Background Paper for the Fifth International Workshop on Business Data Collection Methodology – Lisbon 2018 September:

The Impact of Invitation Mode on Participation in an Online Establishment Survey

Presented by

Joseph Sakshaug[1,2] and Basha Vicari[1]

[1] Institute for Employment Research (IAB), Nuremberg

[2] University of Mannheim, Germany

Review of Literature

There is a sparse literature on the effects of contact mode on Web survey participation. Most of this literature is based on university populations and other Internet-savvy groups, which may not directly translate to establishment populations – we return to this point later. One of the earliest contact mode experiments in a Web survey was conducted by Birnholtz et al. (2004), who examined the effect of paper versus email invitations on a sample of engineering researchers. The invitations were sent along with a code to redeem a $5 Amazon.com voucher. Paper invitations were associated with a higher response rate than email invitations (40 percent vs. 32 percent), however, the difference was not statistically significant which the authors acknowledged could be due to small sample size. Kaplowitz et al. (2012) compared the performance of a postcard invitation to an email invitation in a Web survey of university faculty, students, and staff. Compared to the postcard invitation, the email invitation yielded a significantly higher response rate among students (22 percent vs. 19 percent) and faculty (40 percent vs. 33 percent), but no difference among staff (43 percent vs. 43 percent).

Bandilla, Couper, and Kaczmirek (2012) report the results of an invitation experiment in which respondents who previously took part in a face-to-face, general population survey in Germany were randomized to receive a paper or email invitation for a follow-up Web survey. The invitation mode was crossed with a prenotification letter and a single reminder was administered in the same mode as the invitation. Without the prenotification letter the paper invitation yielded a higher response rate than the email invitation (51 percent vs. 40 percent). However, with the prenotification letter the email invitation was associated with a higher response rate than the paper invitation (57 percent vs. 51 percent). Israel (2012) also examined the effect of crossing invitation mode with a prenotification letter in a Web survey of clients from the Florida Cooperative Extension Service. One group received a

prenotification letter followed by an email invitation and another group received the email invitation without prenotification followed by an email reminder. Although both groups received two contacts, the group with the prenotification letter had a higher response rate to the Web survey than the other group (24 percent vs. 18 percent). The effectiveness of using a prenotification letter (or postcard) to improve Web survey response rates is a common finding and consistent with the notion that prenotification letters make email invitations seem less unsolicited and less likely to be dismissed or considered as spam (Crawford et al. 2004; Kaplowitz, Hadlock, and Levine 2004; Porter and Whitcomb 2007; Harmon, Westin and Levin 2005; Dykema et al. 2011).

Building on the findings that prenotification letters are likely to improve response to a subsequent email invitation, one could posit that a paper invitation followed by an email reminder might have a similar effect. Dykema et al. (2012) examined this notion in a Web survey of university faculty. Faculty members were randomized to receive a paper or email invitation. Email reminders were sent to nonrespondents in both invitation groups. The paper invitation produced a slightly higher response rate than the email invitation before reminders were sent (13 percent vs. 9 percent), but the subsequent email reminder had a much larger effect on the paper invitation group, increasing the response rate to 27 percent compared to 12 percent in the email invitation group. In line with the prenotification literature, the authors attributed this result to the paper invitation which was "likely more successful at underscoring the legitimacy and importance of the study […] and likely served as a sort of advance letter that increased the likelihood sample members would notice and respond to the subsequent e-mailed requests to participate (p. 367)." However, this effect was not replicated by Millar and Dillman (2011). In a Web survey of university students, they compared the effectiveness of an email invitation with follow-up email contacts versus a paper invitation with follow-up email contacts (a strategy that they refer to as "email augmentation"). The difference in response rates between the paper (21.2 percent) and email (20.5 percent) invitation groups was not statistically significant.

Knowledge Gaps and Research Questions

The above literature review paints a mixed picture regarding the optimal choice of contact mode(s) for maximizing participation in Web surveys. Paper invitations are sometimes more effective than email invitations, and other times not. Similarly, the use of a paper invitation followed by an email reminder can improve response rates over an email-only contact strategy, but this is not a consistent finding. The mixed findings suggest that the effects of

contact modes are likely to be population-specific. Thus, it is questionable whether the findings reported from university populations and other Internet-sophisticated groups carry over to establishments.

