Influences on survey response rates in online panels

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Abstract

This paper examines longitudinal response rates from three online panels from the local government context. It investigates the impact of survey topic, length, incentives, and panel age on response rates across 25 online surveys. The findings are that response rates fall from 80% in the first few months after panel establishment, to less than 50% after two years. Panel age appears to be the key driver of response rates in the online panel context with survey topic, length or incentives seemingly having little impact. This paper makes an important contribution to understanding drivers of response rates in the increasingly popular online panel context and raises issues for future research.

Keywords: online panels, survey response rates

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Introduction

Response rates have traditionally been considered a key indicator of survey quality. The lower a survey's response rate, the more potential there is for non-response error to bias the results (Gendall, 2000). Consequently, much academic research has focused on establishing methods to maximise survey response rates. Whilst recent research has demonstrated that response rates are a poor predictor of the amount of bias in a survey or a particular result (Curtin, Presser & Singer 2000; Keeter et al., 2000; Merkle & Edelman, 2002; Groves 2006), they are still commonly believed to be an important indicator of survey quality.

Past research has examined response rates for mail and telephone, often discussing the effectiveness of techniques such as prior notification and incentives (e.g., Brennan, 1992; Wright, 1995; Gendall, 2000; Brennan and Xiaozhen, 2009; Mehta and Sivadas, 1995; Finn, Gendall and Hoek, 2004). More recent research has investigated response rates for online, email and other forms of computer-assisted questionnaires (e.g., Cole, 2005; Schillewaert and Meulemeester, 2005; Vereecken and Maes, 2006; Sheehan and McMillan, 1999). However, little of this newer stream of research has considered response rates in the context of online research panels, a growing field of research (Neff, 2008; ESOMAR, 2005). Looking over two years and across 25 surveys conducted with three local government community panels that were pre-recruited for research, this paper investigates four variables that may influence survey response rates.

Prior Research & Hypotheses

Firstly, survey **topic** has been found to influence response rates across postal, email and web-based contexts (Sheehan & McMillan, 1999; Watt, 1999). The more 'salient' the topic for the surveyed population ('salient' meaning important, relevant and/or timely (Martin, 1994)), the higher the response rate. Whilst it has not yet been tested in the online-panel context, it seems likely that interest in the topic influences, at least in part, an individual's decision to participate in a survey. Prior studies have found that 'salience' has a larger impact on response rates than "any other issue or research-design decision including advance notice, follow-up contacts, or monetary incentives" (Sheehan & McMillan, 1999, p. 47). This paper hypothesises that interest in the survey topic will have a significant and positive impact on response rates in the online panel context.

Research in the *offline* context has established that material **incentives** positively influence response rates, particularly if given in advance (Yu & Couper, 1983; Church, 1993; Brennan, 2009). The majority of online panels have some form of incentive scheme - points redeemable for cash or products, sweepstakes, and free internet access are all common for recruiting and motivating respondents (Goritz, 2000). Incentives, in the form of the chance to win a gift voucher, were offered for some of the surveys examined in this paper. It is hypothesised that their influence will be positive, but not sizeable, because of the limited nature of the incentive (a 1-in-100 chance to win) and the context of the study – community-based panels. The panels were promoted as a means by which community members could 'help shape their City's future' and although material incentives were sometimes offered, they were not emphasised or offered on a pay-per-complete basis and are unlikely to have been a key motive for joining.

Survey length has also been found to influence response rates, although findings are mixed. Some studies have found that longer *mail* surveys are likely to have lower response rates (Herberlien & Baumgartner, 1978; Steele, Schwendig, & Kilpatrick, 1992; Yammarino, Skinner, & Childers, 1991). Others have found longer surveys to have somewhat higher response rates than shorter ones (Eichner & Habermehl, 1981). In online experiments, Deutskens et al. (2004) found that shorter surveys had higher response rates, but longer surveys still generated a "surprisingly high response" rate (17%). This is perhaps because it is more difficult for respondents to estimate how long an online survey will take. They cannot count the number of pages or questions. They must simply rely on the researcher's estimate of how long it will take and the survey's progress indicator, if indeed there is one. Based on this, it is hypothesised that the impact of survey length on response rates will be negative, but not sizeable. In the panel context here, respondents voluntarily signed up to participate in research; so presumably spending 10 or 20 minutes every few months is reasonable to ask. Further, by reasoning, the impact of survey length is tempered by topic salience. As Bean and Roszkowski (1995, pg. 25) suggest, "if a person attaches little importance to the content of a survey, then it will not matter if the survey form is short; the person still is unlikely to respond."

One factor outside of the scope of existing literature is **panel age**, or rather the time the panel has existed for (rather than the age of panellists). It may seems likely that over time, an online panel 'wears-out' as traditional panels do (Tortora 2009:10). Panellists may become more 'choosy' about which studies they participate in or may stop responding altogether. Non-response may be a conscious choice (opting out); or it may be environmental. For example, panellists no longer check the email address that surveys are sent to as frequently or at all. Consequently, panel response rates may decline over time unless non-responders are removed or new members are recruited to 'top-up' the panel. Such 'wear-out' is a concern for panel managers, and yet no benchmarks have been established regarding the expected rate or extent of 'wear-out' likely in an online panel. This paper hypothesises that the impact of panel age on response rates will be negative and that the effect will be significant over a period of years.

