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SERISS (Synergies for Europe's Research Infrastructures in the Social Sciences) aims to exploit synergies, foster collaboration and develop shared standards between Europe's social science infrastructures in order to better equip these infrastructures to play a major role in addressing Europe's grand societal challenges and ensure that European policymaking is built on a solid base of the highest-quality socio-economic evidence.

The four-year project (2015-19) is a collaboration between the three leading European Research Infrastructures in the social sciences – the European Social Survey (ESS ERIC), the Survey for Health Aging and Retirement in Europe (SHARE ERIC) and the Consortium of European Social Science Data Archives (CESSDA AS) – and organisations representing the Generations and Gender Programme (GGP), European Values Study (EVS) and the WageIndicator Survey.

Work focuses on three key areas: Addressing key challenges for cross-national data collection, breaking down barriers between social science infrastructures and embracing the future of the social sciences.

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Introduction

This deliverable describes the recruitment and maintenance strategy of the CROss-National Online Survey (CRONOS) panel under Work Package 7 'Survey future online' of the project 'Synergies for Europe's Research Infrastructures in the Social Sciences (SERISS)'. The CRONOS panel has been set up to investigate the feasibility of building a cross-national online panel using probability-based samples recruited at the end of existing face-to-face surveys. A pilot study was set up in three countries: UK, Slovenia and Estonia in Round 8 (2016) of the European Social Survey (ESS). The CRONOS follows an input-harmonisation framework, where panel recruitment, setup and maintenance were guided by the same methodological principles in all participating countries. The goal of CRONOS is to evaluate the efficiency of the approach in terms of cost, sample representativeness, participation rates and data quality, and explore the challenges associated with cross-national recruitment and implementation.

The panel recruitment and maintenance design as well as design and analysis of experiments presented in this document are the result of the collaborative work of a large team of social scientists:

- At ESS ERIC HQ (City, University of London): Ana Villar, Elena Sommer, Rory Fitzgerald, Gianmaria Bottoni, Elissa Sibley
- At the Norwegian Centre for Research Data (NSD): Didrik Finnøy, Bjørn-Ole Johannesen, Linn-Merethe Rød, Erlend Aarsand
- At the University of Ljubljana: Nejc Berzelak
- Estonian national team at University of Tartu: Indrek Soidla and Mare Ainsaar
- Slovenian national team at University of Ljubljana: Slavko Kurdija, Tina Vovk, May Dousak, Živa Broder
- UK national team at NatCen Social Research: Alun Humphrey, Emma Fenn, Matt Jonas, Johanne Maher, Curtis Jessop
- The CRONOS advisory board: Vasja Vehovar (University of Ljubljana), Salima Douhou (ESS ERIC HQ), Anne Cornilleau (ELIPSS Panel), Mario Callegaro (Google), Michael Bosnjak (GESIS)

In total there were seven waves of CRONOS data collection. The data collection started in December 2016 with a short 10-minute Welcome survey followed by six 20-minute surveys sent to panellists every two months until February 2018. The surveys contain questions on diverse topics from various high-quality cross-national surveys and large-scale benchmarkable national surveys. Apart from being a platform to collect cross-national data on substantive topics, the CRONOS panel also served as a platform for experimental research on survey panel participation. Among others, the methodological research focused on incentives and contact mode experiments to enhance higher participation. In particular, two contact mode experiments were carried out in CRONOS Wave 5 and Wave 6 to test the effectiveness of sending survey pre-notifications and reminders in different modes (e.g. text messages vs. emails) for increasing survey participation.

This deliverable provides an overview of implemented strategies and procedures to recruit and maintain the CRONOS panel as well as evaluation of experiments mentioned above. Its aim is to inform survey practitioners about various strategies for successful web panel implementation.

1. CRONOS panel recruitment strategy

Building probability-based online panels of the general population is associated, among others, with two important challenges: obtaining probability-based samples with online contact data for all sample units, and enabling participation of those without internet access. Despite these challenges, the undeniable potential of online data collection has led researchers to explore solutions to overcome them, resulting in recent establishment of several nation-wide probability-based panels across the world¹. Most of these panels draw new samples and use offline contact modes (mostly face-to-face, but also postal and telephone recruitment) to recruit a probability-based online panel. An under-explored approach to recruit probability-based online panels has been recently the use of existing representative offline surveys (parent survey) as recruitment vehicles whereby the relatively high cost of customised offline recruitment could be largely absorbed by the parent survey. In the last few years, several projects have successfully implemented this “piggy-backing” recruitment approach: the American Trends Panel in the USA (2014) via Political Polarization and Typology Survey as well as Survey on Government; the NatCen Panel in the UK (2015) via the British Social Attitudes (BSA) survey; the GESIS panel in Germany for a refreshment sample (2016) via the German General Social Survey (ALLBUS), as well as CROss-National Online Survey (CRONOS) panel (2016) presented in this deliverable.

CRONOS follows a centralised input harmonised approach aiming at highest possible standardisation of procedures across participating countries but allowing localised adaptation where needed. Recruitment procedures were developed centrally during the proposal writing and first year of the SERISS project. Despite the growing number of projects demonstrating the feasibility of successful establishment of representative nation-wide online panels that can be achieved applying different methodologies, there were still no available examples of probability-based cross-national online panels following input harmonisation survey design. Therefore, the CRONOS recruitment decisions were largely informed by literature review of established probability-based nation-wide social surveys and literature reviews on various aspects of web survey methodology as well as practical and empirical evidence from similar nation-wide projects and cooperation with various web survey experts and organisations involved in the SERISS project. The results of this exercise are summarised in the SERISS Deliverable 7.1 “Summary of existing web panel strategies” (Sommer 2017) and SERISS Deliverable 7.3 “Web recruitment design plans and experimental testing” (Villar & Sommer 2017). The developed recruitment strategy was presented to and discussed with the CRONOS Advisory Board, ESS ERIC Ethics Committee, and CRONOS National Coordination (NC) teams. This collaborative approach intended to find state-of-the-art methodological approaches that were suitable for implementation in all countries and to ensure as much methodological equivalence as possible. This chapter briefly describes the key features of the CRONOS recruitment strategy.

¹ For example, among others, the LISS panel in the Netherlands; the GESIS Panel and the German Internet Panel in Germany; ELIPSS panel in France; NatCen panel in Great Britain; Norwegian Citizen Panel in Norway; KAMOS panel in South Korea; Life in Australia Panel in Australia; Understanding America Study, GfK Knowledge Panel, Pew American Trends Panel Study, AmeriSpeak panel, and FFRISP in the USA.

