

On the Relationship Between Nonresponse and Measurement Error in Response Enhancement. The Norwegian Election Survey System as a Case Study

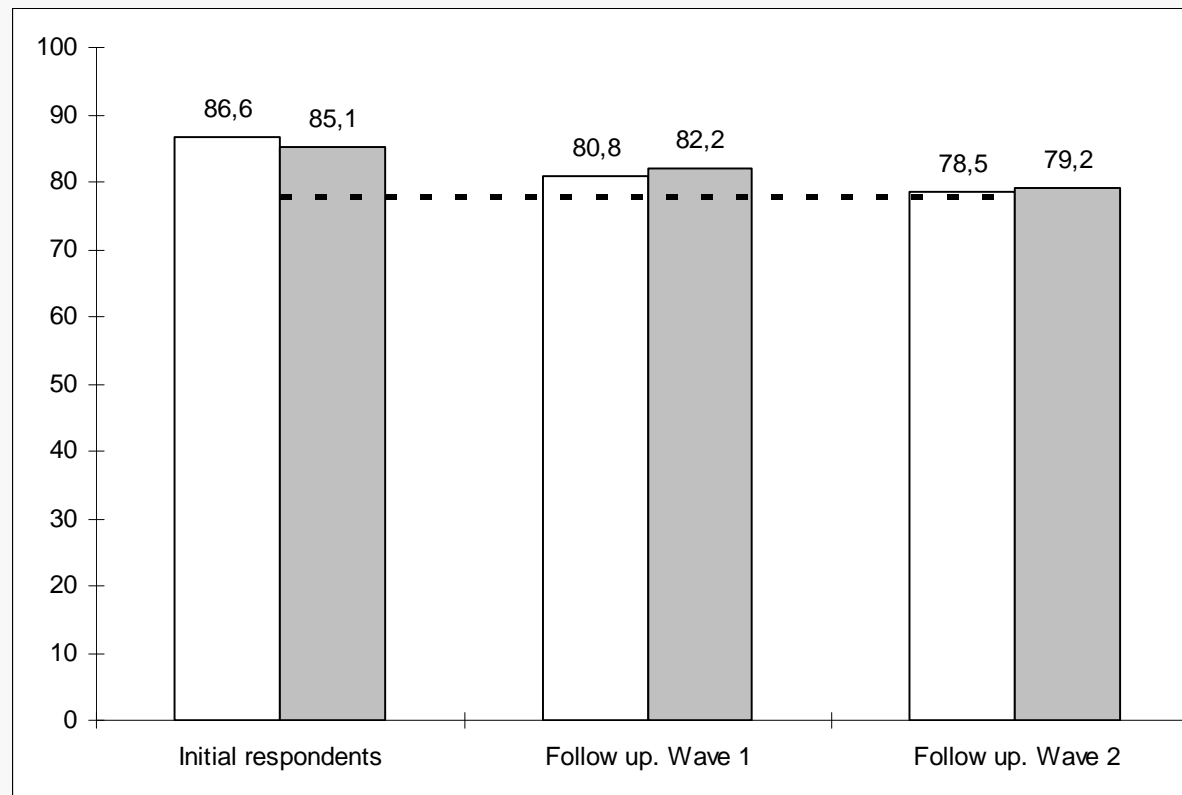
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Background

- In most of our surveys we use a significant amount of money and time to re-contact and try to persuade initial non respondents.
- This procedure increase the net sample, and reduce variance.
- In some surveys we also know that this procedure reduce bias introduced by non response.
- The figure on the next slide demonstrate this

Observed turnout rate (blank bar) and post-stratified turnout rate (shade bar) among, respectively, initial respondents, follow-up wave one and two in Election Survey 2009. True turnout rate in the gross sample marked by long dashed line.



Turn out rate from register in Norwegian Election Survey 1997 -2009, by gross sample, initial respondents and net sample.

