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**Effects of small incentives on survey response fractions:
Randomised comparisons in national alcohol surveys conducted in New Zealand**

Kypros Kypri, PhD^{1,2*}

Brett MacLennan, PhD¹

Jennie Connor, PhD¹

¹Department of Preventive and Social Medicine, University of Otago, New Zealand

²School of Medicine and Public Health, University of Newcastle, Australia

*Corresponding author: Room 4104, HMRI Building, Kookaburra Circuit, New Lambton
Heights NSW 2305 Australia, kypros.kypri@newcastle.edu.au, +61 2 4042 0536

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Abstract

We experimentally evaluate inexpensive interventions to increase response fractions in two alcohol surveys. Residents on the New Zealand General and Māori electoral rolls were randomised to receive a survey pack with or without an offer of entry to a \$500 prize draw. Subsequent randomisation of sample members who did not initially respond allowed estimation of effects of offering a \$5 donation to charity as an incentive to respond. Offering prize draw entry did not significantly increase responses in either population. Contrary to expectation, promising a \$5 donation to non-respondents reduced subsequent responding in the group previously offered the prize draw incentive.

Key words: survey; response; response rate; non-response; incentive; postal survey

Background

Falling response fractions present a challenge for health research, reducing effective sample sizes and, more importantly, increasing the potential for bias in estimates due to non-response being associated with variables of interest. The problem is illustrated by a recent coronary disease study, in which 1886 patients who completed a survey about their quality of life were compared with 506 who did not complete the survey (response fraction 79%).¹ Consistent with the survey methods literature, non-respondents were younger, had greater body mass, and a larger proportion were smokers. They were also 2-4 times more likely to die in the following three years, leading the authors to conclude that “Data gathered by means of questionnaires cannot be generalized to the whole patient population due to a profound non-response bias” (p.168).¹

Correcting for non-response bias is problematic because it relies on naïve assumptions about distributions of the characteristics of interest within the non-respondents.² The best approach is to minimise non-response through study design. A systematic review of methods to increase response rates in postal surveys showed increasing response fractions from a range of strategies including the use of monetary and non-monetary incentives, unconditional incentives, reminder contacts, and provision of replacement questionnaires on request.³

We undertook this study to inform the design of an evaluation of alcohol reform legislation in New Zealand.⁴ The evaluation involves a mixture of methods, including national household surveys before and after the new legislation takes effect. In the New Zealand context, compliance with the Treaty of Waitangi requires that health research should, where possible, provide ‘equal explanatory power’ for Māori and non-Māori subjects of the Crown.⁵ Accordingly, we drew random samples of equal size from the General and Māori electoral

rolls in 2014, such that national surveys were conducted in parallel using identical methods, allowing for direct comparison of estimates. We estimate effects of two low cost interventions within these parallel surveys with a view to applying what we learned in subsequent surveys, and to add to an international evidence base for health survey research.

Methods

Design. We conducted two randomised trials, one for Māori, the other for non-Māori, with two smaller randomised trials embedded within each (see Figure 1).

Sampling. Two thousand individuals were drawn at random from each of the New Zealand General and Māori electoral rolls in September 2014. Being enrolled is compulsory and estimates suggest 92% of eligible voters are enrolled (<http://www.elections.org.nz/research-statistics/enrolment-statistics-electorate>). People who are in prison or who have been in a psychiatric hospital for more than three years after being charged with a criminal offence are not entitled to enrol. To qualify for the Māori electoral roll, citizens must identify as New Zealand Māori or descend from New Zealand Māori (http://www.elections.org.nz/sites/default/files/plainpage/attachments/Enrolment%20Form%20ROE1_MAR13.pdf).

For ease of description, electors on the General roll are referred to as non-Māori, however, it should be noted that Māori citizens may choose to be on the General roll rather than the Māori roll. The latest estimates suggest that 7% of electors on the General roll are of Māori descent but it is possible that not all of these individuals self-identify as Māori.

Randomisation. Electors were randomised to receive (A) a survey pack or (B) the same pack plus entry into a \$500 supermarket voucher prize draw if they responded.