At the end of the European Social Survey (ESS) Round 8 (2016) face-to-face interview, respondents aged 18² and above in Estonia, Slovenia, and Great Britain³ were invited to participate in six 20-minute online surveys administered every two months. A large part of the panel recruitment success relies on interviewers' skills to persuade respondents to join the panel. This is especially challenging after the one-hour long ESS interview (in British English). Also collecting personal contact details which is an essential part of the panel recruitment interview, can be a challenging task for interviewers. Therefore, it was felt to be essential to provide interviewers with appropriate training in how to engage respondents and with necessary materials to reassure respondents of the scientific nature of the study. Various source documents that are available in the Annexes of the SERISS Deliverable 7.4 "Fieldwork Protocols. Documenting the implementation of the CROss-National Online Survey (CRONOS) Panel" (Villar & Sommer 2016) were designed to achieve this purpose. The "source" versions of these supporting materials were distributed to the NC teams for translation. NC teams were encouraged to keep procedures and documents as similar as possible and close to the source version, to ensure uniformity of methodology across countries. Necessary discrepancies were discussed and documented centrally.

Additional time for instructing the interviewers on CRONOS recruitment was added to the ESS interviewer briefings. The CRONOS recruitment session included an introduction of the CRONOS study, presentation of strategies aiming at convincing respondents to join the online panel, overview of replies to possible concerns, instruction on providing an informed consent, as well as a mock recruitment interview as a practice exercise. Interviewers were instructed to carefully study the provided CRONOS interviewer manual before going into the field. In addition, interviewers were provided with print materials that could support them when interacting with respondents such as project leaflets for the respondents in Slovenia and the UK and a participant information sheet in Estonia summarising conditions of participation in the panel and providing information on how the data will be used.

To motivate the interviewers for additional recruitment effort after a long face-to-face interview, interviewers were incentivised for successful panel recruitment. However, no additional incentives for joining the online panel was offered to the ESS respondents. Initially, based on best practice recruitment evidence reported by several representative online panels, it was planned to offer ESS respondents an unconditional incentive for joining the panel. However, this was problematic to implement in practice. As the ESS interview should not be jeopardised by the panel offer, it was not possible to offer an unconditional incentive for joining the online panel before the end of the ESS interview. If the unconditional incentive for joining the panel were to be offered after the ESS interview, there would be an unnatural break before the start of the CRONOS interview when the interviewer would have to hand over an unconditional incentive to the respondent before explaining the panel offer. No conditional incentive for joining the panel and providing an email address was offered to avoid potential association with "selling personal data". There is also a risk of potential fraud when incentives are offered on the spot. Therefore, no incentives for joining the panel were offered but unconditional incentives for future online surveys were mentioned in the panel offer (£5 in Great Britain and €5 in Slovenia and Estonia with every survey invitation).

The CRONOS recruitment interview was kept very short as the ESS interview already provided a large number of background variables about the respondent. The CRONOS

² The 15-17 years old ESS respondents were not eligible for the CRONOS panel.

³ For logistic reasons, Northern Ireland was excluded from CRONOS.

recruitment interview was mainly targeted at assessing respondent's access to the internet for private use and collecting additional contact information, especially email addresses. Respondents that were unsure at the end of the ESS interview whether they would like to join the CRONOS panel or needed more time to think about still received survey invitations if they provided their contact details.

The CRONOS panel provided offline respondents willing to join the panel with tablets and an internet connection to enable their participation. The tablet eligibility was assessed during the recruitment interview and respondents who stated that they do not have internet access for personal use were offered a tablet that they could keep after the end of the project and 4G internet connection for the duration of the project (12 months). Despite this offer and reassurance by the interviewers that the respondents will be provided with training on how to use the device for survey completion and, if needed, assistance during the project, there was a relatively high reluctance especially among older non-internet users to join the panel. Also the initial agreement to join the panel and accept the tablet was higher than the actual agreement when these respondents were contacted to arrange an appointment for the tablet delivery. However, the respondents that accepted the tablet usually participated regularly in the online surveys they were invited to.

A few weeks after the start of the CRONOS recruitment, there were locally organised interviewer briefings to discuss challenges of online panel recruitment as well as to enable an exchange of successful strategies among interviewers. As the ESS Round 8 fieldwork took place over a time period of six months (September 2016 – February 2017), a short 10-minutes CRONOS Welcome Survey (W0) was introduced in December 2016 to keep the panellists recruited at the earlier stage of the ESS Round 8 fieldwork engaged.

ESS Round 8 fieldwork and CRONOS recruitment were closely monitored by NC teams and by the central team at ESS ERIC HQ. NC teams sent weekly aggregated fieldwork progress reports with updated numbers of completed ESS interviews and recruited CRONOS panellists. Case-level data was regularly uploaded by NCs to the central panel administration system.

Table 1: CRONOS participation rates (%) as a proportion of the gross sample and of sample unit invited to the online surveys

Wave	Estonia			Great Britain			Slovenia		
	n	% over gross	% over invited	n	% over gross	% over invited	n	% over gross	% over invited
W0	669	23%	72%	539	12%	44%	642	29%	82%
W1	730	25%	78%	685	15%	56%	529	23%	67%
W2	664	23%	82%	692	16%	60%	482	21%	63%
W3	624	22%	79%	679	15%	59%	586	26%	81%
W4	581	20%	74%	610	14%	53%	561	25%	78%
W5	600	21%	77%	633	14%	55%	615	27%	85%
W6	600	21%	77%	641	14%	56%	571	25%	80%
Gross sample (ESS8)	2901			4447			2278		

Note: Response rate over gross sample is calculated as the sum of complete and partial interviews over total number of issues sample units eligible for CRONOS. For number of invited to each CRONOS waves, please see the CRONOS User Guide (Villar et al. 2018, p. 9).

The described recruitment procedure resulted in the recruitment numbers presented in Table 1. This table illustrates that the response rates to the ESS Round 8 face-to-face survey vary across participating countries (ranging from 15% in Great Britain and 25% in Estonia in Wave 1) which partly reflects cross-national differences in survey climate (see e.g. Blom et al. 2015a). In Great Britain, for example, the initial agreement rate to join the panel as well as the participation rate is very similar to the NatCen Panel that was recruited on the back of the British Social Attitudes survey in 2015 and 2016 (Jessop 2017). Although there was a relatively high initial agreement to join the panel among the ESS Round 8 respondents (initial agreement to join the online panel including hesitant respondents in Estonia 59%, in Great Britain 67%, and in Slovenia 64%), as expected, the actual participation was lower than initial agreement but comparably high for online surveys. As no nation-wide probability-based academic online panel exist in Estonia and Slovenia so far, no comparison is possible at this time point. In all three countries, the “piggy-backing” approach resulted in acceptable panel sizes and participation remained relatively stable over the six CRONOS waves with about 600 respondents in each participating country and participation rates over invited ranging from 56% in Great Britain, 77% in Estonia, and 80% in Slovenia in the last CRONOS Wave 6.

