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State-of-the-art of incentive strategies – Implications for longitudinal travel surveys

Eline Scheepers^{a*}, Sascha Hoogendoorn-Lanser^a

^a*KiM Netherlands Institute for Transport Policy Analysis, Bezuidenhoutseweg 20, 2594 AV The Hague, The Netherlands*

* Corresponding author. Tel.: +31 6 122 04 584.
E-mail address: eline.scheepers@gmail.com

Abstract

There is a slow but steady decline in the willingness of respondents to participate in surveys. The provision of incentives is a possible strategy to motivate respondents and thus reduce non-response. Overall, incentives are found to increase response rates effectively, but the extent of the impact of incentives varies with the characteristics of the survey. By performing a literature review, we contribute to the general understanding of how incentive strategies can best be used in longitudinal household surveys. We complement our state-of-the-art review with lessons learned in the Netherlands Mobility Panel (household panel that was set-up to study the short-run and long-run dynamics in the travel behaviour of Dutch individuals and households) with respect to respondents' knowledge of the type of incentives, combination of different types of incentives, and the impact of changes in incentive strategies.

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1. Background

There is a steady decline in the willingness of respondents to participate in surveys (Singer & Ye, 2013). The provision of incentives is one of the possible strategies to motivate respondents and reduce non-response. Incentives are found to increase response rates effectively, but the extent of the impact of incentives varies depending on mode of data collection (e.g. telephonic, paper and pencil, online), type of incentive (monetary or non-monetary), and delivery method used (e.g. cash, voucher, revenue points, contribution to charity) (Laurie & Lynn, 2009). The

effectiveness is also dependent on the type of survey (household vs. individual, and cross-sectional vs. longitudinal) and the sample from which respondents are drawn (existing respondents database vs. population register).

The MPN is a household panel that was set-up to study the short-run and long-run dynamics in the travel behaviour of Dutch individuals and households, and to determine how changes in personal and household characteristics, and in other travel-related factors, correlate with changes in travel behaviour (Hoogendoorn-Lanser, Schaap, & Olde-Kalster, 2015). The Netherlands mobility panel (in Dutch: MobiliteitsPanel Nederland (MPN)) provides the opportunity to adapt and improve its incentive strategy in 2018.

In order to properly adapt the MPN incentive strategy, we performed a state-of-the art review on the use of incentives in and beyond the field of transport research. In doing so, we took into account more generic theories on the effects of rewards, reciprocity, intrinsic/extrinsic motivation, etc. (Berveling, 2013). In the study we answered the question how an incentive strategy needs to be designed/adapted in case a survey:

- Is longitudinal instead of cross-sectional
- Is household instead of individual
- Is conducted online instead of offline
- Is conducted on a sample drawn from an existing respondents' database or a "fresh" sample drawn from for example a population register

By performing the literature review, we also aim to contribute to the general understanding of how incentive strategies can best be used in longitudinal household surveys. To this end, we complement our literature review with lessons learned in the MPN with respect to respondents' knowledge of the height and type of incentives, combination of different types of incentives, and the impact of changes in incentive strategies among other things. These lessons are drawn from in-depth interviews held after wave 1 and wave 4 and from the logs kept by the telephonic helpdesk.

This paper is structured as follows. We first present an overview of several psychological theories pertaining to the effectiveness of incentives (Section 2) followed by a description of characteristics of incentives Section 3). Subsequently, we discuss different types of incentives to be used for longitudinal, household and online surveys respectively (Sections 4, 5 and 6). The second part of the paper focuses on the MPN. In Section 7 we describe the MPN's current incentive strategy. In Section 8 we discuss the lessons learned in the MPN with respect to using incentives in a household panel, and the respondents' knowledge of height and type of incentives. In Section 9 we focus on the adaptations to the incentive strategy and how we used the literature review as well as the lessons learned to do so. We end with discussion (Section 10).

Although the authors use several other motivational features for stimulating respondents' participation and increasing response rates (e.g. factsheets, information, invitation letters, reminders). These features are not the discussed in this paper.

