Refusal Conversion: Monitoring the Trends

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Introduction

Efforts to increase response rates by converting respondents who have refused interviews have become increasingly important for those in survey research. Evidence of these efforts is revealed in studies that have tracked refusal conversion over time. Curtin et al. (2000) in their Survey of Consumer Attitudes report that between 1979 and 1996 the completed interviews that were due to refusal conversion increased from 7.4% to 14.6%. Similarly, Miller and Wedeking (2003) state that interviews from refusal conversion in the National Election Study data increased from 1% in 1980 to 15% in 2000.

As the percentage of the converted refusal interviews included in studies increases, it is important to understand how these cases affect survey results—both in terms of survey estimates and data quality. Keeter et al. (2000), when comparing estimates for households that never refused to that for households that had one or two refusals (and subsequently converted), found that for 83 of 88 items there was no statistical difference in the results. Similarly, Curtin et al. (2000) found no statistical difference in estimates for monthly samples of Index of Consumer Sentiment data when respondents who had refused and subsequently converted were excluded from the dataset. McDermott (2001) reports that estimates from some election polls that included refusal conversions were less predictive of the actual election outcome than had those cases not been included. Finally, Miller and Wedeking (2003) report several measures that indicate that the quality of the data from refusal conversion is inferior to data from those who never refused.

This paper has three objectives. The first is to present some uniform measures to track refusal conversion. We present five refusal conversion rates; it is our hope that others in the field will use these rates to monitor refusal conversion over both time and geographic area. The second objective is to add to the research that has been done to evaluate the effect on survey estimates of including refusal conversion cases. Third, we review how the inclusion of refusal conversion cases affects data quality as measured by item nonresponse. Finally, we present some ideas for additional research that can be done.

Datasets

We use data from three telephone studies conducted recently by the Survey Research Laboratory. The first study, the Household Survey on Illinois Adult Substance Use, was conducted in 2003 on behalf of Lillian Pickup at the Illinois Division of Alcoholism and Substance Abuse and was funded by the U.S. Center for Substance Abuse Treatment. The purpose was to measure the prevalence of drug and alcohol use among individuals in the state of Illinois, and to assess the current substance abuse treatment need for the population. Refusal conversion patterns for this study reveal differences across geographic areas in the State of Illinois.

The other two datasets are the 2001 and 2003 surveys of the Community Area Policing Strategies (CAPS) study in the City of Chicago. These studies are part of an ongoing evaluation of the CAPS program to examine Chicago's progress in implementing selected components of the policing program, as well as monitoring trends in public assessments of the quality of police service in Chicago. They were conducted on behalf of Wes Skogan of Northwestern University, and were funded by the National Institute of Justice in 2001 and by the Illinois Criminal Justice Information Authority in 2003. Analyses of these data allow us to compare survey estimates between those who never refused the interview and those who did refuse and were converted; they also enable us to review the item nonresponse between the two groups.

Telephone Protocol

The Random Digit Dial telephone protocol for all of the studies used in this paper was as follows: Interviewers were to contact households up to twenty times before a final disposition was assigned. If a respondent refused to complete either a screener or an interview, the interviewer was to continue calling up to the 20 attempts or until they got a second refusal or a completed interview, at which point the case was finalized[1]. We waited a minimum of seven days following a refusal before trying the household again.

Refusal Conversion Rates

Refusal Conversion as a Proportion of Completed Interviews (or a Proportion of Completed and Partial Interviews)

We use data from the Household Survey on Illinois Adult Substance Use to introduce the rates. The first two rates (Rates A-1 & A-2 on Table 1) measure the percentage of completions (or completions and partials) that were due to refusal conversion; that is, of all the cases included in the dataset, those that had at some point refused and were later converted. There are two rates; Rate A-1 includes those interviews in which the respondent answered questions

An earlier version of this paper was presented at the annual American Association for Public Opinion Research meeting, May 14, 2004. The authors would like to thank Antonio Cox and Vince Parker for their work in the preparation of the datasets that we have used. We also thank Allyson Holbrook and Linda Dimitropoulos for their initial reviews of the paper.

