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Testing the Impact of the Type of Mail Used on Augmenting Response Rates for a Leave-Behind Questionnaire in a Face-to-Face Survey

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Abstract

The paper describes an experiment conducted to boost response rates to a paper questionnaire left with respondents at the conclusion of a face-to-face survey of older Americans. Respondents who had yet to return their questionnaire received a new copy via either FedEx or regular mail. Subsequent phases of the experiment manipulated combinations of mailing methods for additional follow-up mailings. Receipt via FedEx increased response rates significantly relative to regular mail. Respondent age and proximity of mailing to interview date also affected response rates. The paper concludes by considering the application of these findings beyond the context of the present study.

Introduction

As declining response rates become the new norm, it is increasingly imperative to identify survey methods and protocols that increase respondent cooperation.¹ For the third wave of the National Social Life, Health, and Aging Project (NSHAP), NORC conducted an experiment to test whether (a) a mail follow-up to telephone prompting boosted response rates for a paper questionnaire, and whether (b) the type of mail used for a sequence of reminders had a differential impact. The NSHAP interview consisted of a 90-minute, in-person questionnaire and physical measures administration. At the conclusion of the interview, respondents were given a supplemental leave-behind questionnaire (LBQ) to return in a prepaid envelope. If respondents did not return the LBQ within three weeks, they were contacted by telephone, in a sequence of up to three separate prompts to return it.

The mail follow-up produced consistent increases in response rates, with about 19% of non-responders returning their LBQ compared to just 2% for the control group. In the initial mail treatment, one group received their materials via regular mail and the other group received their materials via FedEx. The control group received no materials. For this initial treatment, receiving materials via FedEx produced significantly higher returns than via regular mail: 23% vs 14%. Different sequences of follow-up were tested subsequently, but while response rates between the experimental groups converged over time, the group receiving the initial FedEx treatment continued to outperform the regular mail treatment group. This paper describes the full complement of treatments, presents time-sequence results for all groups, and concludes by considering the application of these results to other studies and populations.

¹ See, for example, Czajka and Beyler 2016, Meyer, Mok, and Sullivan 2015, Peytchev 2012, and Morten et al. 2012.

Project Background

The National Social Life, Health, and Aging Project (NSHAP) is a longitudinal study designed to study the relationships between social processes and health among older adults. The NSHAP interview consists of a 90-minute, in-person questionnaire and physical measures administration. At the conclusion of the in-person interview, respondents are given a supplemental leave-behind questionnaire (LBQ) to return in a prepaid envelope. Wave I of NSHAP obtained questionnaire and biomeasure data on a nationally-representative sample of 3,005 community-dwelling adults born between 1920 and 1947 (aged 57 to 85 at the time of the Wave I interview) in 2005-2006. The final LBQ response rate in Wave I was 84%. The second wave of NSHAP in 2010-2011 established longitudinal, population-based data on health, sexuality and social life among older Americans by revisiting respondents five years after their initial interviews, and augmented the sample by interviewing co-resident spouses or partners of the respondents. Wave II of NSHAP obtained data from 3,377 adults. The final LBQ response rate in Wave II was 86%. Wave III of NSHAP improved the robustness of the study's longitudinal data by returning to interview 2,409 Wave I and Wave II respondents (the Returning Respondents) in 2015-2016. We also added a new cohort of 2,368 younger respondents born between 1948 and 1965 and their co-resident spouses or partners (the New Cohort Respondents).

In Wave III there were two different versions of the LBQ given to the different cohorts. The LBQ for New Cohort Respondents was slightly longer and consisted of 100 questions while the Returning Respondent version contained 76 questions. It was estimated to take approximately 25-35 minutes to complete. Respondents received a \$25 prepaid cash incentive to complete all leave-behind measures (including the LBQ) at the time they completed their in-person interviews. The need for an intervention to boost LBQ return rates (which led to the experiment described below) arose during the Wave III field period when we noticed that LBQ return rates were lagging behind the rate at similar points in data collection from Waves I and II.

Literature Review

In determining what course of action might help improve response rates for the LBQs, several different approaches were explored, including offering an option to complete the survey over the web, email prompting, and a blanket mailing to non-responders. Other popular experiments regarding variation in initial advance letters were not directly relevant due to the fact that the NSHAP LBQs are distributed in person.

Based on our review of the literature, offering a web option to complete the survey does not necessarily increase response rates. Several studies have shown that when individuals are given a choice of responding either by web or by mail, the overall response rate is lower than when a response by mail is the only option (Gentry and Good 2008; Griffin, Fischer, and Morgan 2001; Grigorian and Hoffer 2008; Smyth et al. 2010). At least one general population study indicated that starting with a mail-back and then switching to a web option only increased response rates by 1% (Smyth et al 2010), which would be a minimal return for an expensive development process since NSHAP did not have a web capability designed or tested. Another study found that mail surveys that incorporate a concurrent web option have significantly lower response rates than those that do not (Medway and Fulton 2012).