2. Psychological theories

Several psychological theories can be used to explain how incentives influence survey participation. The *theory of reasoned action* (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), for example, argues that people decide on a course of action if the benefits of the action outweigh the costs. The *leverage-salience theory* (Groves et al., 2000) argues that the decision of whether to participate in a survey depends on the subjective weight given to various factors in favour of and against participation, factors made salient by the interviewers introduction to the survey either in-person, in a letter or via e-mail. The ultimate level of incentives for survey participation not only depends on the incentives themselves, but is also related to numerous other survey features, such as the topic and the sponsor. For example, persons interested in a specific topic are more likely to participate in a study. The *social exchange theory* postulates that social exchange is based on the "norm of reciprocity" – namely, that Ego's "gift" to Alter creates an obligation to reciprocate with a gift to Ego (Gouldner, 1960). Unconditional incentives are thought to operate through this process of social reciprocity (Laurie & Lynn, 2009).

In addition to these psychological theories on predicting and explaining (non)participation, research also focused on respondent factors associated with (non)response. The effectiveness of incentives is expected to be influenced by the motivations of respondents to participate in a study. These motivations can often be divided into three categories:

1) altruistic (the belief that the research is important, wanting to be helpful to the researchers or society, civic duty); 2) egoistic (enjoys surveys, would benefit, interest in the results or in learning something); 3) motivations related to one or more survey characteristics (interest in the topic, respect for the organisation, length of survey) (Dillman et al., 2009; Singer & Ye, 2013). Therefore, the use of incentives can be expected to have varying effects for respondents whose motivations for participating in a study differ (Berveling, 2013).

3. Characteristics of incentives

In this paragraph we will give an overview of the different types of incentives, the timing and height of incentives (in case of monetary incentives).

3.1. Types of incentives

A distinction can be made between various types of incentives: monetary vs non-monetary. A monetary incentive is for example money, a cheque or a gift voucher, while non-monetary incentives are gifts or the provision of information. In this paper, we focus on monetary incentives only. The simplest type of monetary incentive is simply paying every respondent. A lottery is another often-used type of incentive strategy. As Göritz (2014) notes, lotteries are easy to implement and usually cap the associated costs, because most lotteries cost the same regardless of the number of participants. Although the chance of winning a lottery is often low, these lotteries are popular because respondents focus more attention on the height of the monetary value they can win rather than on their low chance of winning (Berveling, 2013). Another possibility is to provide respondents with a choice of “payment” (e.g. cash, a gift, or donating to a charity), which allows the respondents to tailor the incentive to fit their own personal preferences in terms of altruism or individual benefit. However, as shown by Laurie & Lynn (2008), the effects that such tailoring has on response rates and biases are unknown.

3.2 Timing of the provision of incentives

With respect to the timing a distinction can be made between prepaid (unconditional) and promised (conditional) incentives. An *unconditional* or *prepaid incentive* is paid without setting any conditions on participation, while a *conditional* or *promised incentive* is paid only if respondents fulfil the requirements for obtaining the incentive. By using prepaid incentives, potential respondents receive an incentive from the research or survey institute without having to “give” something back. If a conditional incentive is used, the timing of when these incentives are provided to respondents is crucial. As noted by Berveling (2013), who conducted a study on the use of rewards in several policy domains, there should be a clear connection between participation in a survey and the incentive provided, but if too much time elapses between those two actions, one can expect that the incentive will become less effective, as the respondents no longer see a clear connection between the incentive and their participation in a survey.

3.3 Height of the monetary incentives

The height of the monetary incentives is important. Monetary incentives should not be too low, because they will then fail to stimulate respondents to participate in the study. Monetary incentives can also have a counterproductive effect, “crowding out” the altruistic motivations. When respondents intrinsically motivated to participate in research are offered an incentive, this can adversely affect their intrinsic motivation. When the monetary incentive is too high, respondents will only participate in a study because of this incentive. Generally, it can be argued to “pay the right amount”. The optimal height of monetary incentives remains unclear. According to some studies, increasing the height of incentives does increase response rates, yet does so at a declining rate (Singer & Ye, 2013). Further, the impact of the height of monetary incentives differs per target group (e.g. lower monetary incentives are needed for low-income groups than for high-income groups).

