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ABSTRACT

We analyse the effect of different incentive structures on response rates for an online survey of New Zealand land owners. We find response rates are lowest for direct cash payment, lower even than for a control group with no incentive, which may be due to direct payment extinguishing any warm glow people receive from the charitable act of completing a survey. Lottery and charitable donation incentives do not increase response rates relative to a control group with no incentive.

JEL Classification: C83; C93; D64

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Introduction

It is common for researchers conducting online surveys to offer potential participants an incentive for taking part. Common incentives include direct payment (typically a voucher instead of cash), donations to charity and the chance to win a prize if the survey is completed. This paper uses a field experiment to test the extent to which these incentives increase response rates. We find response rates are lowest for direct cash payment, lower even than for a control group with no incentive, which may be due to direct payment extinguishing any warm glow people receive from the charitable act of completing a survey. The lottery and charitable donation do not increase response rates relative to the control.

Literature Review

There is a significant literature analysing the effectiveness of different incentive methods (e.g. cash payment, lottery, donation to charity) on survey response rates. The majority of this literature is concerned with traditional methods of inviting participants, such as letters, phone calls or in-person (e.g. door knocking). There is, however, a number of studies on how to maximise response rates for web-based surveys, although some of this work is on mixed-mode invitations where the invitation for a web-based survey is sent out by letter (or, in some cases the invitation is by email, but participants are also sent a pre-notification letter about the research, prior to them being contacted by email).³ We focus our literature review on a sample of studies where the survey is web-based and the invitation by email only. However, we do discuss some studies involving other modes where relevant.

Cash payments come in two forms: pre-payment or post-payment. Pre-payment is where a small cash payment is included with the invitation letter, with the letter typically saying this is the researchers' way of thanking the participant in advance for taking part. Post-payment is where the participant only receives a payment if they complete the survey. It is commonly argued in the literature (e.g. Dillman et al, 2009; LaRose et al, 2014) that prepayment signals the researcher trusts people to complete the survey, whereas post-payment conditional on completing the survey creates the perception the researcher does not trust people to complete the survey unless incentivised to do so. Bosnjak and Tuten (2003), for an online survey where

³ The meta-analysis of Görnitz (2006) includes 14 studies where the invitation was either by email or some other online mode. There have been a number of other studies conducted since then.

the invitation is by email, find response rates are not significantly different for pre-payment and post-payment, with neither form of payment increasing the response rate compared to a control group with no incentives. Patrick et al (2013) sent out pre-notification letters and followed up with an email inviting people to take part in an online survey. In their first treatment there was a \$10 prepayment, in their second treatment a \$2 prepayment combined with a \$10 post-payment conditional on completing the survey. Response rates were significantly higher in their second treatment. Hence, there is some evidence that post-payment is more effective than prepayment for Internet-based surveys.

It has also been suggested (e.g. Jacob and Jacob 2012) that when participants are offered more than a token cash payment, they may be even more likely to view the decision of whether to do the survey or not as an economic one, and may question whether the amount offered is enough to compensate them for their time. However, Jacob and Jacob find that a \$10 prepayment to school principals does substantially increase the response rate.

We now turn our attention to studies that have included cash, or close substitutes, as incentives in Internet-based surveys where the invitation is by email, with no pre-notification by letter. Deutskens et al (2004) use vouchers as an alternative to cash, varying across treatments whether the incentive was a voucher, lottery (the chance to win a voucher) or donation to charity (a donation that would be made if *everyone* completed the survey⁴). They find no statistically significant difference between their voucher and lottery treatments, but both these treatments have a significantly higher response rate than the charity treatment. DeCamp and Manierre (2016) use credits on student ID cards as an alternative to cash in their online survey. The control group was offered no incentive. In the first treatment there is post-payment of \$2 and in the second treatment post-payment of \$5. The \$5 post-payment increased the response rate, but the \$2 post-payment did not. Bosnjak and Tuten (2003) transfer money to participants via Paypal, sending out invitations to participate via email. They compare the effect of prepaid cash, postpaid cash and a lottery to a control group with no incentives, and find that the lottery increases the response rate, but that neither prepaid nor postpaid cash does.