2. CRONOS panel maintenance strategy

The following section describes panel maintenance strategy designed for the CRONOS panel. In order to make panellists’ experience completing CRONOS surveys as easy and as pleasant as possible to minimise panel attrition, CRONOS surveys design enabled completion on a wide range of devices, operational systems and browsers. The visual design of CRONOS surveys was smartphone-friendly and flexible for adaptation on various screen sizes. Respondents did not have to complete the survey in one session and could return to the survey via the link sent to them in the invitation any time before the survey is closed.

Another key aspect of CRONOS panel maintenance was panel care including communication and support via national helplines. Whereas email invitations and reminders to surveys were sent to CRONOS panellists through central panel administration system, the NC teams were responsible for the communication with the respondents in their countries via free telephone and email helpline. The centrally produced helpline guidelines included instructions on how to deal with various issues panellists might encounter. In case of uncertainties local helplines were asked to contact the central team for their advice. All incoming queries were documented by the NC teams and regularly shared with and monitored by the central team. The NC teams also provided information about the CRONOS panel on their institutions’ websites.

In addition, to increase survey participation and to minimise possible panel attrition, CRONOS developed incentives and contact strategies that are presented below.

Incentives

Empirical evidence from different countries and different data collection modes has consistently demonstrated over several decades that unconditional incentives are more effective than conditional incentives for increasing survey participation (Blom et al. 2015b; Millar & Dillman 2011; Singer et al. 1999). Therefore, CRONOS panel used unconditional incentives. After consulting the local teams and comparing similar projects in other countries,

it was decided that £5 in Great Britain and €5 in Estonia and Slovenia was an appropriate incentive for a 20-minute survey.

Although several studies have demonstrated that cash incentives are more effective to increase survey participation rates than other forms of incentives such as vouchers, gift cards, or present items (e.g., Birnholtz et al. 2004; Millar & Dillman, 2011; van Veen et al., 2016), implementing cash incentives in cross-national online panels is a challenging task. For example, in some European countries there are legal constraints regarding cash incentives for survey participation and sending cash by post. Bank transfers would involve collecting bank accounts from panellists and storing them outside their country which is associated with additional data protection burden. Therefore, it was decided to use gift cards as unconditional incentives in the CRONOS panel. In the absence of a European-wide gift card system with good value for respondents, local teams were asked to find local providers. To ensure that gift cards would be appealing and useful to a wide range of panellist subgroups, providers were selected according to 1) their familiarity across the general population, 2) the usefulness and range of the products that the card could be redeemed for, 3) the ease of redeeming the gift and 4) the proximity of establishments where the gift card could be used.

Gift cards from large supermarket chains were used as unconditional incentives in Estonia and Slovenia and were sent out for two waves in advance (10€ every other wave). The decision to send 10€ vouchers for two waves instead of 5€ with each survey invitation was partly guided by the regulation of the voucher provider in Slovenia requiring a minimum amount of 7€ for voucher purchase, and partly by CRONOS Advisory Board's advice to use the CRONOS panel to test alternative incentives approaches to provide new empirical evidence to wider survey research community. Such a two-waves incentive approach is associated with a risk of lower participation in the waves when the incentive is not sent but at the same time this approach reduces the cost for administration of incentives and might increase perceived value of the incentive for respondents. Gift cards with a value of 10€ were sent out with the postal pre-notifications directly from the supermarket chain in Slovenia as there were concerns that electronic incentives might not be appealing to a large sector of population and empirical evidence that additional offline contact mode (e.g. mail) can have a positive effect on response rates in online surveys. In Estonia, 10€ electronic gift cards were sent with the email invitations as there were no postal addresses available for the Estonian sample (except panellist who were provided a tablet and received their gift cards with postal invitations). Although both countries used a two-waves 10€ incentive, only in Slovenia there was a slightly lower participation in the waves when the incentive was not sent. In Estonia, this pattern did not occur. A possible interpretation for this observation could be related to the possible effect of additional postal pre-notifications to deliver the incentive in Slovenia.

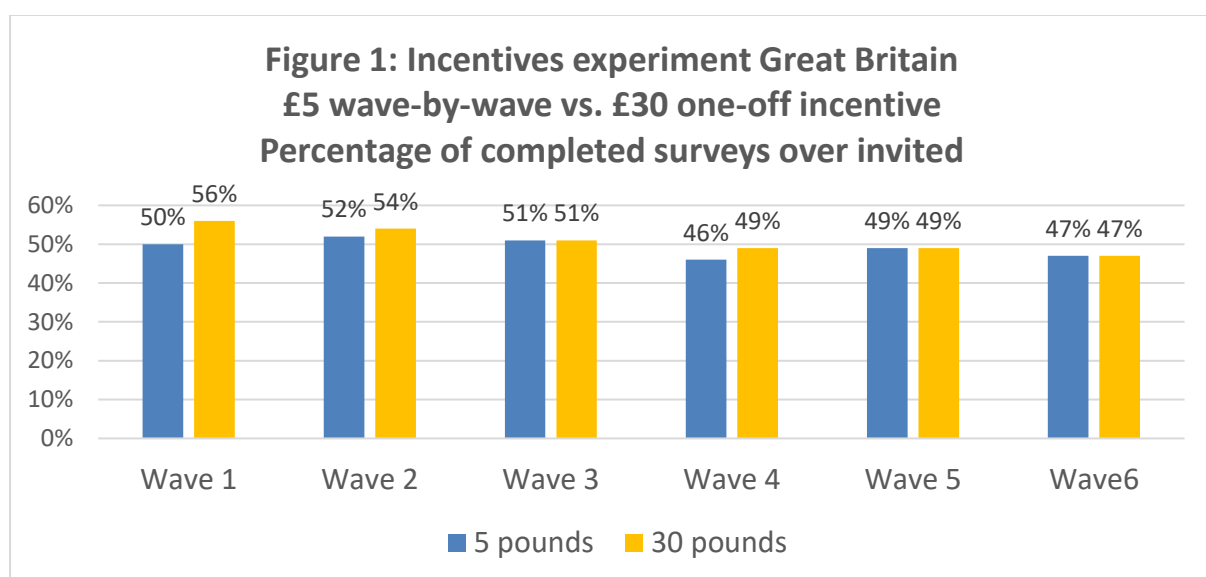
Incentives experiment in Great Britain

In Great Britain, Amazon vouchers sent in the email invitation were used in the Welcome Wave. This incentives strategy was revisited after evaluating participation in the Welcome Wave and panellists' feedback. Several panellists contacted the helpline to inform them that they could not use this type of incentives because they either did not have an Amazon account or they did not support Amazon on ethical ground. Also as participation in the Welcome Wave in Great Britain was lower than expected – it was lower than in the other two countries and lower than in similar Great Britain projects – it was decided to change the incentives strategy starting from Wave 1 and to use high-street vouchers sent with a postal pre-notification

instead. The participation over invited increased from 44% in the Welcome Wave to 56% in the Wave 1 after changing the incentives strategy.