4. The use of incentives in panel surveys

Most studies on the effectiveness of incentives are based on cross-sectional surveys. Overall, it was found that

incentives are effective in increasing response rates in cross-sectional surveys, but the impact of incentives varies depending on the mode of data collection, the type of incentive, and the delivery method used (Laurie & Lynn, 2009). For example, Singer & Ye showed that using unconditional incentives is more effective than using conditional incentives (Singer & Ye, 2013). Using lotteries as an incentive was found to have mixed results. Yanez et al. argue that raffling prizes after each wave is more effective than providing cash or gifts (Yanez, Mansilla, & de Dios Ortuzar, 2010). However, Singer & Ye conclude that prepaid incentives increase response rates more than lotteries do (Singer & Ye, 2013). In addition, Dillman (2000) concluded that lotteries have a relatively small, if any, effect on participation in offline surveys.

As Laurie and Lynn (Laurie & Lynn, 2009) state, panel surveys differ in two ways from cross-sectional surveys in terms of the use of incentives. Firstly, the administration of incentives (e.g. type, value, method) to each potential respondent can vary in different waves, leading to a multitude of potential incentive regimes, each consisting of a combination of treatments across the various waves. Secondly, determining the effectiveness of incentives may be more complex in panel surveys than in cross-sectional surveys, and hence may need to be evaluated differently. Finally, the decision to use incentives in panel surveys has long-term financial consequences for the survey, as well as with regard to the respondents' expectations.

In the context of longitudinal surveys, research on the long-term impact of incentives on respondent participation is scarce. Consequently, given the available empirical evidence, incentive-related decisions in longitudinal surveys cannot be wholly grounded in facts (Schaurer & Bosnjak, 2016). Moreover, it is questionable whether the types of incentives that proved to be effective in cross-sectional surveys are also effective in longitudinal surveys. For example, most findings related to monetary incentives come from cross-sectional studies (Callegaro et al., 2014).

In line with the evidence of cross-sectional studies, the evidence for the use of incentives in longitudinal surveys suggests that incentives can be effective in reducing attrition across multiple waves of a survey (Laurie & Lynn, 2009). Unconditional incentives have also proven to be more effective in longitudinal studies than conditional ones, and monetary incentives in turn are more effective than gifts in kind (Laurie & Lynn, 2009).

4.1 Changes in incentive strategy over time

Many longitudinal surveys change their incentive strategy over time in an attempt to maximise longitudinal response rates (Laurie & Lynn, 2009). Laurie and Lynn (2009) state that there is still little or no evidence of the effectiveness of multiple combinations over time. Further, another area in which knowledge is lacking pertains to the impact of introducing an incentive for the first time in a longitudinal survey that previously not used an incentive.

Laurie & Lynn (2009) note that it is virtually inevitable that long-running panel surveys using financial incentives from the study's first wave have to increase the height of the monetary incentive over time, in order to keep the incentive meaningful for respondents. This increased incentive also demonstrates to long-serving sample members that their contributions remain important to the survey organisation. Laurie (2007) showed some evidence for the symbolic value of increasing the height of the incentives, in terms of demonstrating to respondents that they were appreciated and valued. Laurie & Lynn (2009) also argued that a small, regular increase in the value of an incentive would be more effective than an occasional larger one.

In addition to increasing the height of monetary incentives over time, other incentive strategies have also been cited as being effective. For example, Laurie & Lynn (2009) noted that an effective strategy can be using some type of "golden handshake" to welcome and encourage the children of participating households who reach the age of twelve and join the survey.

Although incentive strategies are often adjusted in longitudinal studies, the theoretical rationale behind these adjustments is often lacking. In many cases, such adjustments are made based on own experiences in the field, comments from interviewers and/or advice from survey practitioners, rather than on experimental evidence. In the absence of experimental evidence, it is difficult to disentangle the effects of incentives from other survey procedures designed to minimise losses to the sample, some of which may have significant impacts on response rates (Laurie & Lynn, 2009).