[1] Although the protocol was 20 calls, some of the cases did have additional call attempts. Call attempts beyond 20 resulted in 5 completed interviews for one of the studies discussed. Future analysis will control for the number of call attempts.

through the end of the questionnaire; Rate A-2 includes those respondents who completed through a question that would designate the interview as a 'partially' completed interview. The definition for a partially completed interview changes some from study to study; however, for the studies used in this paper, a partially completed interview is an interview whose data is deemed to be complete enough to be included in the analysis.

Table 1. Refusal Conversion Rates: Illinois Adult Substance Use Household Study, Illinois and eight regions, 2003

		Chicago Metropolitan Area				Non-Chicago area			
	Illinois	Chicago	Suburban Cook	South Collar Counties	North Collar Counties	West Central Illinois	East Central Illinois	Southern Illinois	Northwest Illinois
	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)
Rate A-1: % of completed interviews that ever refused	783/3980 (19.7%)	96/518 (18.5%)	93/472 (19.7%)	95/505 (18.8%)	90/471 (19.1%)	106/499 (21.2%)	92/520 (17.7%)	105/488 (21.5%)	106/507 (20.9%)
Rate A-2: % of completed & partial interviews that ever refused	817/4155 (19.7%)	101/555 (18.2%)	95/493 (19.3%)	106/533 (19.9%)	93/484 (19.2%)	109/518 (21.0%)	96/537 (17.9%)	109/505 (21.6%)	108/530 (20.4%)
Rate B-1: % of eligible refusals that turned into a completed interview	783/5516 (14.2%)	96/785 (12.2%)	93/736 (12.6%)	95/826 (11.5%)	90/731 (12.3%)	106/552 (19.2%)	92/538 (17.1%)	105/717 (14.6%)	106/631 (16.8%)
Rate B-2: % of eligible refusals that turned into a complete & partially completed interview	817/5516 (14.8%)	101/785 (12.9%)	95/736 (12.9%)	106/826 (12.8%)	93/731 (12.7%)	109/552 (19.7%)	96/538 (17.8%)	109/717 (15.2%)	108/631 (17.1%)
Rate C-1: % of all refusals that turned into complete/ partial or ineligible	863/5562 (15.5%)	122/806 (15.1%)	106/747 (14.2%)	111/831 (13.4%)	99/737 (13.4%)	110/553 (19.9%)	97/539 (18.0%)	109/717 (15.2%)	109/632 (17.2%)

Note: Eligible refusals for Rates B-1 and B-2 include all refusals for which respondent is known to be eligible, and all refusals for which eligibility is unknown.

Rate A-1 on Table 1 shows that for the statewide survey, the proportion of completed interviews that had ever been refused ranged from 17.7% in East Central Illinois to 21.5% in Southern Illinois. Grouping the data into the Chicago/Chicago suburbs and non-Chicago areas, as shown in Table 2, shows no significant difference between the proportion of completed interviews that were ever refused among the two groups. Rate A-2, the percent of completed and partial interviews that ever refused is quite similar to Rate A-1[2]. Rate A-2 ranges from 17.9% in East Central Illinois to 21.6% in Southern Illinois (Table 1). Chi-square analysis also shows no significant difference between the two areas: Chicago/suburbs and non-Chicago areas (Table 2).

Refusal Conversion as a Proportion of Refusals

Above we have measured refusal conversion by monitoring the extent to which our final completes (or completes & partials) were ever refused. Another way to monitor refusal conversion is to look at what happens to cases that were ever refused.

Theoretically, we can divide refused cases into three categories:

(1) Refusals that we know are ineligible (initial refusals that were converted, screened, and determined to be ineligible);
(2) Refusals that we know are eligible (cases that were screened, and for which a respondent was selected, either before or after a refusal occurred);
(3) Refusals for which we do not know the eligibility status (initial refusals that we haven't managed to convert and screen).