The literature also suggests that repeated email contacts are less effective for improving web response than repeated postal contacts are for improving mail survey response (Manfreda et al. 2008). Also, studies that have seen success with email contacting and prompting are those with younger, highly internet-literate populations. For example, a survey of UC Riverside recent graduates, all with known university email addresses, saw a higher completion rate through email contact (Crow, Johnson, and Hanneman, 2011). With NSHAP's older adult demographic, as with web completion options, replicating the same types of response rate gains seemed unlikely.

As an intervention to improve response rate with the existing paper format, a blanket mailing to non-responders appeared to be NSHAP's best option. Several decades of research have shown that response to self-administered mail surveys can be improved through the simultaneous application of several techniques, such as multiple contacts, token cash incentives delivered in advance, personalized communications, respondent-friendly construction, and other design features (Dillman, Smyth, and Christian 2009). Research has also shown that even if no previous incentive was sent or included in the original mailing of the survey, sending a replacement questionnaire without an incentive still had a significant effect at increasing response rates (Brennan 2004).

Because NSHAP had already given the respondents a \$25 prepaid incentive to complete the LBQ, and any additional incentives for the LBQ would likely be prohibitively costly, NSHAP decided to focus on mailing methods to determine if a particular method would incentivize respondents to return a completed LBQ. Specifically, we decided to test the difference between FedEx and regular First Class mail. Other studies have tended to focus on the effects of envelope messaging (Dykema et al. 2015), which seems to have little, if any, effect on response rates. Previous research has also explored differences between First Class and Priority Mail (Edwards et al. 2003) and found a positive effect of an overnight courier

compared with both First Class and Priority Mail (Dimitropoulis et al. 2003²). However, there is a gap in the literature regarding effect on response rates as a direct result of a particular mailing method as a follow-up to an in-person interview, which is how this experiment hopes to intervene and add to this robust field of research.

Methods

As previously mentioned, at the conclusion of the in-person NSHAP interview, field interviewers gave the respondent a supplemental paper questionnaire (the Leave-Behind Questionnaire, or LBQ) along with a prepaid return envelope. Although the LBQ was slightly different based on the respondent type (with New Cohort Respondents receiving a slightly longer version to collect additional background information compared to the Returning Respondents), in all cases, the interviewer explained how to complete and return the questionnaire and answered any respondent questions. As respondents completed and mailed back their questionnaires, NORC staff receipted the documents and updated the case management system to indicate that no prompting was required.³ However, if the respondents did not return their LBQ within three weeks of the date of the in-person interview, they became eligible for a standard prompting protocol of up to three telephone contacts. If, in the course of telephone prompting, a respondent requested a new LBQ, those remail requests were fulfilled individually, but prior to implementation of the experiment described below, the standard follow-up protocol did not include any bulk or automatic remailing.

The mail follow-up experiment was first implemented approximately nine months into the roughly 14-month field period of Wave III of NSHAP. At this point, it had become clear that LBQ return rates were lagging behind benchmark rates from the two prior waves, despite the fact that the LBQ protocol was substantially similar. The final LBQ return rates from Waves I and II of NSHAP were, respectively, 84% and 86%. By comparison, at this point in the Wave III field period, the overall LBQ return rate was 75%. Thus, it is worth bearing in mind that the total sample for the mail follow-up experiment described in this

² Dimitropoulis et al. touch on one of the thoughts that motivated the present experiment as well: “A package delivered by a delivery service or an overnight courier is still perceived as important because it is not merely dropped in the mailbox, it is delivered to the door” (p. 76).

³ Reminding a respondent to return the LBQ was not the only reason that our telephone prompters contacted respondents. Some NSHAP respondents wore a small, watch-like device called an accelerometer to measure their sleep and activity levels. If that was not returned, telephone prompters would call the respondent. In addition, a small percentage of completed interviews was randomly selected for interviewer validation. To avoid numerous calls to the same respondent, our case management system displayed all items for which a respondent needed to be contacted by the telephone prompters. Thus, it is possible that some of the respondents included in this experimental design were asked about more than just returning the LBQ when they spoke with a telephone prompter. However, we believe the variation in prompting items required per respondent was distributed randomly enough so that it did not bias the experimental design.

paper is composed of individuals who had already completed the full NSHAP interview but had not returned their LBQ within three weeks of completing the interview.