4.2 Differentiating incentives between respondents

With a longitudinal design, it is possible to tailor incentive strategies by using the detailed information already known about respondents' response history and characteristics. This creates opportunities to vary incentive strategies

for different subgroups. However, generally, using differential incentives, in which some respondents receive more than others, is avoided by most longitudinal surveys, or at least restricted to situations in which the various sample members have different response tasks (Laurie & Lynn, 2009). Little is known about the long-term effects of tailoring strategies, however, and especially when non-cooperative respondents receive a higher incentive. If a respondent receives a higher amount in one particular year, it is reasonable for them to expect to receive this amount the following year, and if they do not, they may drop out of the survey. Another potential problem concerning these differential incentives applies to surveys, such as household panel surveys, in which multiple members participate, because offering varying amounts of money to different household members would be difficult.

Although most longitudinal surveys do not use differential incentives, many surveys do use some mechanisms for varying the incentives that respondents receive. However, little is known about how successful these strategies are in delivering a long-term commitment to the study (Laurie & Lynn, 2009).

4.3 Bias induced by provision of incentives

The use of incentives in itself can also be a potential source of bias. In contrast to cross-sectional studies, the effects on long-term retention are perhaps more important than effects on wave-specific response rates. Evidence also suggests that the effect of a repeated incentive can grow more pronounced the more waves respondents have participated in. Additionally, it is of interest if incentives encourage groups that are typically underrepresented in surveys to respond (such as those on low incomes, ethnic minority groups, and those with low levels of education), or whether the additional respondents are similar to the ones who would respond regardless, in which case incentives have no beneficial effects for reducing non-response bias (Laurie & Lynn, 2009). Statistics Netherlands performed an experiment in which they compared the effectiveness of (1) an unconditional incentive of €5.00 sent with an advance letter, (2) a lottery of an iPad, and (3) no incentive. It was found that the effectiveness of the incentive strategies differed per group of respondents (e.g. age, ethnicity, income, urbanity) (Statistics Netherlands, 2016).

Singer & Ye tested several hypotheses about the effect of incentives on quality of response, sample composition and response distribution (both cross-sectional and longitudinal). It was found that only a few studies addressed these issues, and most of them did not find any significant effects of incentives on these aspects (Singer & Ye, 2013). Future research is needed in order to be able to draw conclusions on this topic.

5. The use of incentives in household panels

In longitudinal household studies in which more than one household member is supposed to participate, the task of motivating respondents becomes even more important. The incentive should encourage all “relevant” household members to participate. Ideally, the incentive is appealing to all household members and stimulates household members who already completed the survey to motivate other household members to do so as well. This can be achieved by providing an additional household incentive on top of an individual incentives or by replacing individual incentives completely by a household incentive.

To our knowledge, only very few studies use a household incentive. The Household Income and Labour Dynamics in Australia (HILDA) survey (Laurie & Lynn, 2009), and the German Mobility Panel (Weiß, Chlond, von Behren, Hilgert, & Vortisch, 2016), use for example a household incentive. The HILDA survey’s incentive strategy has changed over the years, from only a household incentive to both an individual and a household incentive. The reason for this was that it was unclear if the one person in the household who received the household incentive shared this incentive with the other household members. Moreover, the height of the incentive was raised, as it was deemed somewhat unfair that large households received the same amount of incentives as smaller households (Laurie & Lynn, 2009). Generally, however, the rationale of choosing between an individual and household incentive is often lacking, as are corresponding studies pertaining to the effectiveness of such incentives.

