), converted refusals constituted $7.5o/o$ of completed interviews. Juster and Suzman (1995) reported that $4.2o/o$ of respondents at wave 1 of the (US) Health and Retirement Study were converted refusals.

2. Survey Design/Methodology

A two-stage stratified sampling scheme was used with households in Oyo as the sampling unit. A sample of 750 households were randomly selected from the community and sub-divided into five equal groups with each group treated as a wave. The recording schedule was used to obtain information on demographic characteristics including survey process, external environment, age, gender, educational qualification, religion, employment status, family size, duration of interview and the type of questions. The data were collected through oral interview of the subjects. Summary statistics were constructed to look at the patterns of conversion of refusals. Logistic model was fitted to investigate the propensity of converted refusals to respond at later waves following a conversion.

3. Discussion of Results

At wave 1 of the survey (January, 2010), one hundred and nine house heads were interviewed with a response rate of $72.67o/o$. The interview lasted an average of 8 minutes per house head and covers a broad range of topics including housing, education, employment, health, age, marital status, sex, and tribe. The response rate at wave 2, wave 3, wave 4 and wave 5 were $82o/o$, $81.33o/o$, $82o/o$ and $80.67o/o$ respectively. Low response rate at the first wave was as a result of lack of cooperation. The response maximization techniques adopted including advance notice and multiple call-backs. Refusal conversion depends on the reasons that are given for the refusal. Some house heads complained that the time is not convenient and in this situation they were allowed to fix the time for the interview and some based on their past experience in previous survey. In this case they were enlightened on the purpose of the research. From wave 1 of the survey, information on the process of refusal conversion has been recorded on the survey data. Initial interview outcomes are recorded together with information on outcome of conversion. Outcomes of a conversion attempt were a full interview and a proxy interview. Table 1 presents the distribution of outcomes at each wave for individuals for whom a refusal conversion attempt was made at that wave.

Table 2 shows the number of house heads who were converted at wave t and the numbers of those who completed a full interview at wave $t + 1$ and subsequent waves ($t = 1, 2, 3, 4, 5$). Five house heads went through the conversion process at wave 1 and data were successfully collected on 2 of them ($40o/o$). all of them were interviewed again at wave 2 ($100o/o$). Of all those converted at wave 1, $100o/o$ gave a full interview six months later. For house heads who were converted between wave 1 and wave 5 continued to give full interviews at every wave up to wave 5. For all other waves, the converted refusals participated throughout the survey. This suggests that it is often possible to sustain co-operation following a refusal conversion. Using information on previous response history and demographic characteristics we have modeled propensity to respond at later waves following a conversion (table 3) with logistic model. We first looked at the effect of the type of conversion, i.e. to a full interview or proxy, on whether or not a full interview was obtain at the following wave (model 1). In this model, the dependent variable was coded 1 if the respondent gave a full interview in a wave following conversion and 0 otherwise. Variable denoting the type of initial conversion were entered as independent variable. This model showed that those who were converted to a full interview rather than proxy interview are the most likely (6 times as likely) to give a full interview at s subsequent wave. Those who were converted to proxy interview are less likely to give a full interview subsequently compared with those who are converted to full interview. When we include in the model information on the wave in which the initial conversion took place and the time since conversion (model 2), we found that those whose initial conversions were in earlier and later waves were less likely to give a full interview compared with those who were converted at wave 3, as the odds of participation increases then the longer the respondent is in the sample. Adding demographic information (model 3) suggested that male, people with their ages between (30-50) years, respondents with primary education were likely to take part again following a conversion.

4. Conclusion

It is of concern not only to see that refusal conversion increase the sample size that is available for the analysis but also to know whether, and how, it affects the composition of the sample over time. One rationale for carrying out refusal conversion programme is that it may reduce differential attrition and therefore bias in the sample. It has being argued that increasing a response rate does not necessary reduce bias (Curtin et al., 2000; Groves and Couper, 1998; Stoop, 2004). Whether or not a reduction of attrition bias is achieved depends on two main factors; first, the extent to which those who refuse to take part differ from those in cooperating sample and second whether those refusals who were successfully converted are similar to those who refused and not converted. The refusal conversion procedures were effective in minimizing attrition from the sample.