[2]Our calculations of Rate A-2 include only those cases that we *know* became partials as a result of a refusal conversion. Given the way that our case history data is recorded, this means that our calculations include only those partial cases that were converted after a refusal to selection. We do not include partials that refused only during the interview (after selection), because we are unable to tell from our case history data whether those cases refused before or after the 'partial completion' cutoff point. (If the respondent refused before the cutoff, was then converted, and continued the survey till after the cutoff, then the partial *should* count as a refusal conversion. If the respondent refused after the cutoff, regardless of whether or not refusal conversion later occurred, the partial *should not* count as a refusal conversion.)

Rates B-1 and B-2 measure the outcome of refusals from eligible cases. For our purposes in this paper, we are calculating the number of refusals from eligible cases in the most conservative way possible, by including both refusals which are known to be eligible (category 2 above) and all refusals for which we do not know the eligibility status (category 3). Rate B-1 is the percentage of these eligible refusals that were converted into completed interviews. Rate B-2 is the percentage of these eligible refusals that were converted into completed or partial interviews.

Rate C-1, unlike Rates B-1 and B-2, measures the outcome of all refusals (categories 1, 2, and 3). Rate C-1 is the percentage of all refusals that were converted into completed or partial interviews or that were converted, screened, and determined to be ineligible. By showing the percentage of refusals that were converted into a final disposition that doesn't count against the response rate, Rate C-1 serves as a rough guide to refusal conversion's impact on the response rate.

The calculation of Rate B-1, as shown in Table 1, shows the range of completes from eligible refusals to be between 11.5% in South Collar Counties and 19.2% in West Central Illinois. Grouping these data into the Chicago Metropolitan area and the remainder of the state does show a significant difference in the proportion of these refusals that turn into completed interviews (see Table 2). Outside of the Chicago area, 16.8% of these refusals turn into a complete, whereas in the Chicago area only 12.1% do.

Table 2. Refusal Conversion Rates, Illinois Adult Substance Use Household Study, Chicago/suburbs & remainder of state, 2003

	Chicago/ Suburbs	Non-Chicago area Illinois	*Significance level (p)*
Rate A-1: % of completed interviews that ever refused	374/1966 (19.0%)	409/2014 (20.3%)	n.s.
Rate A-2: % of completed or partial interviews that ever refused	395/2065 (19.1%)	422/2090 (20.2%)	n.s.
Rate B-1: % of eligible refusals that turned into a completed interview	374/3078 (12.1%)	409/2438 (16.8%)	***
Rate B-2: % of eligible refusals that turned into a complete or partially completed interview	395/3078 (12.8%)	422/2438 (17.3%)	***
Rate C-1: % of all refusals that turned into complete/ partial or ineligible	438/3121 (14.0%)	425/2441 (17.4%)	***

**** <.001; n.s.: not significant*
See Note to Table 1.

The calculation of Rate B-2 is similar to that for Rate B-1; it shows the percentage of eligible refusals which refusal conversion turned into a complete or partial. Again, this is significant when comparing the Chicago area to the rest of the state—17.3% of all these refusals converted to a complete or partial in the area outside of Chicago and 12.8% did in the Chicago area.

The results of the significance testing for Rate C-1, which shows the percentage of *all* refusals that are converted into completes, partials, or ineligibles, shows similar results to Rates B-1 and B-2—outside of Chicago, 17.4% of these refusals turned into a complete, partial or ineligible, and in the Chicago area 14.0% did.

Please see Appendix 1 for an explanation of how the case outcome data from the Illinois Adult Substance Use Household Study is used in the Refusal Conversion Rate equations.