In addition, an incentive experiment testing a possible approach of increasing participation by providing an incentive for all six upcoming surveys at once was tested in Great Britain. The rationale behind the one-off approach is based on the social exchange theory whereby the research team demonstrates trust into panellists, expecting but not insisting on their commitment in return. The risk of such an approach are higher attrition rates in later waves as no further incentives will be sent. On the other hand, if relatively high participation rates are achieved in the early waves, the number of active panellists from which attrition starts is higher and even with higher rates of attrition the number of participants in later waves might be comparable or potentially even higher to those when a small incentive is sent for each wave. In such a case, the tested approach would be more cost-effective as resources for administering and delivering incentives in each wave could be saved. To test feasibility of this approach, the Great Britain sample was split in two halves. One half of panellists received a postal pre-notification announcing Wave 1 survey including a £30 high-street voucher for six upcoming surveys (one-off approach). The other half received a £5 high-street voucher for Wave 1 survey and continued receiving £5 high-street vouchers with each survey invitation (wave-by-wave approach).

As expected, the £30 gift-card of the one-off approach led to higher participation in Wave 1 as compared to the £5 gift-card of the wave-by-wave approach (see Figure 1). Participation in subsequent waves was similar in both groups (see Figure 1). In both groups, 32% of invited panellists did not participate in any of the CRONOS Wave 1 – Wave 6 surveys. The percentage of panellists who completed all six CRONOS Wave 1 - Wave 6 surveys was also similar but slightly higher in the one-off £30 group (£5 - 30% vs. £30 - 33%). The two groups, however, differed in their self-reported retrospective survey participation motivation that was assessed in CRONOS Wave 5. Whereas the £5 wave-by-wave gift-card group was more likely to join the panel in order “to help scientific research” (£5 - 46% vs. £30 - 34%) and reported higher “trust in the conclusions that researchers will make from this study” as compared to the £30 gift-card group, the one-off £30 gift-card was more likely to be guided by a sense of duty reporting that they stayed in the panel because they “made a commitment” (£5 - 64% vs. £30 - 76%).



Survey invitations and reminders

To ensure similar procedures across all countries, source versions of invitations and reminders were produced by the central team in collaboration with all NC teams. Some variations were necessary to reflect the different incentive approaches followed in each country, but email communications were kept as similar as possible, ensuring that the standard strategies to gain survey cooperation are followed in all countries. Email invitations and reminders were sent out from the central panel administration database. Postal communication with the respondents was administered locally by the NC teams.

The CRONOS panellists received email invitations to each survey with an individual survey link followed by up to three email reminders. Panellists who did not provide an email address during the recruitment stage were sent a postal invitation with a shortened URL to access the survey online. They were asked to provide an email address for further participation at the end of the web survey in Wave 1 and Wave 2. Starting from Wave 3 no postal invitations (except for the tablet sample in Estonia) were sent. The tablet sample received one postal reminder (GB, Slovenia, Estonia) and one email reminder (GB, Slovenia).

In Great Britain panellists received a postal pre-notification about an upcoming web survey regardless of to which incentive experiment group they were assigned. A decision to introduce postal pre-notification in Great Britain was taken as a reaction to a relatively low participation rate in the Welcome Wave. In Slovenia, postal pre-notifications were sent to respondents every other wave to deliver the unconditional incentive (10€ supermarket voucher) for participation in two surveys. In Estonia, no postal pre-notifications could be sent as panellists' postal addresses were not available (except for the tablet sample).

3. Evaluation of CRONOS contact mode experiments

Previous research demonstrated that numerous factors could affect survey response rates (Dillman 2007). The survey topic, questionnaire length, incentives, sponsorship, and the visual display are all factors that previous studies proved to affect how respondents participate in a survey (Görizt 2006; Manfreda et al. 2008; Mavletova and Couper 2014; Blom et al. 2015a). Amongst those factors, one of the most important aspects is the contact strategy used to deliver letters, emails, and text messages to panellists.

Several scholars (Kaplowitz et al. 2004; Bosnjak et al. 2008; Cernat and Lynn 2018) highlighted the effects of different contact modes on participation rates. Generally, it is agreed that sending pre-notifications and reminders increases response rates (Cook, Heath and Thompson 2000). Pre-notifications about an upcoming survey can contribute to higher response rate by raising awareness of an upcoming survey invitation making the request foreseeable and appear more legitimate (Van Veen et al. 2016). Another common explanation for the positive effect of pre-notifications roots in the social exchange theory highlighting reciprocity aspect whereby pre-notification is perceived by respondents as an additional cost on the side of the survey agency and asking for cooperation may trigger the social norm to respond (Dillmann 2007).

However, the findings are not consistent. For example, Bandilla et al. (2012) showed that pre-notifications are effective only when they are sent in a different mode than the invitation. In that study, the postal pre-notification had a significant effect when the invitation was sent by email; however, this effect disappeared when using a postal mail as invitation mode (Bandilla

et al. 2012). Instead, in a different web survey study from two decades ago (Schaefer and Dillman 1998) paper pre-notification has proved to be less effective compared to email pre-notice. Furthermore, SMS text message pre-notifications were shown to be more effective than email pre-notifications in increasing participation rate in Bosnjak et al. (2008). However, the same study detected no significant effect of email pre-notification compared to not sending any pre-notification. Also other recent empirical studies show no effect of email pre-notifications (Keusch 2015). An email without a survey link is perceived as a “missed opportunity” or as spam and respondents might get confused if they are willing to complete the survey but have to wait until it is launched online. Email invitations combined with pre-notifications in an offline mode (postal mail or SMS), on the other hand, have a positive effect on participation rates in web surveys (de Bruijne & Wijnant, 2014; Keusch 2015) as an additional contact channel might make people more aware of the upcoming survey email invitation and it will be less likely perceived as a spam. A wider range of contacting channels might be also effective in reaching different sub-groups (e.g. specific age groups might prefer certain contacting modes over others).

In general, contact mode experiments have so far usually been conducted in surveys of specific respondent groups (e.g. students, faculty members) rather than in general population surveys and there are no available published contact mode experiments in cross-national general population survey setting so far. Another shortcoming is that studies analysing contact mode effects have mostly been implemented in cross-sectional web surveys and there can be a reduced effect on participation for a panel study, especially in later waves, as panellists are already familiar with the project and with the way invitations and reminders are distributed. Further, whereas a number of studies have analysed the effects of postal pre-notifications and reminders on response rates in web surveys, studies looking at the effects of other offline contact modes, for example SMS, are rare. In practical terms, however, SMS contact attempts are less cost-intensive for survey agencies than postal pre-notifications and reminders.