References

Curtin et al. (2000). The effects of response rates changes on the index of consumer sentiment. *Publ. Opin, Q.*, 64, 413-428.

Groves, R. and Couper, M. (1998). *Non response in Household Interview Surveys*. New York: J. Wiley and Sons, Inc.

Juster, F . T. and Suzman, R. (1995). An overview of the health and Retirement study. *J. Human Resourcec*, 30, S7 -S56.

Lin, I.F. and Schaeffer, N. C. (1995). Using survey participations to estimate the impact of nonparticipation. *Publ. Opin.*

Q., 59, 236-258.

Lynn, p. et al. (2002). Separating refusal bias and non-contact bias: evidence from UK national surveys. *Statistician*, 51, 319 - 333.

Lynn, p. et al. (2002). The effects of extended interviewer efforts on non response bias. *In survey Non response*, New York: Willey.

Stoop, I. (2004). Survey non respondents. Field Meth,. 16, 23-54 computing, second edition, Cambridge University Press, Cambridge, 1992.

Table 1. Number and proportion of conversion attempts

Wave	NHHA	CFI	CPI	CAF	TCR	CTCR
1	5 (100o/o)	2 (40o/o)	0 (0o/o)	3 (60o/o)	2 (40o/o)	2
2	1 (100o/o)	0 (0o/o)	0 (0o/o)	1 (100o/o)	0 (0o/o)	2
3	4 (100o/o)	2 (50o/o)	1 (25o/o)	1 (25o/o)	3 (750o/o)	5
4	2 (100o/o)	1 (50o/o)	0 (0o/o)	1 (50o/o)	1 (50o/o)	6
5	0 (0o/o)	0 (0o/o)	0 (0o/o)	0 (0o/o)	0 (0o/o)	6

NHHA = number of house heads attempted

CFI = converted to full interview

CPI = converted to proxy interview

CAF = conversion attempt failed

TCR = total converted refusals

CTCR = cumulative of total converted refusals

Table 2. Outcome at subsequent waves for successful conversions

type of conversion	1	2	3	4	5
conversion attempts at wave *t*	5	1	4	2	0
interview at wave *t*	2	0	3	1	0
o/o interview at wave *t*	100o/o	100o/o	100o/o	100o/o	0o/o
full interview at wave *t* + 1	2 (100o/o)	1 (100o/o)	3 (100o/o)	1 (100o/o)	0 (0o/o)
full interview at wave *t* + 2	2 (100o/o)	1 (100o/o)	3 (100o/o)	1 (100o/o)	0 (0o/o)
full interview at wave *t* + 3	2 (100o/o)	1 (100o/o)	3 (100o/o)	1 (100o/o)	0 (0o/o)
full interview at wave *t* + 4	2 (100o/o)	1 (100o/o)	3 (100o/o)	1 (100o/o)	0 (0o/o)

Table 3. Propensity to achieve a full interview at waves subsequent to a conversion

Type	Results for model 1	Results for model 2	Results for model 3
Variable	Odds ratio	Odds ratio	Odds ratio
Converted to full interview	5.50	5.32	3.89
Converted to proxy interview	1.50	1.48	1.24
Wave 1	-	-	-
Wave 2	-	2.50	2.81
Wave 3	-	3.51	3.79
Wave 4	-	1.48	1.99
Wave 5	-	-	-
Male	-	-	2.94
Female	-	-	1.22
Age(30-50)	-	-	3.45
Age(51-70)	-	-	1.64
Age(71-90)	-	-	2.21
Primary education	-	-	3.18
Secondary education	-	-	2.33
Tertiary education	-	-	1.94

[1]Department of Physical Sciences,Ajayi Crowther University, Oyo, Oyo State, Nigeria. E-mail: laniyi-mathew@yahoo.com
[2]Department of Statistics, University of Ibadan, Nigeria.
[3]Department of Statistics, University of Ilorin, Nigeria.