Another reason why these findings may not translate to establishments is that they are based on populations for which postal and email addresses are known. Although postal addresses are usually known for establishments, an email address may be lacking for many. Even email addresses which have been provided by establishments through their participation in a previous survey – the situation considered in the present study – may be outdated because of turnover, name changes, or for other reasons. Different contact strategies may be considered for these situations. For example, in the case of an invalid email address, supplementary paper contacts can be used to deliver the survey invitation and any subsequent reminders. Establishments for which an email address is not available can be administered paper contacts from the outset or, alternatively, these establishments can be sent a prenotification letter with a request to provide an email address to receive an emailed invitation. It is unclear whether establishments are willing to comply with such a request, but even if not, the prenotification contact might increase the likelihood that establishments will notice and respond to a subsequent paper invitation and reminder versus a paper invitation and reminder strategy that does not include the additional prenotification contact. However, sending supplementary paper contacts and/or prenotification letters comes with additional costs to the survey organization. Whether these additional costs can be justified with a meaningful increase in the response rate is unknown.

Besides response rates and costs, it is also important to consider the effects of different contact mode strategies on nonresponse bias. In the household survey literature, response rates have been shown to be only weakly correlated with nonresponse bias (Groves 2006). That is, high response rates do not imply small nonresponse bias, just as low response rates do not imply large nonresponse bias. Rarely is it feasible to conduct a detailed examination of nonresponse bias due to the lack of relevant auxiliary information available for both respondents and nonrespondents. In the present study, we overcome this limitation by making use of detailed record information on the full sample of establishments.

Specifically, we address the following research questions:

(1) Do paper and email invitations differentially impact response rates to a Web survey of establishments?

(2) What combination of paper/email invitation and reminder contacts maximizes the response rate in a Web survey of establishments? Are supplementary paper contacts effective in eliciting response from establishments with invalid email addresses?

(3) Are establishments willing to provide an email address as part of a prenotification request letter? Does the strategy of requesting an email address via a prenotification letter, and sending a supplementary paper invitation and reminder to establishments that do not provide one, yield a higher response rate compared to simply sending a paper invitation and reminder without prenotification?

(4) To what extent do different paper/email contact strategies affect nonresponse bias and survey costs?

References

Bandilla, W., Couper, M.P., and Kaczmirek, L. (2012). The Mode of Invitation for Web Surveys. *Survey Practice*, 5(3). <http://www.surveypractice.org/index.php/SurveyPractice/article/view/20/html>

Birnholtz, J.P., Horn, D.B., Finholt, T.A., and Bae, S.J. (2004). The Effects of Cash, Electronic, and Paper Gift Certificates as Respondent Incentives for a Web-Based Survey of Technologically Sophisticated Respondents. *Social Science Computer Review*, 22(3), 355-362.

Crawford, S.D., McCabe, S.E., Saltz, B., Boyd, C.J., Freisthler, B., and Paschall, M.J. (2004). Gaining Respondent Cooperation in College Web-Based Alcohol Surveys: Findings from Experiments at Two Universities. Paper Presented at the Annual Meeting of the American Association for Public Opinion Research, Phoenix, May.

Dykema, J., Stevenson, J., Day, B., Sellers, S.L., and Bonham, V. (2011). Effects of Incentives and Prenotification on Response Rates and Costs in a National Web Survey of Physicians. *Evaluation & the Health Professions*, 34(4), 434–447.

Dykema, J., Stevenson, J., Klein, L., Kim, Y., and Day, B. (2012). Effects of E-Mailed Versus Mailed Invitations and Incentives on Response Rates, Data Quality, and Costs in a Web Survey of University Faculty. *Social Science Computer Review*, 31(3), 359-370.

Groves, R.M. (2006). Nonresponse Rates and Nonresponse Bias in Household Surveys. *Public Opinion Quarterly*, 70(5), 646-675.

Harmon, M.A., Westin, E.C., and Levin, K.Y. (2005). Does Type of Pre-Notification Affect Web Survey Response Rates? Paper Presented at the Annual Conference of the American Association for Public Opinion Research, Miami Beach, FL, May.

Israel, G.D. (2012). Combining Mail and E-Mail Contacts to Facilitate Participation in Mixed-Mode Surveys. *Social Science Computer Review*, 31(3), 346-358.

Kaplowitz, M.D., Lupi, F., Couper, M.P., Thorp, L. (2012). The Effect of Invitation Design on Web Survey Response Rates. *Social Science Computer Review*, 30(3), 339-349.

Kaplowitz, M.D., Hadlock, T.D., and Levine, R. (2004). A Comparison of Web and Mail Survey Response Rates. *Public Opinion Quarterly*, 68(1), 94–101.

Millar, M.M., and Dillman, D.A. (2011). Improving Response to Web and Mixed-Mode Surveys. *Public Opinion Quarterly*, 75(2), 249-269.

Porter, S.R., and Whitcomb, M.E. (2007). Mixed-Mode Contacts in Web Surveys: Paper is Not Necessarily Better. *Public Opinion Quarterly*, 71(4), 635–648.