6. The use of incentives in online research

In recent years the use of the Internet for both cross-sectional surveys and panels has increased greatly. Nevertheless, research on the effectiveness of using incentives in online research is quite limited (Singer & Ye, 2013). Due to differences between offline and online research (device, logistics, respondents and their participation process, etc), it is questionable whether findings from offline studies can be generalised to the online realm (Göritz, 2006). An

online panel constitutes a pool of people who have signed up to occasionally participate in web surveys (Görizt & Wolff, 2007), meaning that these respondents have already made up their minds about participating in surveys, and hence the participatory invitation does not arrive unexpectedly (Görizt, 2006). The attraction of these online panels for researchers is threefold: 1) fast data collection; 2) promised lower costs per interview than with other methods; and 3) sampling efficiency due to extensive profiling (Callegaro et al., 2014).

In the review of (Görizt, 2006), most of the older work done on the use of incentives in online research was summarized; she found that incentives significantly increased the proportion of respondents starting the survey and the proportion completing it. Singer & Ye (2013) concluded in their review that incentives in online surveys appear to increase the likelihood of responding, as compared to a no-incentive group. Although prepaid incentives were found to be more effective in terms of response, compared to conditional incentives, these are more difficult to implement in web surveys (Singer & Ye, 2013).

As previously mentioned, monetary incentives proved to be effective in offline research. In online research, it is difficult to pay online panellists in cash; consequently, such monetary incentives are usually paid using online intermediaries, such as PayPal, or in a propriety currency, such as loyalty points (Görizt, 2014). In a five-wave experiment, Görizt (2008) investigated the differences in initial responses and drop-out rates between the provision of loyalty points and a cash lottery. Initially, no differences were found in the starting rate, but over time the loyalty points outperformed the lottery.

Lotteries - conditional on completion - were found to be the most popular incentives, especially among access panels, and comparisons with other types of incentives are rare (Görizt, 2006). As shown by Görizt (2014), mixed effects were found in literature concerning the impact that using a lottery had on starting rates and completion rates. However, most studies on the effectiveness of lotteries were based on a cross-sectional design (Görizt & Wolff, 2007). One study that focused on the effectiveness of lotteries in panel research was conducted by Görizt & Wolff (2007), who performed an experiment in which they examined the influence of a lottery of gift certificates on response and retention in a four-wave study in an online panel. For each wave a lottery was held among the respondents belonging to the experimental group, with the result being that the lottery increased the number of respondents starting the study in wave 1, but had no further effects in the subsequent waves. Görizt & Wolff (2007) argue that the lottery's failure to impact subsequent waves was due to the fact that the participants had gained experience with the lottery over time and came to understand that their chances of actually winning a prize were low. Additionally, no direct effects were found between the lottery and drop-out rates during the waves. However, because the results are mixed and only a few studies on the use of lotteries in online panel research have been conducted, we are unable to draw any firm conclusions about the effectiveness of such lotteries.

7. Current MPN incentive strategy

This section briefly discusses the MPN and its current incentive strategy.

7.1 Introduction to the MPN

The MPN consists of several elements, namely a screening-, personal- and household questionnaire and a three-day location-based trip diary. The screening questionnaire is only filled out when a household is recruited for the MPN, whereas the personal and household questionnaires are filled out every year. In the location-based trip diary respondents report their travel activities for three consecutive days once per year. The screening and household questionnaires are filled out by the so-called *gatekeeper* (an adult household member and contact person), while the individual questionnaire and the location-based trip diary are filled out by the individual household members (12 years and older). The gatekeeper receives general notifications and reminders which enables him to encourage the other household members to participate in the study. The first wave of data-collection started in 2013.

7.2 MPN incentive strategy

The MPN sample was drawn from an existing access panel. The contracted fieldwork agency has a standard incentive strategy consisting of a point revenue system. Every household has one revenue point account. It was not possible to create separate accounts for individual household members. As a result, we were not able to design an incentive strategy from scratch, although it was possible to make some adjustments regarding the timing and height

of the incentives. However, we were able to design the non-monetary part of the incentive strategy ourselves.