Organisational affiliation, pre-notification, reminders and personalization have also been found to improve response rates in both mail and online surveys (Heberlein and Baumgartner 1978; Kittleson, 1997; Fox, Crask & Kim, 1988; (Schaefer and Dillman, 1998) Dillman, 2000). Prior studies in the panel context have found that, on average, 25% of a survey's total respondents respond only once a reminder is sent (Reynolds, Sharp & Anderson, 2009). This suggests that reminders have a significant impact on response rates in the online panel context. However, their effect cannot be examined in this paper as all of the surveys were personalized, included a university logo, and had one reminder, as well as pre-notification (in the form of newsletters).

Data & Analysis

The online panels were established in 2007/08 by three city councils in South Australia working in partnership with a local university. Councils conducted a range of recruitment activities, both offline and online (Sharp, Reynolds and Anderson, 2009). Recruitment was ongoing, but the biggest growth in panel numbers occurred within the first 12-months. Panel members were local residents or workers who volunteered to join and participate in 4-8 online surveys per year for their local council. After two years, the three panels had over 2,000 members altogether. Panel members were sent regular newsletters, provided feedback on past survey results (and their impact on council decisions) and invited to special events.

The survey process was the same for all three panels and across all surveys. When a new survey was available, panellists were emailed a personalised invitation containing a unique survey URL. Email invitations included information about the survey's topic, any incentive on offer, the closing date, and the survey's estimated length. This information was repeated on the first page of the survey and in reminder emails.

Across the three panels, 25 online surveys were conducted over two years. They covered a variety of topics and ranged from two to 27 minutes in length. The average completion time was calculated after removing outliers, such as one respondent that took two hours to complete five questions (probably because they were distracted by other tasks and left the survey open). A material incentive was offered for 14 surveys, generally the chance to win a $30-$50 gift voucher and occasionally a more significant prize, such as a Wii console. Survey response rates were calculated based on the number of survey invitations sent and the number of responses received to the first question of the survey. Any 'bounce backs', where the respondent never sees the invitation, were excluded response rate calculations. The proportion of emails 'bouncing back' ranged from three percent (Panel A) to 12 percent (Panel C). Bounce-backs did not increase markedly over time and were not related to demographic variables like age and employment (Sharp, Moore, Reynolds & Anderson, 2010).

Topic interest (or salience) was estimated from the results of surveys conducted for each panel 12-18 months after they were established. Panellists were asked directly which local-government related topics they were interested in responding to (results in Table 1). Approximately 300 panellists from each panel responded to the surveys. Results were generalised to all panel members. There is no reason to believe non-responders would be significantly different given the consistency of results across the three panels (see Table 1).

Table 1: Claimed interest in survey topics

Multiple response possible	**Panel A** % n=333	**Panel B** % n=356	**Panel C** % n=239	**Average** %
Redevelopment of open space (parks, gardens, playgrounds)	87	87	78	84
Environmental issues	81	81	67	76
New programs and services	80	80	59	73
Development issues	79	70	69	73
Local infrastructure works (roads, footpaths, drains)	73	74	68	72
Local traffic management	73	66	71	70
Strategic directions	59	54	41	51
Annual budget and business plan	36	36	21	31
Other	7	6	3	5

Later surveys were classified according to the topics they covered (refer to Table 1 for categories and Table 2 for survey topics) and the proportion of respondents claiming they were interested in the topic used as an estimate of the survey's response rate. This approach afforded a more direct measure of topic interest compared to previous studies that used a panel of 'experts' to judge topic salience or inferred interest from another variable (Sheehan, 1999; Cook, Heath & Thompson, 2000; Groves, Presser & Dipko, 2004). Subsequent analysis involved descriptive statistics and multiple regression analysis.

Results & Discussion

The results in Table 2 show that a survey's estimated response rate, based on the population's interest in the topic, bears little relationship to actual response rate. A survey about the city's

Strategic Plan conducted with Panel A four months after the panel's establishment had a response rate of 81%. This is significantly higher than the 51% estimate, based on the number of panellists that indicated an interest in the topic. Conversely, surveys about Environmental Initiatives sent to Panel B, 23 and 28 months after this panel's establishment, had response rates of around 50% even though 81% of respondents had previously indicated they were interested in these topics.

The results indicate that panel age has the biggest influence on response rates. Response rates fall from around 80% when the panels were first established to less than 40%, two years after the panels' establishment. Previous studies have indicated that responses rates may be falling generally (Ansee, Lievens, Schollaert & Chorgwicka 2010) and whilst it seems unlikely that this sharp decline in response rates is part of a broader trend, further research is needed to confirm this definitively. Rather these longitudinal results seem to suggest that surveys on the same topic may achieve different response rates, depending on when they are conducted in the life of a panel.