First Remail

The experiment was conducted in three phases. (Skip to Chart 1.1 below on page 8 for an illustration of the complete three-phase sequence.) The first phase of the experiment was the largest. Using case management data, we prepared a sample file of all respondents who had completed their interview at least three weeks prior and whose LBQ had not yet been returned. Because the experiment was implemented nine months into data collection, there was significant variation in the length of time that had elapsed since the respondents' completed interviews. From this initial sample of roughly 850 LBQ non-responders, we randomly selected 500 respondents and then randomly assigned them to one of two treatment groups; the remaining respondents were assigned to the control group. (The random assignments were balanced on interview date, whether the interview was conducted in English or Spanish, and whether or not there was more than one remail-eligible respondent in the household.)

Respondents in the treatment groups received a remail packet that included a new copy of the LBQ, a prepaid return envelope, a small notepad as a token of appreciation, and a cover letter. The cover letter thanked respondents for participating in the interview, informed them that we had not yet received their LBQ, and reminded them that their responses were confidential.⁴ Respondents in Treatment Group 1 received their remail packets via regular mail, and respondents in Treatment Group 2 received their remail packets via FedEx.⁵ Respondents in the Control Group did not receive any additional mailing during this initial phase of the experiment.

After the remail packages were sent, we waited another three weeks for respondents to return the LBQ. If after three weeks the LBQ was still not returned, the respondent became eligible for an additional round of telephone prompting. Although complete results will be presented in the following section, two things were clear after this three-week waiting period following the bulk LBQ remail: (1) remaining LBQs to respondents who had yet to return the copy left with them by their interviewer provided a substantial boost to LBQ response rates, and (2) respondents who received their remail package via FedEx had a

⁴ Additionally, in cases where more than one respondent in the household was receiving a new LBQ, the respondent's first and last initial had been written on the questionnaire to distinguish between them since no other respondent-identifying information is placed on the questionnaire. In such cases, we affixed a customized sticky note to the front of the LBQ explaining why this had been done and asking the respondent to take care to fill out and return the questionnaire intended for them.

⁵ FedEx shipments were sent via Standard Overnight, except in areas where that service was not available. In those rare cases, the shipments were sent instead by Priority Overnight.

higher return rate than those who received their remail package via regular mail. Because data collection was ongoing as results came in, we applied these findings to two subsequent bulk LBQ remailings.

Second Remail

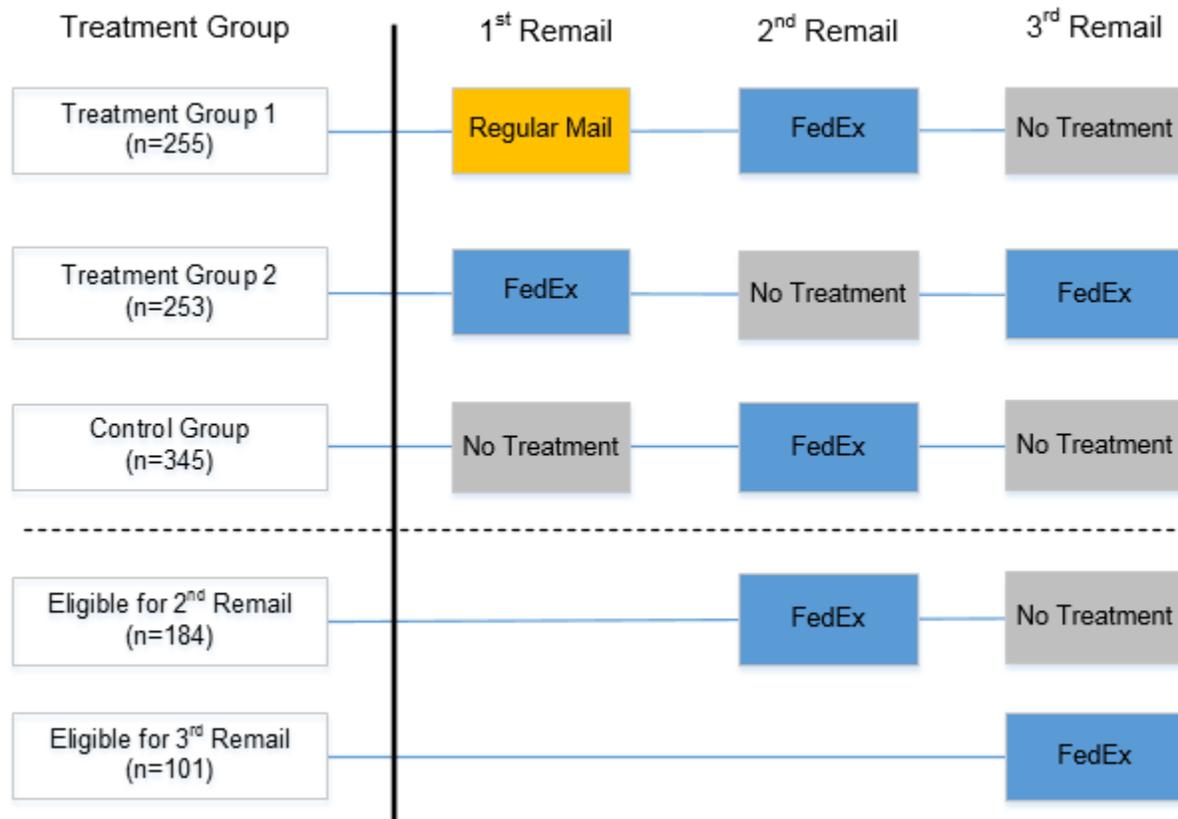
For the second bulk remail, we decided to send all remail packages via FedEx, since that delivery method had produced higher return rates from the first bulk remail. Thus, when we sent out the second bulk remail approximately two months after the first, we sent an LBQ remail package via FedEx to (1) respondents in the Control Group who had not yet received any remailed materials; (2) respondents in Treatment Group 1 who had already received a remail package via regular mail; and (3) respondents who had not yet been eligible for LBQ remailing at the time of the first bulk remail because three weeks had not yet elapsed since the date of their NSHAP interview. Respondents in Treatment Group 2 – who had already received an LBQ remail package via FedEx – did not receive any additional remailed materials in the second bulk remail. Just as with the first bulk remail, we waited three weeks and then initiated an additional round of telephone prompting for respondents with unreturned LBQs.