At the start of the MPN, we decided to use a household incentive, as this would allow household members to encourage each other to participate in the study. Additionally, two raffles are held to encourage even greater participation. The incentive strategy currently consists of three different aspects (all conditional):

1. A household receives €10.00 in revenue points if the entire household has completely participated;
2. A raffle of 400 web shop vouchers worth €10.00 each is held among the completely participating respondents;
3. A raffle of 40 family excursions (museums, zoos, exhibitions, etc.) is held among the completely participating households.

Respondents are able to convert the revenue points into vouchers for specific web shops, or as a donation to a charity organisation. By giving respondents the opportunity to choose between the various vouchers and purposes, they are able to choose the incentive that best fits their motivation (e.g. altruistic, egoistic). As Göritz (2008) has shown, the provision of loyalty points is an effective incentive strategy.

The MPN's incentive strategy is part of a larger package of measures aimed at stimulating respondents' participation and increasing response rates. For example, various instruction materials are available to the respondents (e.g. a manual, an instructive video on the diary website, a memory jogger). Moreover, there is a free telephone helpline and online assistance, as well as a reminder strategy. Respondents also receive factsheets, gift cards, and animated films (available at <https://english.kimnet.nl/the-netherlands-mobility-panel>), showing some of the results and insights derived from the MPN. Face-to-face in-depth interviews (see Section 8) revealed that the MPN respondents appreciated seeing these results and insights. Furthermore, it was found that such measures were evaluated differently depending on age, gender, etc. The authors therefore decided to use this broad range of measures. As previously stated, those measures are not included in the scope of this paper.

7.3 Adjustments of the MPN incentive strategy

In wave 3, the incentive strategy was adjusted: the prizes that households could win in the raffle if completely participating were changed. In waves 1 and 2, instead of 40 family excursions, an e-scooter and an e-bike were raffled off. The decision to change this raffle was based on the fact that respondents perceived the chance of winning one of these 'big' prizes as too low. An additional advantage of the family excursions was that not just one but all household members profited from it. When winning the lottery, households could choose from a list of family excursions (museums, zoos, exhibitions, etc.) across the country and received the tickets of their choice. Special care was taken selecting family excursions for households with children. However, this adjustment of the incentive strategy was not based on a theoretical rationale, but rather on statements made by respondents when communicating with the fieldwork agency helpdesk.

8. Lessons learned from the MPN incentive strategy

In this section, we discuss the lessons learned in the MPN with respect to the use of incentives in a household panel, and the respondents' knowledge of height and type of incentives. Although we do have information about which households participated fully in which wave (and received the household incentive) and which households and individuals won which prize in the raffles, we are unable to quantify the effects of the current incentive strategy, owing to the fact that the incentive strategy is complex (including several monetary and in-kind incentives). Furthermore, participation in the MPN may be influenced by factors outside of our span of control. For example, respondents may be asked to participate in other surveys besides the MPN by the fieldwork agency. Also, between waves small changes were made in the travel diary in the questionnaires.

The lessons learned are based on the in-depth face-to-face interviews held after waves 1 and 4 with a small but random subsample of respondents. For a description of the structure and topics of the interviews after wave 1 see (Hoogendoorn-Lanser et al., 2015). The interviews after wave 4 were structured with questions pertaining among other things respondents' knowledge about the current (monetary and in-kind) incentive strategy and changes in it over the years. The logs kept by the telephonic helpdesk were also a useful source of information. Respondents have the opportunity to contact the helpdesk if they encounter problems with the questionnaires and the travel diary, but

also with complaints, suggestions, etc. Part of the statements in the log pertain to type and height of the incentives.

8.2 Type and height of incentives

Most respondents stated in the in-depth interviews that they rely on the fieldwork agency to offer them a suitable incentive, as they do for any other surveys. They expect to receive revenue points based on the time needed to perform the requested task. Contrary to our expectations, most of the respondents were unaware of the height of the conditional household incentive (i.e. amount of revenue points). This turned out not only to be true for the MPN, but for other surveys for the same fieldwork agency as well.

Most respondents thought that the MPN only consisted of the travel diary. This is mainly caused by the fact that the travel diary has a different interface than the household and personal questionnaire, that both look more closely like the questionnaires they filled out before. Also, completing the travel diary requires a different task than they are normally asked to do by the fieldwork agency.