An online panel is a pool of people who have registered to occasionally take part in web-based surveys. This is a slightly different context to our research, as we are interested in maximising response rates for people who have not previously agreed to take part in surveys

⁴ This is very different to our charity treatment, where we donate \$10 to charity for every completed survey.

(this is sometimes referred to in the literature as “ad hoc surveys”).⁵ However, we briefly review a sample of these studies. Sánchez-Fernández et al (2012) find that a prize draw (lottery) does not increase retention rates compared to a control group with no incentive. Pederson and Nielsen (2016) include a lottery and donation to charity (either 3 Danish Kroner or 10 Danish Kroner) as incentives. The lottery increases responses, the small donation has no effect and the large donation reduces responses. They argue that a donation, just like a cash payment, could involve some sort of quid pro quo, making completing the survey some kind of economic transaction, rather than activating an altruistic motivation. Göritz and Wolff (2007) find that a lottery increases responses in the first wave of a four-wave longitudinal survey, but that lotteries have no direct effect on retention in subsequent waves.

To the best of our knowledge, in the context of the invitation being sent out by email, there are no studies which simultaneously analyse the effect on response rates of cash payment, a lottery and a donation to charity. In fact, Bosnjak and Tuten (2003) is the only study where the payment takes the form of cash (rather than a voucher or credit on an ID card). We aim to add to the existing literature by analysing simultaneously the effect of cash payment, a lottery and a donation to charity in the context of an ad hoc survey. Our hypothesis is that response rates will be highest for direct cash payment, followed by lottery, charitable donation and no incentive. This hypothesis is based on the standard neoclassical assumption that people will respond to financial incentives. Cash payment is expected to have a higher response rate than a lottery, given that people are likely to be risk averse.

Method

Our field experiment was incorporated into the Survey of Rural Decision Makers, a large-scale, web-based survey of land owners across New Zealand. Conducted bi-annually since 2013, the Survey of Rural Decision Makers provides detailed information on land use, land-use change, and drivers and barriers of land-management practices (e.g. Brown and Roper 2017). The sample is drawn from official databases of rural land owners and from past participants, and the survey is widely promoted by industry bodies and central and regional government.

⁵ For a detailed discussion of the differences in recruiting for online panels versus ad hoc surveys, see Göritz 2006).

The survey has traditionally incentivised participation by both a charitable contribution and a prize draw. Respondents select the charity that they wish to support from four options; in 2017, these options included the New Zealand SPCA (the country's largest animal welfare organisation), St John New Zealand (which provides ambulance services and medical training across New Zealand), the Starship Foundation (which support's New Zealand's largest children's hospital, and the Westpac Chopper Appeal (which supports rescue helicopter services across New Zealand). In addition, respondents are invited to view survey results (in aggregated, anonymised form) on the Manaaki Whenua – Landcare Research website, and approximately 80% of respondents do so.

New respondents are recruited during each wave to mitigate survey fatigue and respondent attrition (Watson and Wooden 2009). While most potential respondents were offered the same incentives as existing respondents during the 2017 wave, a subset of potential respondents was offered either a direct payment of \$10, a lottery with an expected value of \$10, or a \$10 donation to one of the four charities identified above. A control group was offered nothing. Each of these four groups was drawn from an equally sized random sample of individuals who had been invited to complete the survey in 2013 and who had not done so. Direct payment was made via direct bank transfer upon completion of the survey. Unlike North America, where individuals may be reluctant to share personal banking details and where direct bank transfers are cumbersome, direct bank transfers are so common in New Zealand that PayPal and similar services have virtually no footprint in the country. For example, prior to March 2017, the only ways to settle transactions on TradeMe (New Zealand's analogue to eBay, with nearly 8 million individual listings) was by cash or direct bank transfer.

The lottery took the form of a 1-in-50 chance to win a pre-paid Visa card worth \$500. Credit cards are the most common form of payment in New Zealand, and New Zealanders made 337 credit card transactions per capita in 2017 (Payments NZ 2019).