In future calculations of Rates B-1 and B-2 (the proportion of eligible refused cases that are converted), it would be useful to remove from the denominator the number of cases of unknown eligibility that we estimate would be ineligible if we managed to convert and screen them. We could do this by first determining the proportion of unscreened initial refusals that were actually converted and determined to be ineligible during the course of the study. The same proportion of unscreened final refusals could then be removed from the denominator for the calculation of Rates B-1 and B-2.

Comparison of Survey Estimates: never refused cases vs. converted cases

We use data from two years (2001 & 2003) of the Chicago Area Policing Strategies (CAPS) survey to compare estimates of those who never refused and those who refused and subsequently converted to see if study results might be affected by the inclusion of refusals. An analysis that showed a similar demographic profile in each dataset, and the fact that we were using the same questions from questionnaires that were comparable in length, allows us to combine them in order to have enough converted refusal cases so that we would have adequate power for analysis. We have used two sets of questions for this analysis. We have compared eight demographic variables and sixteen substantive questions that measure respondent views toward police services in the City of Chicago.

Table 3 shows Rates A-1 thru C-1 for these two datasets. The analysis in this section includes the 5,550 cases that completed interviews. These cases are divided into those that ever refused (n=916) and those that never refused (n=4,634), as can be seen from Rate A-1. Though Table 3 shows two sets of rates at different points in time, these are not enough to establish any trends: our intention is to track these rates overtime for studies that are comparable in order to monitor any changes.

Table 3. Refusal Conversion Rates: Chicago Community Area Policing Strategies (CAPS), 2001 and 2003.

	CAPS 2001	CAPS 2003
Rate A-1: % of completed interviews that ever refused	447/2462 (18.2%)	469/3088 (15.2%)
Rate A-2: % of completed or partial interviews that ever refused	448/2499 (17.9%)	475/3141 (15.1%)
Rate B-1: % of eligible refusals that turned into a completed interview	447/2379 (18.8%)	469/3007 (15.6%)
Rate B-2: % of eligible refusals that turned into a complete or partially completed interview	448/2379 (18.8%)	475/3007 (15.8%)
Rate C-1: % of all refusals that turned into complete/ partial or ineligible	512/2443 (21.0%)	583/3115 (18.7%)

See Note to Table 1.

Table 4 shows the results for the demographic bivariate comparisons. It shows that there are significant differences between the converted cases and the non-converted cases in several of the demographic characteristics: age, education, race/ethnicity, marital status, number of adults in the household, and number of children under 18. Our logistic regression analysis revealed, however, that only age, education, number of adults in the household, and number of children are significant independent predictors of non-refusal (see Table 5). Thus, the younger a respondent, the more likely he/she is to cooperate without any initial household refusal; the more educated the respondent, the more likely he/she will cooperate; and the fewer adults and children in the household, the more likely the respondent is to cooperate without an initial household refusal.

Table 4: Demographic comparisons between converted cases and non-converted cases

Demographic Variables	Total	Converted	Non-converted	*Significance level (p)*
N	5,550	916	4,634	
Gender: Male (%)	45.5%	43.6%	45.9%	n.s.
Age (Mean, SD)	44.81(16.53)	47.36(17.93)	44.32(16.18)	***
Education (%)				***
Less than high school	13.1%	15.7%	12.6%	
High school graduate	23.0%	24.4%	22.7%	
Some college	25.2%	27.2%	24.8%	
College graduate	22.4%	20.6%	22.7%	
More than college	16.3%	12.1%	17.1%	
Income				n.s.
Less than10,000	15.6%	17.9%	15.2%	
10,000 ~ <20,000	13.3%	12.4%	13.5%	
20,000 ~ <40,000	24.6%	26.5%	24.3%	
40,000 ~ <60,000	17.4%	16.3%	17.6%	
60,000 ~ <100,000	17.3%	15.6%	17.6%	
100,000+	11.8%	11.4%	11.9%	
Race/Ethnicity				*
White	41.8%	40.7%	42.0%	
Black	32.2%	35.2%	31.6%	
Hispanic	14.7%	12.1%	15.2%	
Other	11.3%	12.0%	11.2%	
Marital Status				**
Married	36.6%	39.2%	36.1%	
Divorced/separated	15.2%	16.3%	15.0%	
Widowed	7.9%	9.6%	7.5%	
Never married	40.3%	34.8%	41.4%	
Number of adults				**
1	37.9%	33.5%	38.8%	
2	43.5%	44.2%	43.4%	
3	12.2%	15.1%	11.6%	
4 or more	6.4%	7.2%	6.2%	
Number of children under 18				*
0	62.7%	58.5%	63.5%	
1	14.6%	17.0%	14.2%	
2	11.9%	12.5%	11.8%	
3	6.4%	6.7%	6.3%	
4 or more	4.4%	5.3%	4.2%	