Results were different for the raffles. Some respondents were aware of the individual raffle. Knowledge of the individual raffle is mainly due to the fact that the probability of winning a web shop voucher was relatively high. Several respondents in the in-depth interview had a household member, who had won one of these vouchers over the years.

While some respondents were aware of the household raffle, they were often unaware that the prizes had changed between waves 2 and 3 (most people that started in waves 1 or 2 still thought that an e-bike and an e-scooter were raffled). Respondents were informed about the raffle prizes when they were initially asked to participate in the MPN (in the first email contact and in the screening questionnaire). Respondents also received a separate email when the prizes changed. Respondents mention that if they have participated in the MPN before, they hardly read documentation sent to them either by mail or e-mail prior to the survey. Respondents' ignorance about the incentive structure could also have been caused by the fact that information about incentives was not displayed on the main screen in the questionnaires and the travel diary, but was only shown if one pressed the help button.

Some respondents complained that the incentive was paid to the gatekeeper (household revenue point account), and that other participating household members did not have their own accounts. This may have influenced the response rates of the hard-to-reach groups, such as teenagers. Parents often solved the "problem" by exchanging revenue points for web shop vouchers, which were then used to buy items for the household or the children.

Several households contacted the fieldwork agency helpdesk to stress that they perceive the incentive strategy to be unfair for larger households. Currently, all households receive the same incentive, irrespective of household size. Moreover, a guaranteed incentive is only provided when the household participated fully. If household members know beforehand that one of them is not willing to participate, they also know that they won't get the incentive. This might result in non-response of the other household members as well.

8.3 Timing of payment of incentives

At present, a gatekeeper receives the conditional household incentive and his household participates in the raffle, when the household participates completely. Quite some time elapses between completing questionnaires and travel diaries, and checking households for completeness. The check is performed after the fieldwork is completed (August – November) and data is cleaned. Respondents could not be asked immediately what option they wanted their revenue points translated to, because at the time the gatekeeper finalises the questionnaires and the diary, it is not yet known if other household members did so as well. If the complete household has participated, the revenue points are automatically translated to the option selected in the last survey the gatekeeper participated in before the MPN. Literature has shown that there should be a direct connection between participation and the incentive provided (Berveling, 2013). This direct link is currently missing in the incentive strategy.

8.4 Use of an existing access panel

Using a sample from an existing access panel implied that we had to take into account the existing incentive strategy of the fieldwork agency. Apart from that, respondents are not exclusively assigned to the MPN, but still participate in other surveys conducted by the fieldwork agency. Although both the fieldwork agency and the authors have taken precautions to minimise the influence of other surveys on MPN response, it can never be completely disregarded. Measures include restrictions on the minimum timeframe between two subsequent surveys, on survey topics, and on questionnaire design. On the one hand, the possible influence of other surveys on the MPN response renders it difficult to quantify the impact of (changes in) the MPN incentive strategy. On the other hand, carefully

conducting additional surveys will keep the MPN alive.

9. New MPN incentive strategy

In 2018, we will have the opportunity to adapt the current incentive strategy, as our contract with the fieldwork agency is ending. Although we will continue with the same respondents and the same fieldwork agency, the contract renewal creates the opportunity to reconsider the current incentive strategy and adapt it. We will use the literature review as well as the lessons learned to do so.

Sections 4, 5 and 6 described several features of effective incentive strategies for longitudinal, household and online surveys respectively. We tried to translate certain features to the MPN, although this is not fully possible. For example, cash cannot be used as an incentive because of tax regulations. Additionally, it is not deemed ethical for a governmental research institute to differentiate the height of incentives between groups; for example, by giving low-income groups a higher incentive in order to convince them to participate in the study. Because we want to continue using the respondents currently engaged with the fieldwork agency, we are prohibited from abandoning the point revenue system.

