

**Study protocol**

**SMS versus E-mail for recruiting students to participate in a COVID-19 related survey: A Randomised Trial**

Arnfinn Helleve, Centre for Evaluation of Public Health Measures, Norwegian Institute of Public Health

Atle Fretheim, Centre for Informed Health Choices, Norwegian Institute of Public Health; Oslo Metropolitan University

Rannveig Kaldager Hart, Centre for Evaluation of Public Health Measures, Norwegian Institute of Public Health

Dagfinn Bergsager, University Center for Information Technology, University of Oslo

**Abstract**

Low response rates are a major challenge when conducting surveys. Using SMS to recruit respondents may be an effective tool, but comes at a cost. Whether the potential gain in response rate is worth the price, is unclear. To investigate this, we will randomize 120,000 Norwegian university and college students to receive either SMS- or e-mail invitations to participate in a COVID-19 related survey. All students will receive two reminders, so one group will receive three SMS invitations, and the other will receive three e-mail invitations. We will compare response rates after one week. We will also compare response rates after two weeks, and assess differences across gender and age groups.

## **Background**

Surveys are widely used as a data collection tool, but low response rates are a notorious challenge. Various approaches may improve response rates, with varying degree of evidence to support beliefs in their effectiveness [1, 2].

Web-based surveys are widely used, with invitations typically disseminated through e-mail and/or text messaging (SMS). While distributing invitation by e-mail is practically free, SMS-messages can represent a substantial cost. Whether using SMS is worth the cost is highly dependent on the gain in response rate.

We are not aware of any systematic review of studies comparing the response rates using SMS or e-mail invitations, though we are aware of a handful of randomized trials that have been conducted [3-5]. Overall, the findings from those studies provide little support to the notion that the use of SMS improves survey participation: Mavletova and Couper found marginal differences in the overall response rates when comparing SMS and e-mail invitations, but observed that “SMS invitation is more efficient compared to e-mail in encouraging respondents to complete the survey via a mobile device” [4]. They conducted their study among members of an established survey panel in Russia. De Bruijne and Wijnant report similar findings in their study among Dutch members of a survey panel [3]. Finally, Pew Research Centre have reported findings from two experiments, confirming that SMS-invitations do not seem to increase response rates over e-mail-invitation, though they do seem to shorten the response time [5].

We are conducting a large prospective study among university and college students in Norway. The survey is web-based and is adapted to smartphones as well as computers. Despite the limited evidence from previous studies, invitation by SMS was widely perceived as more efficient than by e-mail, among researchers, faculty and students involved in our study. This made it difficult for us to decide whether to use SMS for inviting students to participate. We therefore opted for running a randomized trial to assess the relative effectiveness of the two approaches.

## **Methods**

The leadership at 13 higher learning institutions in Norway agreed to take part in a study to assess the association between in-person instruction and COVID-19 risk (the Campus & Corona study [6]). They were therefore willing to share the e-mail addresses and mobile phone numbers of their students with us. From a list with contact information for 125.491 students, we removed 5.557 individuals without an operating university e-mail account or a valid Norwegian cell phone number. We entered the contact information for the remaining 119.658 students into a spreadsheet, with one line per student. We used the random number generator integrated in R to give insert a unique random number to each student. We then rearranged the spreadsheet so that the students were by a random number, in rising order. We then allocated the first half to receive e-mail invitations, and the second half to receive SMS-invitations. Two of the authors (AH and RKH) conducted the randomization procedure.

We will send out all the invitations on Friday 4 September 2020. We will send two SMS-reminders to the SMS-group, and two e-mail reminders to the e-mail group. The first on Monday 7 September, and the second on Wednesday 9 September. All SMSs and e-mails are generated and sent from the survey solution used in the study. Only people who do not answer get reminders via SMS or e-mail.

The e-mail contains information about the goal of the study and about a financial incentive, i.e. that those who take part in the study enter a lottery with five winners receiving a universal gift card of NOK 1000 (around \$100). The SMS only contains a short invitation to participate, without further information about the study or the financial incentive. Both the e-mail and the SMS contain a link to the consent form for the study. Those who consent to participate are automatically directed to the web-based questionnaire. The consent form provides detailed information about the study.

Both the SMS and the e-mail invitations contain a link to the survey that the recipients are encouraged to click.

### Outcomes and analyses

We will compare response rates (measured as completed consent forms or completed questionnaires) one week after the first dispatch of invitations, and calculate the relative response rate with 95% CI. This serves as our primary outcome.

We will also calculate the relative response rate after two weeks. In addition, we will conduct subgroup analyses based on gender, age groups, and possibly other background variables depending on availability (e.g. field of study and sociodemographic characteristics). We may also explore differences in proportions of invitees who open the informed consent form, and the proportions who enter the questionnaire itself.

We will present response rates over time (after first invitation, first and second follow-up) graphically.

1. Edwards, P.J., et al., *Methods to increase response to postal and electronic questionnaires*. Cochrane Database Syst Rev, 2009(3): p. MR000008.
2. Menon, V. and A. Muraleedharan, *Internet-based surveys: relevance, methodological considerations and troubleshooting strategies*. Gen Psychiatr, 2020. **33**(5): p. e100264.
3. Bruijne, M.d. and A. Winjant, *Improving response rates and questionnaire design for mobile web surveys*. Public Opinion Quarterly, 2014. **78**(4): p. 951-962.
4. Mavletova, A. and M. Couper, *Mobile Web Survey Design: Scrolling versus Paging, SMS versus E-mail Invitations*. Journal of Survey Statistics and Methodology, 2014. **2** (4): p. 498–518.
5. McGeeney, K. and H.Y. Yan. *Text Message Notification for Web Surveys*. 2016 [cited 2020 03.09.2020]; Available from: <https://www.pewresearch.org/methods/2016/09/07/text-message-notification-for-web-surveys/>.
6. Atle Fretheim, M.F., Arnfinn Helleve, Solvi Helseth, Gro Jamtvedt, Borghild Loyland, Ida Hellum Sandbekken, Alexander Schjoll, Kjetil Telle, Sara Sofie Viksmoen Watle, *STUDY PROTOCOL: Relationship between In-person Instruction and COVID-19 incidence among University Students: A Prospective Cohort Study*. medRxiv 2020.08.30.20182139, 2020. **2020**.