To address these research gaps, two contact mode experiments were implemented in CRONOS to compare the effects of SMS vs email contacts on participation rates in panel surveys. The expected mechanisms for the effects of SMS contacts relate to raising awareness about the survey by reaching panel members via a different channel (e.g. to reach panellists who are ignoring emails or do not see them because they are marked as spam), and increasing motivation by putting extra effort and thus signalling the importance of their participation. The design and the results of these two experiments are presented in the sections below. To test the effectiveness of the different contact mode strategies we computed the cooperation rate (i.e. the proportion of all cases with a complete or partial interview of all eligible units that were contacted) and performed a chi-square test. Partial responses were included since those that just answered to a part of the survey actually reacted to the experimental treatment.

Effect of SMS vs. email reminder

The first experiment aimed at testing the effect of sending an SMS reminder compared to sending an email reminder on survey participation. The experiment was implemented in CRONOS Wave 5 in all three participating countries. The sample (excluding panellists who did not provide a mobile phone number) was randomly split into two halves one of which received an SMS reminder, the other one instead received an email reminder (see Table 2).

Table 2: Design of contact mode experiment conducted in Wave 5

	Pre-notification*	Invitation	1st reminder	2nd reminder	3rd reminder
Group 1	Postal	Email	Email	Email	Email
Group 2	Postal	Email	SMS	Email	Email

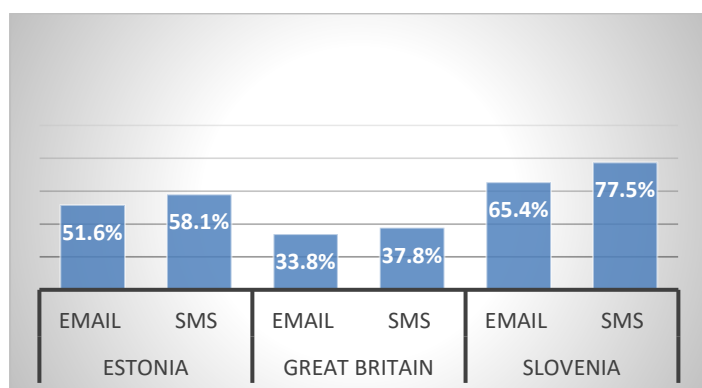
*Note: Estonia did not send out postal pre-notifications.

After excluding panellists responding before the reminder was sent out, the sample size resulted in 1293 respondents (Estonia = 377; Great Britain = 651; Slovenia = 265). To test the effectiveness of sending an SMS reminder we computed the cooperation rate. The Summary Table 1 in the Appendix reports all the cooperation rates for this experiment and the results for the chi-square test.

Analysing the pooled data, the cooperation rate in the SMS reminder group is significantly higher compared to the email reminder group (52.2% vs. 45.2%; chi-square = 6.427, df= 1, p = .011). Therefore, we can conclude that sending an SMS reminder instead of an email reminder actually improves the participation rate.

Considering the innovative cross-national setting of the CRONOS panel, it was of primary interest to test possible cross-country differences and examine if the experiment worked differentially in each country. Cooperation rates are higher for the SMS reminder group in each of the three countries, meaning that respondents getting an SMS reminder were more likely to participate in the online survey (Figure 2). However, there is a statistically significant difference only in Slovenia (chi-square = 4.837, df= 1, p = .028). Statistically, we cannot conclude that sending an SMS reminder in Estonia and UK actually increases the survey participation. However, taking into account that the effect is always in the same direction (SMS group shows higher cooperation rate in each country) possibly the sample size is not big enough to detect significant differences in those two countries.

Figure 2: SMS vs. email reminders - Cooperation rate by country

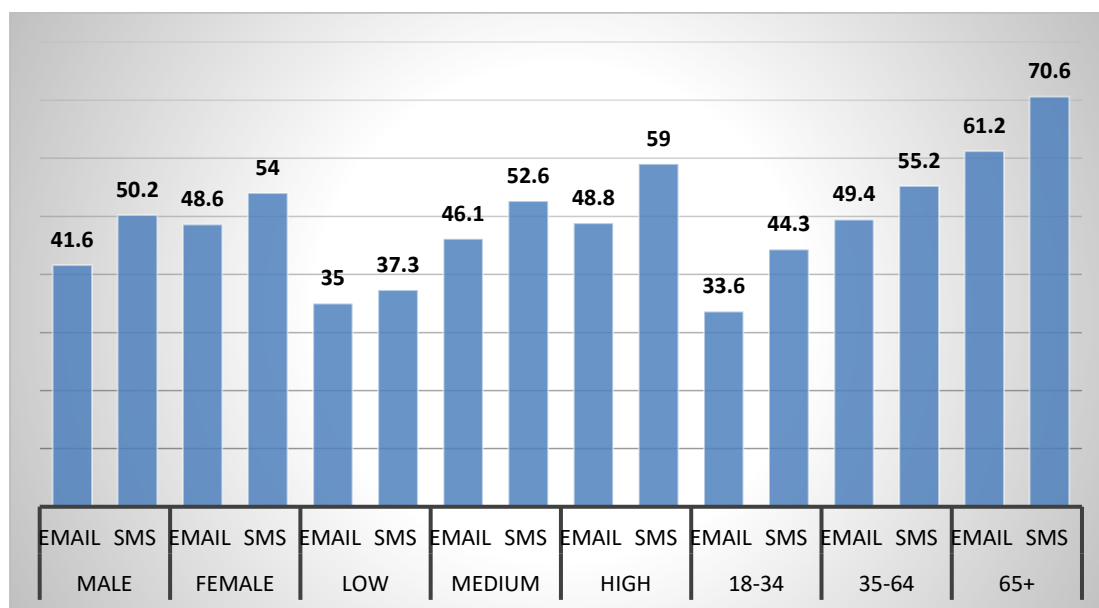


We also tested if there are differences in the experimental treatment considering different panellists' characteristics like gender, age and education. Male (email = 41.6%, SMS = 50.2%) and female panellists (email = 48.6%, SMS = 54%) show a higher cooperation rate amongst the SMS reminder group (see Figure 3); however, the effect is significant just for male panellists (chi-square = 4.521, df= 1, p = .033). For the female group we cannot conclude that sending an SMS reminder enhances survey participation.

Regarding education, there is a statistically significant effect only in the highly educated group (see Figure 3). Therefore, sending SMS reminders instead of email reminders to panellists with high level of education seems to increase survey participation. The effect is still positive in the low and medium education groups, however the differences are not statistically significant (see Summary Table 1 in the Appendix).

Finally, sending an SMS reminder has a positive and significant effect only in younger group of 18-34 years old (see Figure 3). In the other two groups, there is a positive effect of sending ad SMS reminder in terms of increment in the survey participation but these differences are not statistically significant. Especially for 65+ group (there are 9 percentage points of difference amongst the two reminders groups in the 65+ category), this could be related to sample size not being large enough to detect statically significant differences.