*** < .01; *** < .001 level; n.s.: not significant.*

Table 5. Logistic regression coefficients of demographic variables on the likelihood of cooperating without initial refusal

Demographic Variables	b	s.e.	p
Intercept	2.412	0.293	***
Gender (Male)	0.034	0.084	n.s.
Age	-0.011	0.003	***
Education	0.088	0.041	*
Income	-0.005	0.033	n.s.
Race/Ethnicity (ref:White)			
Black	-0.030	0.102	n.s.
Hispanic	0.227	0.141	n.s.
Other	-0.105	0.138	n.s.
Marital Status (ref:married)			
Divorced/separated	-0.137	0.128	n.s.
Widowed	-0.045	0.179	n.s.
Never married	-0.029	0.111	n.s.
Number of adults	-0.179	0.051	***
Number of children	-0.105	0.038	**

<.05; **<.01; *<.001 level; n.s.: not significant.*

In reviewing the sixteen key questions concerning respondent assessments of the quality of police service in Chicago, we started by analyzing the item nonresponse for each of the sixteen items. We have compared the percentage of item nonresponse in the converted cases to the item nonresponse in the non-refused cases. Table 6 shows that in nine of the sixteen key questions, there is a significantly higher proportion of item nonresponse among the converted cases as for the never-refused cases. Similarly, for the seven demographic questions that we ask, five of them had significantly more item nonresponse among the converted cases than among those who never refused. Overall, for never-refused cases, an average of 4.7 percent of respondents declined to answer each question. Among converted cases, an average of 6.6 percent of respondents declined to answer questions. As such, data from converted cases are not as complete as data from never-refused cases.

However, among those who have responded to these questions, response patterns to the survey items were not found to be different between these two groups. For example, those who ever refused gave a positive response to each of the questions that measure views toward police services in the City of Chicago as likely as in those who never refused.

Table 6. Percent Item nonresponse (no coded response applicable, don't know or refused)

	Total	Converted	No refusal	p
N	5,550	916	4,634	
Questions that measure public assessment of quality of police service in Chicago				
Responsive to community concerns?	4.4%	6.9%	3.9%	***
Doing good job dealing with the problems people concern in your neighborhood?	2.5%	2.8%	2.5%	n.s.
Doing good job in working together with residents to solve local problems?	7.9%	10.8%	7.3%	***
Doing good job in helping people out after they have been victims of crime?	15.2%	17.6%	14.7%	*
Doing good job to prevent crime in your neighborhood?	2.7%	3.1%	2.6%	n.s.
Doing good job in keeping order on the streets and sidewalks?	2.2%	3.1%	2.0%	n.s.
Polite when dealing with people in your neighborhood?	5.1%	6.3%	4.9%	n.s.
Concerned when dealing with people's problems in your neighborhood?	6.3%	7.6%	6.0%	n.s.
Helpful when dealing with people in your neighborhood?	5.3%	6.6%	5.0%	n.s.
Fair when dealing with people in your neighborhood?	7.3%	8.8%	7.0%	n.s.
The police in your neighborhood have gotten better?	3.4%	5.1%	3.1%	**
The police in your neighborhood will be better form now?	3.6%	6.0%	3.2%	***
Problem with police stopping too many people without good reason?	4.5%	6.4%	4.1%	**
Too tough on people they stop in your neighborhood?	5.8%	7.6%	5.5%	*
Excessive force, being verbally, or physically abusive to people in your neighborhood?	6.1%	7.6%	5.8%	*
Police being corrupted?	13.3%	16.0%	12.7%	**
Demographic variables				
Age (Year R born)	1.9%	3.9%	1.6%	***
Self-defined race/ethnicity	2.8%	2.8%	2.8%	n.s.
Highest grade/year of school completed	1.4%	2.0%	1.2%	n.s.
Income	11.5%	17.5%	10.3%	***
Marital status	0.8%	1.5%	0.7%	*
Number of adults in household	0.5%	1.2%	0.4%	**
Number of children in household	0.5%	1.1%	0.3%	**