To accommodate seasonal commitments for farmers in different sectors, the survey was open from 6 September until 7 November. In addition to the initial invitation, each respondent received up to three reminder messages. Importantly, the invitation and reminders were identically worded apart from the description of the incentive, if any.

Invitations were sent via the VerticalResponse email campaign system. This platform enabled us to monitor the number of opened email invitations and the number of surveys begun

within each group. The survey itself was administered in Qualtrics, which enabled us to track the number of surveys that were completed within each group. The 2017 survey took 21 minutes to complete, on average.

Results

We restrict our attention to those who opened the email. Some participants began the survey, but did not complete it. We present results both for those who started the survey, and those who completed. The Response rates by treatment are reported in Table One. Whether we focus on either the percentage starting the survey or the percentage completing the survey, the response rate is lowest for the cash payment treatment (6.4% completed the survey), with the response rates for the other three treatments ranging from 9.7% for no incentive to 11.8% for the prize draw (for those completing the survey). The rate of attrition is also higher in the direct payment treatment (27.3%), compared to the other three treatments (all around 15%).

Table One: Response Rates By Treatment

Incentive	Number Opened	Number Started	Number Completed	Attrition
Prize Draw	744	104 (13.9%)	88 (11.8%)	15.4%
Charity	717	85 (11.9%)	72 (10.0%)	15.3%
No Incentive	729	84 (11.5%)	71 (9.7%)	15.5%
Direct Payment	749	66 (8.8%)	48 (6.4%)	27.3%

We used the Fisher exact test to determine whether the differences in response rates across treatments are statistically significant. The results are reported in Table Two (for those starting the survey) and Table Three (for those completing the survey). For those completing the survey, the response rate for the direct payment treatment is significantly lower than the other three treatments, at the five percent level; for those starting the survey, this is true at either the five or ten percent level, depending on the comparison being made. Table Four shows there is no statistically significant difference in attrition rates across treatments, which is perhaps due to the small number of drop-outs.

Table Two: Fisher Exact Tests for Statistically Significant Differences in Response Rates for Those *Starting* the Survey

	Charity	No Incentive	Direct Payment
Prize Draw	0.242	0.161	0.002
Charity		0.870	0.059
No Incentive			0.086

Note: the numbers reported in the table are the p-values for the two-sided Fisher exact test.

Table Three: Fisher Exact Tests for Statistically Significant Differences in Response Rates for Those *Completing* the Survey

	Charity	No Incentive	Direct Payment
Prize Draw	0.278	0.208	<0.001
Charity		0.861	0.013
No Incentive			0.022

Note: the numbers reported in the table are the p-values for the two-sided Fisher exact test.

Table Four: Fisher Exact Tests for Statistically Significant Differences in *Attrition Rates*

	Charity	No Incentive	Direct Payment
Prize	1.00	1.00	0.132
Charity		1.00	0.168
No Incentive			0.170

Note: the numbers reported in the table are the p-values for the two-sided Fisher exact test.

None of the incentives lead to higher response rates than the control of no incentives (also there is no statistically significant difference between the lottery and the charitable donation), and offering a direct payment actually reduced response rates. It is likely that the cash payment being offered was low compared to the time taken to complete the survey for the participants in our survey. It may well be that our participants considered completing the

survey to be a charitable act, and that offering them a minimal payment to complete the survey extinguished the warm glow from acting charitably. Gneezy and Rustichini (2000) found that the extrinsic motivation of introducing a fine for parents who picked their children up late from a day-care centre crowded out the intrinsic motivation to pick up children on time because it was the right thing to do. In the same way, it could be that offering the extrinsic motivation of direct payment crowds out the intrinsic motivation to do the survey out of civic mindedness. Whereas direct payment crowds out the intrinsic incentive, it may be that other extrinsic incentives such as a lottery and charitable donation do not.

Conclusion

We conduct a field experiment to analyse the effect of different incentive mechanisms on survey response rates. To the best of our knowledge our research is the first to directly compare cash payment with a lottery, charitable donation and a control group with no incentive. Our hypothesis was that the highest response rate would be for cash payment, but this incentive actually had the lowest response rate. We suggest this could be because offering a cash payment crowds out intrinsic motivations to complete the survey.

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