Figure 3: SMS vs. email reminders - Cooperation rate by gender, age, and education



Effect of SMS and email pre-notification vs. no pre-notification

An experiment to test the effect of different contact modes of pre-notification comparing no pre-notification to email and SMS pre-notification was implemented in CRONOS wave 6. Generally, the main purpose of pre-notifications is to increase the survey legitimacy and consequently survey participation. We aimed to test whether this mechanism is still valid in a web panel after panellists have been already responding to several surveys. This contact mode experiment was conducted in all three participating countries excluding panellists who did not provide a mobile phone number. The sample was randomly split into three groups one of which only had email contact including an email pre-notification, another groups received an SMS pre-notification and email reminder, and the third group received no pre-notification and an SMS reminder (see Table 3). The 5 pounds wave-by-wave incentives group in Great Britain received in addition a postal pre-notification that was used to deliver the gift voucher. The total sample size of panellists assigned to one of the three condition groups is 2215 (Estonia = 716; Great Britain = 947; Slovenia = 552).

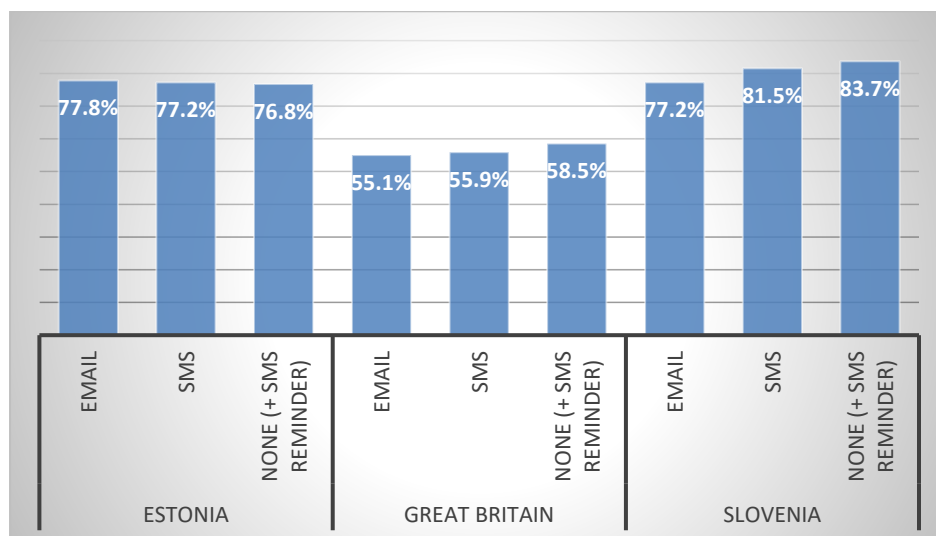
Table 3: Effect of SMS and email pre-notification vs. no pre-notification – experiment design

	Pre-notice	Invitation	SMS reminder	1st email reminder	2nd email reminder	Thank you email
Group 1	Email	Email	None	Email	Email	Email
Group 2	SMS	Email	None	Email	Email	Email
Group 3	None	Email	SMS	Email	Email	Email

To evaluate this experiment, we computed the cooperation rate in the three randomised experimental groups: email pre-notification group, SMS pre-notification group, and no pre-notification but SMS reminder group. The group that received no pre-notification and an additional SMS reminder had the highest cooperation rate of 70.7%, followed by SMS pre-notification group (69.2%) and email pre-notification group (67.8%). However, the differences in the cooperation rate amongst the three groups are not statistically significant (see Summary Table 2 in Appendix). As demonstrated in the previous experiment, sending an SMS reminder actually significantly increases survey participation. However, an SMS sent as a pre-notification in this experiment rather than a reminder did not play any role in enhancing the cooperation rate. This probably is due to the intrinsic difference between the two contacts (i.e. reminder and pre-notification) especially considering that reminders included the link to the survey questionnaire whereas the pre-notification is just a way to notify that a survey invitation will be sent via email to the respondent the next day. By having a URL in the SMS reminder, panellist can directly start completing the survey on their smartphone. These functional differences between the two contacts might also explain why the group that got no pre-notification with an additional reminder is actually the group with the highest participation. In line with Bandilla et al.'s study (2012), the first group (email pre-notification followed by email invitation) as expected showed the lowest cooperation rate. However, as already mentioned before, the differences between the three groups are very small and not statistically significant.

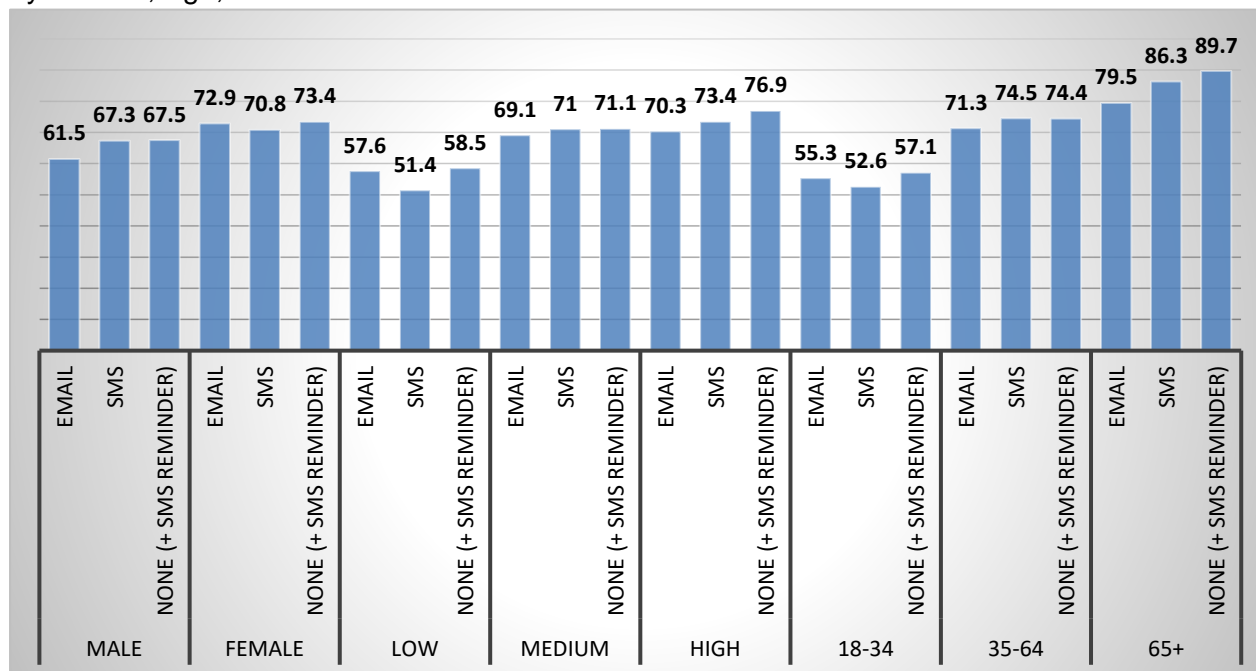
We also tested if there are cross-national differences across the three experimental groups. There are small differences in Slovenia and Great Britain where the third group (no pre-notification and SMS reminder) shows slightly higher cooperation rates (see Figure 4). However, these differences are highly not significant (see Summary Table 2 in the Appendix).