Year	Turn out rate in gross sample		Turn out rate among initial respondents			Turnout among whole net sample (initial+follow up)		
	%	n	%	n	95% Confidence interval	%	n	95% Confidence interval
1997	81,4	3 000	87,9	1 741	[86,4-89,4]	86,0	2 052	[84,5-87,5]
2001	77,2	3 000	84,1	1 751	[82,4-85,8]	82,9	2 055	[81,3-84,5]
2005	79,4	3 000	86,2	1 806	[84,6-87,8]	86,0	2 012	[84,5-87,5]
2009	77,6	3 000	86,4	1 532	[84,7-88,1]	85,1	1 782	[83,4-86,8]

What about other error sources?

An intriguing challenge is the potential ‘interaction’ between measurement errors and nonresponse, which e.g. occurs if the so-to-speak ‘easy-to-get’ responses contain measurement errors that systematically differ from those of the ‘hard-to-get’ responses.

It is also sometimes argued that the efforts to increase the response rate may inadvertently lead to increase in the measurement (or total) errors (Kreuter, Müller, and Trappmann, 2010).

- Converted refusers may exert less cognitive effort to respond, or interviewers may be more willing to accept ‘satisficing’ responses from reluctant respondents to obtain a completed interview (Triplett et al. 1996).
- The survey research literature is however inconclusive on this effect, there are reports of significant differences when comparing survey estimates with and without converted refusers.
- Burton et al. (2006) cited various studies on this topic and found that the difference was found in less than half of the survey measures, and some of this disappeared after controlling for demographic background variables.

The data used

- The Norwegian Election Surveys
- Long tradition for extended follow up procedure in the survey
- Paradata from the field work indicates initial respondent or follow up respondents
 - Initial respondents= Within planned fieldwork period
 - Follow up= Non respondents/Non contacts re contacted after planned fieldwork period
- The *claimed* turnout in the survey can be checked individually against the *true* head-count from the electoral offices

Hypothesis

- Based on the literature and our own prejudice we expect a higher measurement error among the followed up group compared to the initial respondents

Table 1 Agreement rate in The Norwegian General election survey by initial respondents and follow up. 1997-2009.

	<u>Initial respondents</u>		<u>Follow up</u>	
	Frequency	Percent	Frequency	Percent
1997				
Agreement between survey and register	1688	97,0	284	92,5
Claimed to have voted in survey - Not voted according to register	44	2,5	21	6,8
Claimed not to have voted in survey - Voted according to register	9	0,5	2	0,7
Total	1741	100,0	307	100,0
2001				
Agreement between survey and register	1643	93,8	238	89,1
Claimed to have voted in survey - Not voted according to register	99	5,7	28	10,5
Claimed not to have voted in survey - Voted according to register	9	0,5	1	0,4
Total	1751	100,0	267	100,0
2005				
Agreement between survey and register	1731	95,9	185	94,9
Claimed to have voted in survey - Not voted according to register	70	3,9	9	4,6
Claimed not to have voted in survey - Voted according to register	5	0,3	1	0,5
Total	1806	100,0	195	100,0
2009				
Agreement between survey and register	1447	94,5	198	90,8
Claimed to have voted in survey - Not voted according to register	75	4,9	14	6,4
Claimed not to have voted in survey - Voted according to register	10	0,7	6	2,8
Total	1532	100,0	218	100,0

Table 2: Multiple logistic regression. Dependent variable: Agreement between survey and register (voted in last election) Agreement register/survey =1, Not Agreement between survey and register=0 (n=7 817)

	Odds Ratio Estimates	95% Wald Confidence Limits
Initial respondents vs Follow up	1.288	0.950-1.746
Female vs male	1.068	0.843-1.354
Age group		
Under 30 år vs 60 +	1.174	0.796-1.731
30-59 vs 60 +	0.905	0.627-1.305
Education		
Midle vs University	1.316	0.957-1.809
Low vs University	1.363	0.927-2.003
Region		
Agder/Rogaland vs East	1.001	0.678-1.479
Akershus/Oslo vs East	0.670	0.468-0.959
Hedmark/Oppland vs East	1.098	0.696-1.732
North vs East	1.373	0.871-2.166
Trøndelag vs East	2.060	1.211-3.504
Vest vs East	1.260	0.844-1.881
Year		
1997 vs 2009	2.015	1.362-2.979
2001 vs 2009	1.052	0.764-1.447
2005 vs 2009	1.539	1.088-2.175
Voted vs Not voted	79.629	56.651-111.926
Panel Wave 1 vs Wave 2	1.125	0.857-1.476