Table 2: Response rates over time and across surveys (in chronological order, by panel)

Panel	Survey Date	Survey Topic	Est. RR (%)	Av. Time (mins)	Incentive	Panel Age (months)	Actual RR (%)
A	Jun-08	Consultation Preferences	59	2	Y	3	72
A	Jul-08	Strategic Plan	51	10	Y	4	81
A	Nov-08	Facilities	73	13	Y	8	84
A	Dec-08	Service Quality & Performance	59	17	Y	9	70
A	Feb-09	Member Satisfaction (strategic direction)	59	12	N	11	58
A	Mar-09	Council assets (cinema)	79	12	Y	12	50
A	May-09	Annual Business Plan & Budget	31	16	Y	14	40
A	Oct-09	New Library Services	80	11	Y	19	52
A	Mar-10	Council Communications	80	15	N	24	43
A	May-10	Annual Business Plan & Budget	36	26	N	26	33
B	Dec-07	Annual Community Survey (strategy)	54	15	Y	2	86
B	Jul-08	New Library Services	80	13	N	9	74
B	Sep-08	Art Show Policy	80	9	N	11	60
B	Nov-08	Annual Community Survey (strategy)	54	20	Y	13	70
B	Feb-09	Member Satisfaction (strategic direction)	54	12	N	16	55
B	May-09	Annual Business Plan & Budget	36	13	N	19	50
B	Sep-09	Environmental Initiatives	81	-	N	23	52
B	Feb-10	Environmental Initiatives	81	-	N	28	46
C	Feb-08	Council Performance & Traffic	71	10	Y	4	88
C	Oct-08	Environmental Initiatives	67	17	N	12	69
C	Feb-09	Council Communications & Events	59	27	Y	16	61
C	May-09	Annual Business Plan & Budget	21	9	Y	19	50
C	Jul-09	Environmental Initiatives	67	12	Y	21	51
C	Dec-09	Environmental Initiatives	67	5	Y	26	48
C	Apr-10	Annual Business Plan & Budget	21	24	N	30	37

Multiple regression confirmed that panel age had the strongest influence on response rates. Using a linear model ($R^2 = 0.85$) its impact was estimated to be -1.7; meaning that for every month the panel aged, survey response decreased by 1.7% (result significant at $p>0.001$), confirming the interpretation that panel age has a strong negative influence on response rates. Time (survey date) is potentially a confounding factor- the passage of time may have also influenced response rates. It was not possible to test this currently because panel age is highly correlated with time/survey date ($r=0.91$). Tracking of response rates in panels more recently established (2009/10) would shed light on this issue.

Table 3: Regression results (model coefficients)

Influence on dependent (response rates)	**b** Unstandardised	**b** unit	**b** Standardised	**Sig**
Est. response rate based on survey topic	0.3	per % pt	0.3	.76
Panel age	-1.7	per month	-0.9	.00
Survey length	0.4	per min	0.1	.40
Incentive	4.9	yes offered	0.2	.16

Model $R^2 = 0.85$

The estimated model indicates that topic and incentives have small positive effects on response rates, and survey length has a small negative effect, but these results were not statistically significant ($p<0.05$). Furthermore, including these additional variables contributes little to the model's accuracy (R^2 of 0.85 with versus 0.83 without, in a step-wise regression). The high R^2 validates the variables investigated and suggests that panel age should be considered in future studies of response rates for online panels, a significant finding.

Conclusions & Implications

These results indicate that panel age, being the number of years or months since it was established, is a major determinant of response rates in the online panel context. This is an important contribution, as existing literature had not identified this variable in the online context This suggests that online panel research differs to phone and mail in the way it must be managed, and that researchers and panel managers would be better diverting resources from activities like incentives into active panel management and recruiting new panelists to ensure good response rates. They also demonstrate that 'wear-out' is likely to be a significant problem for online panels and should be considered at the recruitment stage.

A key implication is that response rates and panel age/tenure should be tracked and reported on in online panels, at both the individual and the panel levels. Many online survey and panel management software packages cannot do this easily, and this is a concern.

These findings also suggest that high response rates for online panels may be little more than an indicator of a panel manager's ability to maximise response rates by rewarding good panellists and removing bad, unresponsive panellists (Callegaro et al. 2008) and say nothing about the quality or reliability of a panel. It is therefore imperative to understand how panels are managed, and avoid making unwarranted assumptions about the representativeness or accuracy of a panel based on its response rate.

Limitations & Future Research

This paper makes a contribution to our understanding of key variables associated with survey response rates in the increasingly important context of online panels. However, some important limitations need to be acknowledged. The research topics and online panels examined are all within the same local government context. Extending this research to panels of other types and in other contexts would be valuable in testing the robustness of this paper's findings. Additionally, individual-level analysis is necessary to understand if response rates fall because panellists become more selective in the surveys they respond to, or because some stop responding altogether and to determine which panellists (young, new etc.) tend to do so. Future research should also examine the impact of declining response rates on non-response bias and the accuracy of estimates from panels. Additionally, the value of actions to retain and 'reactivate' non-active respondents and the best methods for doing so, warrant research.

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