Figure 4: Effect of SMS and email pre-notification vs. no pre-notification - Cooperation rate by country



We also computed the cooperation rates for the three experimental groups by gender, age and education to test if specific characteristic are associated with a specific contact mode preference (see Figure 5). In the high education category, panellists that got no pre-notification but received an additional SMS reminder show a higher (but not statistically significant) cooperation rate. For the other two categories (i.e. low education and medium education) there are basically no substantive and statistical differences except for panellists with low education that seem to respond less when a survey is pre-notified with an SMS (however this effect is not statistically significant). In the same way, there are basically no differences for gender and age except in the older age group that shows higher cooperation rates when the survey is pre-notified by SMS or by no pre-notification an additional SMS reminder. All the differences amongst the cooperation rates within each group in Figure 5 are not statistically significant (see Summary Table 2 in the Appendix).

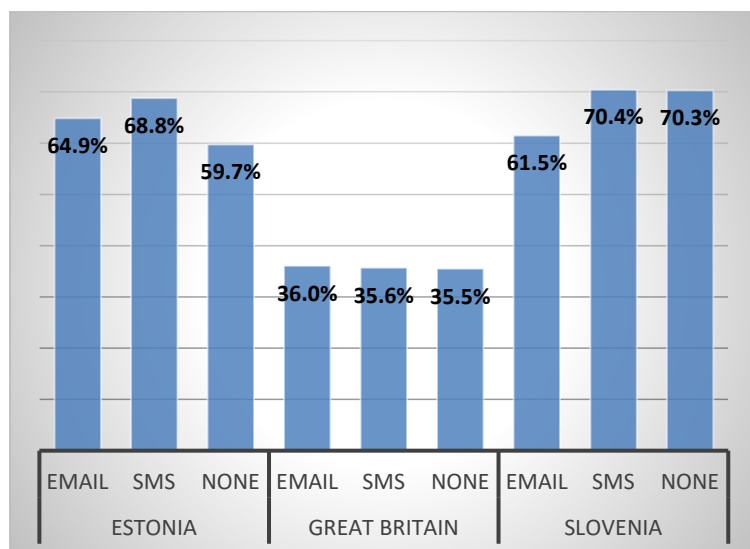
Figure 5: Effect of SMS and email pre-notification vs. no pre-notification – Cooperation rate by Gender, Age, Education



In the previous analysis, the effect of the pre-notification in group three was confounded with the additional SMS reminder that those panellists received to even the number of contacts. In order to control for this additional SMS reminder we computed for all groups the cooperation rate before the additional SMS reminder was actually sent out. The SMS pre-notification slightly increases the survey participation (SMS = 55%, Email = 50.7%, No pre-notification 51%) but this increment is not statistically significant (see Summary Table 3 in Appendix). It should be taken into consideration that looking just at the panellists answering before the additional reminder further reduces the sample size (sample in the previous analysis = 2215; before additional SMS reminder sample = 1429). This can explain why the differences in the cooperation rate are not significant. The results also show that sending an email pre-notification or sending no pre-notification at all makes no difference and email pre-notification played no role in enhancing survey participation.

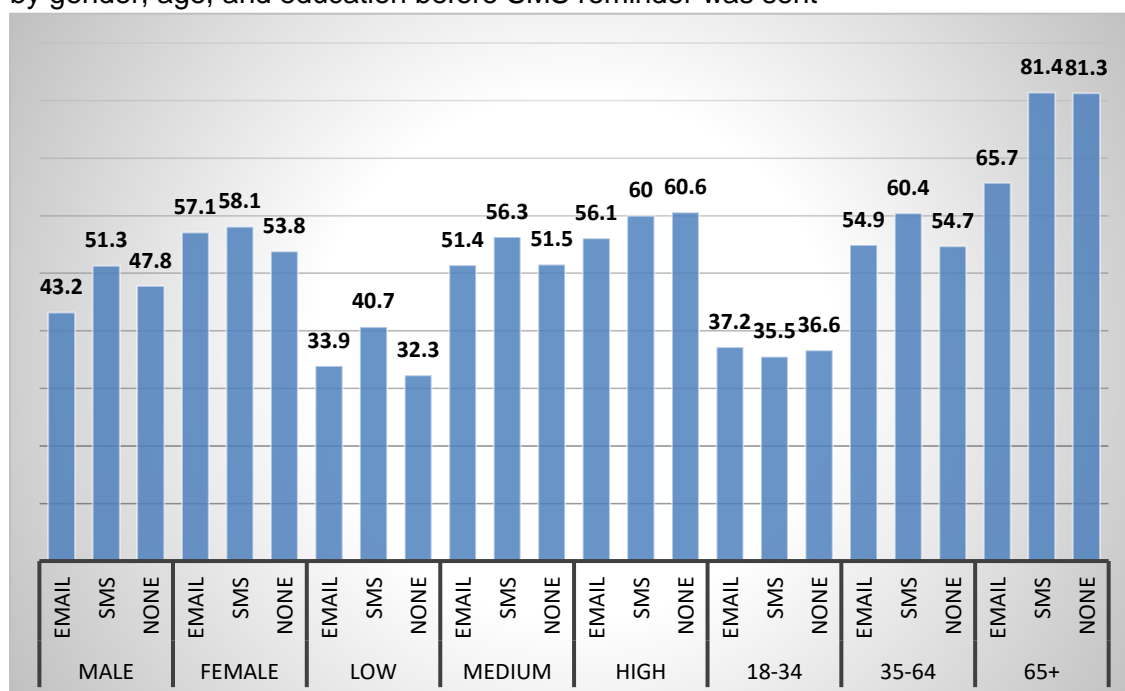
The pre-notification contact worked in a different way in each country (see Figure 6). Even though all the differences are not statistically significant (see Summary Table 3 in Appendix), in Estonia SMS pre-notification produced higher cooperation rates compared to email pre-notification and no pre-notification before sending out the SMS remind. In Great Britain, on the contrary, there are no differences at all across the three pre-notification groups. Finally, in Slovenia email pre-notification seems to produce lower survey participation compared to SMS pre-notifications and no pre-notifications before sending out the SMS reminder.

Figure 6: Effect of SMS and email pre-notification vs. no pre-notification – Cooperation rate by country before SMS reminder was sent



We also evaluated if there are differences in the cooperation rates across gender, education and age. All the differences between the sub-groups in gender, education, and age are not statistically significant (see Summary Table 3 in Appendix). That said, figure 7 demonstrates that that before sending out reminders, the 65+ age group shows higher cooperation rate for SMS pre-notification compared to email pre-notification. In addition, the survey participation is higher for SMS pre-notification group in the 35-64 age category. In the same way, males, those with low education and medium education groups seem to have slightly higher preference to answer surveys after being pre-notified by SMS. Finally, we can state that in each sub-group the cooperation rate in the email pre-notification group is always lower than in the SMS pre-notification group – confirming Bandilla et al.’s findings (2012) – and sometimes also lower than in no pre-notification group.