After 50 days, electors in condition A who had not yet responded or withdrawn, were randomised to receive another survey pack (A1) or another survey pack plus our promise to give \$5 to the charity Child Poverty Action Group if they responded (A2). The same experiment was undertaken with non-respondents in B. These procedures were used for both the General and Māori roll samples. Ethical approval to conduct the research was provided by the University of Otago Human Research Ethics Committee (Ref D14/290).

Questionnaire. Enrolees were sent an 8-page booklet containing 44 questions requiring tick box (or checkbox) or short text responses. Questions elicited respondents' views on alcohol availability and related problems in their local community, their participation in local decision-making, effects of other people's drinking, their own drinking, and their demographic characteristics.

Analysis. The pre-specified primary outcome in each trial was the proportion of sample members who returned a questionnaire that was at least partially completed within Phase 1, i.e., prior to the posting of a second questionnaire (Figure 1). The pre-specified secondary outcomes were the proportions of non-respondents, after Phase 1, who returned a questionnaire before the completion of Phase 2 (Figure 1). We performed chi-squared tests and calculated 95% confidence intervals for differences between proportions.

Results

Primary outcome

For the general roll sample, response fractions (see numbers designated as “responded” at the end of phases 1 and 2 in Figure 1) in conditions A and B were 52% $[(340+33+26)/767]$ and 53% $[(495+72+45)/1148]$, respectively ($p=0.58$) and for the Māori roll: 33% $[(190+24+31)/749]$ and 36% $[(318+48+37)/1133]$ respectively ($p=0.20$). The overall, unweighted, response fractions were 42% $[(340+33+26+190+24+31)/(767+749)]$ for condition A and 45% $[(495+72+45+318+48+37)/(1148+1133)]$ for condition B ($p=0.22$).

Secondary outcomes

In the general roll non-respondents, the promise of a donation did not increase response in condition A (difference: -1%; 95% CI for the difference: -9% to 6%), and decreased response in condition B (difference: 9%; 95% CI for the difference: 3% to 15%). In the Māori roll non-respondents, the promise of a donation to charity did not significantly increase response in condition A (difference: 4%; 95% CI for the difference: -1% to 9%), but decreased the response in condition B (difference: 4%; 95% CI for the difference: 1% to 8%).

Conclusion

Offering entry to a \$500 supermarket voucher prize draw did not increase the overall response fraction in this national postal survey of alcohol consumption and attitudes to alcohol issues. For sample members who had not responded to the initial request to participate, the promise of donating \$5 to charity on their behalf if they completed and returned the survey did not increase response fractions in those who had been offered only a survey pack without the prize draw incentive. Contrary to expectation, this offer reduced response in participants who had already been offered the prize draw incentive (condition B).

It is unclear to what extent the estimates generalise to other populations and survey subject matter, or whether effects would vary as a function of the size of the prize, for example, if there would be an effect of a prize that was larger by a factor of 10. The Cochrane review by Edwards and colleagues³ identified only seven trials comparing larger versus smaller non-monetary incentives in terms of questionnaire submission after all mailings, finding small benefits at best (OR 1.09; 95% CI 0.97 to 1.22). We relied on the intuition that \$500 (more than most New Zealand families spend on groceries each week [http://www.stats.govt.nz/browse_for_stats/people_and_communities/Households/HouseholdEconomicSurvey_HOTP_YeJun13/Commentary.aspx]) would be enough to encourage some people do the survey where they might not otherwise.

Edwards and colleagues³ meta-analysed 94 estimates from trials of non-monetary incentives versus no incentive, finding small benefits in terms of questionnaire submission after all mailings (OR 1.15, 95% CI 1.09 to 1.22), however, the incentives were typically offered at the outset of the survey rather than after several contact attempts, as in our study, and they were not following a previous offer of a prize draw entry as we used. The results showing no benefit from strategies previously shown to be effective, and evidence of detrimental effects of small charitable donations where a previous offer of prize entry had been made, reveal the need for further experimental study of population behaviour in relation to surveys.

Key points

- Previous studies have found that non-monetary incentives are typically effective in increasing survey response fractions.
- We estimate effects of inexpensive incentives: entry to a prize draw, and charitable donations for people who do not respond initially.