Table 3 Agreement rate in The Norwegian General election survey by initial respondents and follow up. 1997-2009. %ps = Post stratified by voted/not voted from register.

	Initial respondents			Follow up		
	Freq.	%	%ps	Freq.	%	%ps
1997						
Agreement between survey and register	1688	97,0	95,6	284	92,5	94,2
Claimed to have voted in survey/Not voted according to reg.	44	2,5	3,9	21	6,8	5,2
Claimed not to have voted in survey - Voted according to reg.	9	0,5	0,5	2	0,7	0,7
Total	1741	100,0		307	100,0	
2001						
Agreement between survey and register	1643	93,8	91,4	238	89,1	89,7
Claimed to have voted in survey/Not voted according to reg.	99	5,7	8,1	28	10,5	9,8
Claimed not to have voted in survey/Voted according to reg.	9	0,5	0,5	1	0,4	0,4
Total	1751	100,0		267	100,0	
2005						
Agreement between survey and register	1731	95,9	94,2	185	94,9	93,6
Claimed to have voted in survey/Not voted according to reg.	70	3,9	5,8	9	4,6	6,0
Claimed not to have voted in survey/Voted according to reg.	5	0,3	0,3	1	0,5	0,5
Total	1806	100,0		195	100,0	
2009						
Agreement between survey and register	1447	94,5	91,4	198	90,8	90,5
Claimed to have voted in survey/Not voted according to reg.	75	4,9	8,0	14	6,4	6,8
Claimed not to have voted in survey/Voted according to reg.	10	0,7	0,6	6	2,8	2,7
Total	1532	100,0		218	100,0	

Indications of mode effects

- In the 2009 survey we also send a very small paper questionnaire to the non respondents after the survey had finished
- Indications of less social desirability when interviewer is not present

Election Survey 2009

	<u>Initial respondents</u>			<u>Follow up by interviewers</u>			<u>Follow up by short postal questionnaire</u>		
	Freq	%	%ps	Freq	%	%ps	Freq	%	%ps
Agreement between survey and register	1447	94,5	91,4	198	90,8	90,5	208	95,4	95,3
Claimed to have voted in survey - Not voted according to register	75	4,9	8,0	14	6,4	6,8	6	2,8	2,9
Claimed not to have voted in survey - Voted according to register	10	0,7	0,6	6	2,8	2,75	4	1,8	1,8
Total	1532	100,0		218	100,0		218	100,0	

%ps = Post stratified by voted/not voted from register.

Discussion

- The study gives empirical support to continue to do follow up procedures in response enhancement.
 - There is some indication that extended follow up can introduce more measurement errors in the survey...
- When we are studying measurement error, selection bias needs to be taken into account. Often this is hard to control.

References:

Burton, Jonathan, Heather Laurie, and Peter Lynn (2006) "The Long-term Effectiveness of Refusal Conversion Procedures on Longitudinal Surveys" *Journal of the Royal Statistical Society, Series A*, Vol.169, Issue 3, 2006:459-478

Kreuter, F., Müller, G., and Trappmann, M (2010). Nonresponse and measurement error in employment research. Making use of administrative data. *Public Opinion Quarterly*, **74**, 880-906.

Triplett, Timothy, Johnny Blair, Teresa Hamilton, and Yun Chiao Kang. "Initial Cooperators vs. Converted Refusers: Are There Response Behaviour Differences?" *Proc. of the Survey Research Methods Section*. August 4-8, 1996. American Statistical Association, 1996.