Figure 7: Effect of SMS and email pre-notification vs. no pre-notification – Cooperation rate by gender, age, and education before SMS reminder was sent



Conclusions

This deliverable provides an overview of the panel recruitment and panel maintenance strategies applied for building and implementing the CRONOS panel. The design decisions were mainly based on empirical evidence from similar nation-wide projects and best practice examples in survey methodology. The implemented CRONOS panel recruitment and panel maintenance strategies resulted in satisfactory participation rates and relatively low panel attrition. The evidence from the CRONOS panel presented in this document can be of use for survey practitioners planning to design cross-national or nation-wide online panels recruited at the back of existing representative offline surveys.

In particular, the following aspects were of major importance for the successful recruitment – appropriate interviewer training and additional interviewer incentive for panel recruitment, information survey materials for respondents, and mentioning of respondent incentives in the panel offer. For panel maintenance, the following key aspects were essential to minimise panel attrition – unconditional incentives, user-friendly online survey design allowing easy survey completion on wide range of devices, different contact modes to inform or remind panellists about the survey, free helpline for panellists' queries, relatively short length of the surveys (20 min) at regular two month intervals.

Further, this deliverable summarises the results from experiments aiming at evaluating effects of unconditional incentives and contact modes on survey participation. The general recommendation resulting from these experiments is twofold. First, one-off unconditional incentives for several waves in advance seem to work as well as the wave-by-wave unconditional incentives. In the first wave when one-off incentives were sent, they actually increased the participation rate compared to the wave-by-wave incentive but in the remaining five waves the participation in both groups was almost identical. Sending out incentives for several waves can, however, reduce survey administration costs.

Second, adding an SMS reminder resulted in higher participation rates. This additional offline contact mode is very cost-efficient and easy to implement. Therefore, it can be used by online surveys as a strategy to increase participation rates. At the same time, an SMS pre-notification did not result in higher participation rates. A possible explanation is that it did not include a survey link (URL). The survey URL in the reminders might have encouraged some panellists to directly open the link and complete the survey on a smartphone. Alternatively it could be that it was used in a much later wave. Further analysis could look at whether the SMS reminder indeed had an effect on higher smartphone completion as compared to email reminder.

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Appendix

Table 1: SMS vs. email reminders - Summary table (cooperation rates and chi square test values)

		Survey completed/partially	Chi- Square	df	Asymptotic Significance (2-sided)
Pooled					
	Email	45.2	6.427	1	0.011
	SMS	52.2			
Country					
Estonia	Email	51.6	1.609	1	0.205
	SMS	58.1			
Great Britain	Email	33.8	1.119	1	0.290
	SMS	37.8			
Slovenia	Email	65.4	4.837	1	0.028
	SMS	77.5			
Gender					
Male	Email	41.6	4.521	1	0.033
	SMS	50.2			
Female	Email	48.6	1.934	1	0.164
	SMS	54.0			
Education					
Low	Email	35.0	0.103	1	0.748
	SMS	37.3			
Medium	Email	46.1	2.871	1	0.090
	SMS	52.6			
High	Email	48.8	4.393	1	0.036
	SMS	59.0			
Age					
18-34	Email	33.6	5.622	1	0.018
	SMS	44.3			
35-64	Email	49.4	2.351	1	0.125
	SMS	55.2			
65+	Email	61.2	1.127	1	0.288
	SMS	70.6			

Table 2: Effect of SMS and email pre-notification vs. no pre-notification, total sample - Summary table (cooperation rates and chi square test values)

		Survey completed/partially	Chi-Square	df	Asymptotic Significance (2-sided)
Pooled	Email	67.8	1.427	2	0.490
	SMS	69.2			
	None (+ SMS reminder)	70.7			
Country					
Estonia	Email	77.8	0.070	2	0.966
	SMS	77.2			
	None (+ SMS reminder)	76.8			
Great Britain	Email	55.1	0.853	2	0.653
	SMS	55.9			
	None (+ SMS reminder)	58.5			
Slovenia	Email	77.2	2.615	2	0.270
	SMS	81.5			
	None (+ SMS reminder)	83.7			
Gender					
Male	Email	61.5	3.289	2	0.193
	SMS	67.3			
	None (+ SMS reminder)	67.5			
Female	Email	72.9	0.744	2	0.689
	SMS	70.8			
	None (+ SMS reminder)	73.4			
Education					
Low	Email	57.6	1.246	2	0.536
	SMS	51.4			
	None (+ SMS reminder)	58.5			
Medium	Email	69.1	0.453	2	0.797
	SMS	71.0			
	None (+ SMS reminder)	71.1			
High	Email	70.3	2.740	2	0.254
	SMS	73.4			
	None (+ SMS reminder)	76.9			
Age					
18-34	Email	55.3	0.978	2	0.613
	SMS	52.6			
	None (+ SMS reminder)	57.1			
35-64	Email	71.3	1.336	2	0.513
	SMS	74.5			
	None (+ SMS reminder)	74.4			
65+	Email	79.5	4.208	2	0.122
	SMS	86.3			
	None (+ SMS reminder)	89.7			

Table 3: Effect of SMS and email pre-notification vs. no pre-notification, before SMS reminder sample - Summary table (cooperation rates and chi square test values)

		Survey completed/partially	Chi-Square	df	Asymptotic Significance (2-sided)
Pooled	Email	50.7	2.279	2	0.320
	SMS	55.0			
	None	51.0			
Country					
Estonia	Email	64.9	2.781	2	0.249
	SMS	68.8			
	None	59.7			
Great Britain	Email	36.0	.016	2	0.992
	SMS	35.6			
	None	35.5			
Slovenia	Email	61.5	2.613	2	0.271
	SMS	70.4			
	None	70.3			
Gender					
Male	Email	43.2	2.986	2	0.225
	SMS	51.3			
	None	47.8			
Female	Email	57.1	.992	2	0.609
	SMS	58.1			
	None	53.8			
Education					
Low	Email	33.9	1.315	2	0.518
	SMS	40.7			
	None	32.3			
Medium	Email	51.4	1.538	2	0.464
	SMS	56.3			
	None	51.5			
High	Email	56.1	.816	2	0.665
	SMS	60.0			
	None	60.6			
Age					
18-34	Email	37.2	.104	2	0.949
	SMS	35.5			
	None	36.6			
35-64	Email	54.9	2.248	2	0.325
	SMS	60.4			
	None	54.7			
65+	Email	65.7	5.712	2	0.058
	SMS	81.4			
	None	81.3			