Based on the state-of-the-art, an unconditional incentive was found to be most effective. However, since we use an existing access panel, literature has shown that the provision of an unconditional incentive is difficult to implement in online research (Singer & Ye, 2013). Moreover, because the respondents are already familiar with the workings of the fieldwork agency's incentive strategy, as well as the budgetary restraints, we decided not to use these unconditional incentives. Lotteries are common practice in online research, and were also found to be more effective in online research than in offline research (Singer & Ye, 2013). Therefore, we will use both a conditional incentive and a lottery as an incentive strategy in the next MPN waves.

In addition, we will increase the conditional incentive, by making it household-size dependent and by providing individuals with a guaranteed reward for their contributions. As previously stated, large households currently receive the same amount of money as an one-person household, and individuals who are willing to participate did not receive the household incentive when other household members failed to fill out the questionnaires and diary. Both of these matters were perceived to be unfair. Therefore, we will increase the conditional incentive by paying every household member an individual incentive after completing a questionnaire or travel diary. Households will still receive an incentive when all household members completely participate.

When a child reaches the age of 12, they automatically become part of the MPN research population and are expected to participate in the study. As Laurie & Lynn (Laurie & Lynn, 2009) noted, using some type of "golden handshake" to welcome these children is an effective incentive strategy. To mark this change, every child reaching the age of 12 will be given extra attention (small gift) in the first year that they participate in the study.

Currently the link between performing a task in receiving an incentive is too weak. Several measures will be taken to be able to provide respondents with an incentive shortly after completing a questionnaire or a travel diary. For example by further automating the data cleaning processes. Making a larger part of the incentive personalised instead of household-based, also contributes to this.

As Laurie & Lynn (2009) noted, it is inevitable for long running panels using financial incentives from the start to increase the incentives over time. The reason for this is that not only do costs of living increase over time, but also increasing the height of the incentives demonstrates to long-serving respondents that they remain important to the survey organisation. The introduction of an individual conditional incentive means an increased incentive for households and individuals. We will give households that have participated in two or more earlier waves an extra bonus if they also participate in wave 6. This is a particularly sensitive moment in the process, as both the role of the fieldwork agency, and the appearance of the questionnaires and diary, will be changing. The height of the conditional household and personal incentives has not been determined yet. Before the start of wave 6 in 2018 the questionnaires and the travel diary will be tested. In-depth interviews will be held as part of a pilot and will be used to determine the height of these incentives.

In sum, the existing incentive strategy will be supplemented with the following elements:

1. Every respondent receives a conditional incentive in revenue points when completing a questionnaire or travel diary;
2. Every child reaching the age of twelve receives a small present when completely participating;

3. A household who participated in at least two earlier waves receives an additional bonus when it participates in 2018 (only once).

10. Discussion

In this paper, we focused on the use of incentives in longitudinal surveys in general, as well as more specifically on their use in the MPN. Special attention was paid to household panels and online panels. We presented a state-of-the-art as well as lessons learned from the use of incentives in the MPN as well as how the new incentive strategy in the MPN will look like. This new incentive strategy will be implemented in wave 6. Future research should look at the effectiveness of changing this incentive strategy on response rates and data-quality.

Although incentives have proven to have an effect on response rates, incentives also have the potential to both increase and reduce non-response bias (Singer & Ye, 2013). They therefore argue that much better information about the mechanisms through which non-response bias occurs, and the likely impact of incentives on those mechanisms, is needed if incentives are to be used for effectively targeting non-response bias. Future research is required to delve deeper into these mechanisms. Additional research is also needed on the use of incentives in panel research, and how adjusting the incentive strategy impacts response rates, as well as research quality.

In addition, Laurie and Lynn (2009) noted that incentives in panel research are usually part of a larger package of measures designed to inform and motivate respondents (e.g. factsheets, information, invitation letters, reminders). These additional motivational features were not included in the scope of this study. Literature also reveals that there is a multitude of various strategies and combinations of strategies in use, and any clear ranking as to which is most impactful in terms of reduced non-response or other quality aspects does not yet exist (Lund & Gulløy, 2016). Future research should focus on how these various aspects impact response rates.

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