- We find no significant benefit of prize draw entry and some evidence of reduced response among those randomised to charitable donations who had already been offered entry to a prize draw.

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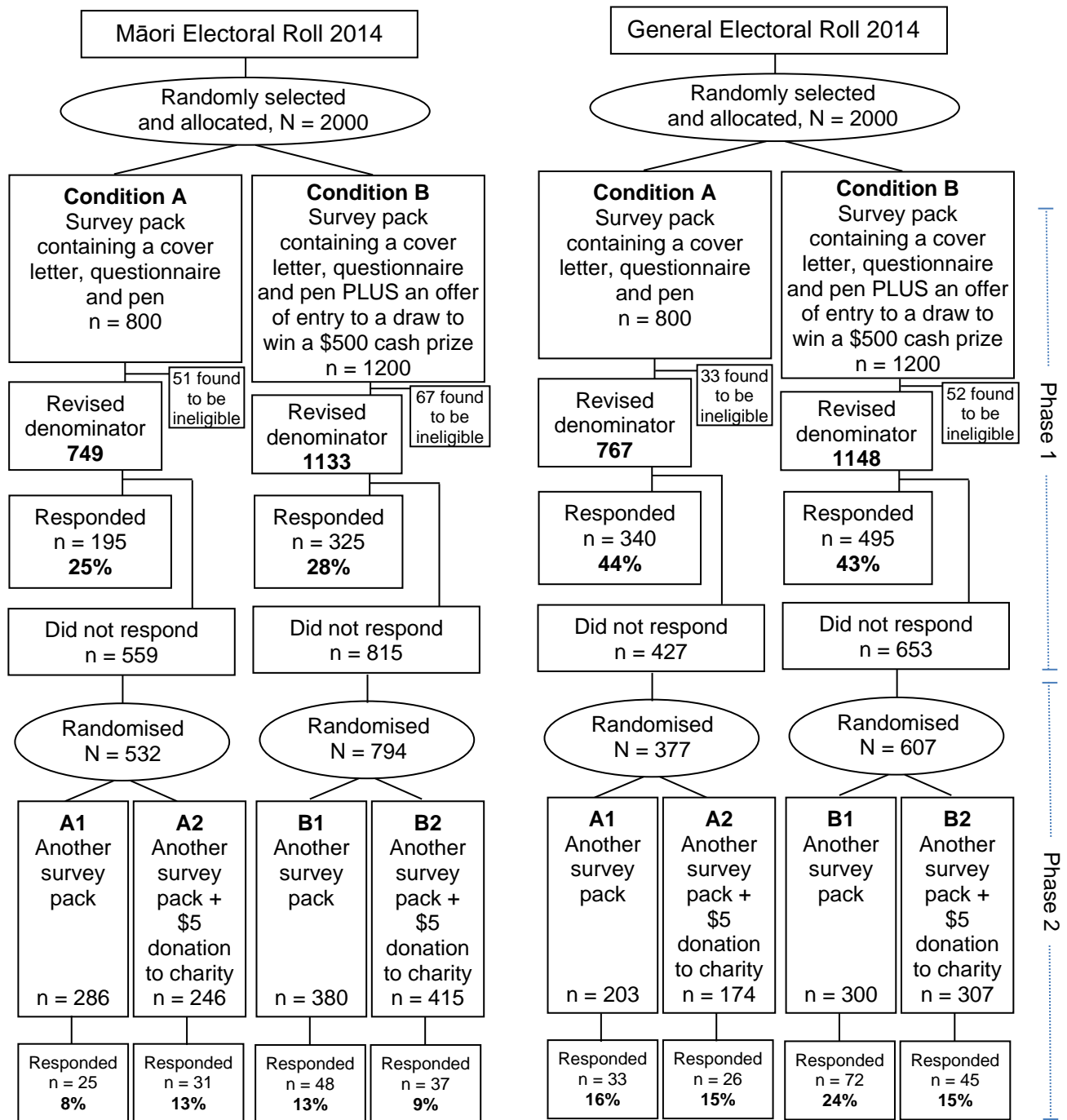


Figure 1. Trial flow charts