<.05; **<.01; *<.001 level; n.s.: not significant.*

Future Research

To supplement the rates outlined above, we anticipate doing the following:

(1) As noted above, for Rates B-1 and B-2 we included in the denominator refusals to all known eligible cases as well as refusals to all cases of unknown eligibility. In future calculations it would be useful to remove from the denominator the number of cases of unknown eligibility that we *estimate* would be ineligible if we managed to convert and screen them. We could do this by first determining the proportion of unscreened initial refusals that were actually converted and determined to be ineligible during the course of the study. The same proportion of unscreened final refusals could then be removed from the denominator for the calculation of Rates B-1 and B-2.

(2) In this paper, we do not distinguish between a respondent refusal and refusals from others in the household. In the future, we would like to make this differentiation in order to calculate the number of respondent refusals that we are able to convert as opposed to the non-respondent refusals we are able to convert. We recognize that we would only be able to do this for refusals that come after respondent selection, and that we will not always know whether the refusal came from the respondent or another household member, but think trying to differentiate the origin of the refusal for cases we are able to convert might be useful.

Conclusion

Using consistent refusal conversion rates over time will help us to understand how effective we as data collectors are at converting refusals over time; we hope that those in the field of survey research will adopt the rates that we have outlined. Refusal conversion rates in different geographic areas and over time will also allow us to understand the geographic and time trends of our refusal conversion efforts.

These rates reveal the effect of refusal conversion on response rates--by increasing completed cases and identifying ineligible cases. The analysis in this paper, however, supports some other research by showing that there are costs to including data from cases that have been refused and subsequently converted. While our comparison of unconverted and converted cases found some significant differences in demographic variables and no statistical differences in the substantive questions we analyzed, we did find that for 14 of the 23 questions the data from converted cases had significantly more item non-response. It is clear that if we continue to rely on refusal conversion in our data collection, we will also need to continue to evaluate the data quality of these cases.

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Appendix 1

Using the data from the Illinois Adult Substance Use Household Study in Table 1, we show how the rates are calculated. For this study, we had the following data:

(1) Completions = 3980
(2) Partials = 175
(3) All refusals = 5562
(4) Refusals converted to complete = 783
(5) Refusals converted to partial = 34
(6) Refusals determined to be ineligible = 46

The following equations show how these data are used to calculate the rates in this paper.

Rate A-1 = Refusals converted to complete / Completions
= (783) / (3980)
= 19.7%

Rate A-2 = (Refusals converted to complete + Refusals converted to partial) / (Completions + Partials)
= (783 + 34) / (3980 + 175)
= 19.7%

Rate B-1 = (Refusals converted to complete) / (All refusals – Refusals determined to be ineligible)
= (783) / (5562 - 46)
= 14.2%

Rate B-2 = (Refusals converted to complete + Refusals converted to partial) / (All refusals – Refusals determined to be ineligible)
= (783 + 34) / (5562 - 46)
= 14.8%

Rate C-1 = (Refusals converted to complete + Refusals converted to partial + Refusals determined to be ineligible) / (All refusals)
= (783 + 34 + 46) / (5562)
= 15.5%