Third Remail

A little over a month after the second bulk remail, as we neared the end of the data collection period, we prepared a third bulk remail. Again we sent all remail packages via FedEx instead of by regular mail. For this final bulk remail, we sent an LBQ remail package to respondents from Treatment Group 2 who had received a remail package via FedEx in the first bulk remail but received nothing in the second bulk remail, and respondents who were not eligible for remailing at the time of the second bulk remail.⁶ Chart 1.1 below illustrates the complete sequence of remailings across all five experimental groups.

⁶ Because we were very close to the end of the field period, and because we had received no feedback from our telephone prompters that respondents were irritated by receiving a new LBQ unannounced, we relaxed the three-week waiting period down to ten days for this third bulk remail. This means that some of the respondents who completed their NSHAP interview very close to the end of the field period were potentially sent a new copy of the LBQ sooner than respondents in the previous two bulk remails.

Chart 1.1 – Mailing Sequence by Treatment Group



The following section describes the results of the experiment in greater detail and presents logistic regressions of respondent characteristics and other possible influences on LBQ return rates.

Results

As mentioned in the preceding section, the results from the first bulk remail were promising enough to inform the subsequent battery of remailings for all treatment groups. Table 1.1 below illustrates the initial return rates for the three experimental groups from the first bulk remail.

Table 1.1 – Effect of Mail Method on Return Rate

Experimental Group	Return Rate 3 Weeks After Remail
Control	0.6%
Treatment Group 1 (Regular Mail)	14.1%
Treatment Group 2 (FedEx)	23.3%

It is evident that (a) remaining the LBQ to those respondents who had yet to return their initial copy of the questionnaire boosted return rates above that of the control group which received no additional materials, and that (b) receiving the remailed materials via FedEx produced a differentially higher return rate than receiving the remailed materials via regular mail. Because of these preliminary results, the second bulk remail was sent via FedEx to both the control group and the treatment group who had already received a remail package via regular mail. Table 1.2 below illustrates the cumulative return rates for these three experimental groups three weeks after the second bulk remail was sent.

Table 1.2 – Effect of Subsequent Mailing on Return Rates

Experimental Group	1 st Remail Action	2 nd Remail Action	Return Rate 3 Weeks after 2 nd Remail
Control Group	Nothing sent (0.6%)	FedEx	18.3%
Treatment Group 1	Regular Mail (14.1%)	FedEx	37.6%
Treatment Group 2	FedEx (23.3%)	Nothing sent	39.9%

At this point, the return rate for the two initial treatment groups was close to converging, but it is useful to bear in mind that the group that first received a remail package via regular mail had received two separate remails at this point, which further bolstered our conclusion that receiving the remail package via FedEx was producing a notable increase in return propensity.

Finally, Table 1.3 below illustrates return rates for all five experimental groups at the time-points three weeks subsequent to the second bulk remailing and at the very end of the field period.

Table 1.3 – Impact of Final Mailing

Experimental Group (Sequence of Mailings)	Return Rate after 2 nd Remail	Final Return Rate
Control Group (No Treatment / FedEx / No Treatment)	18.3%	32.5%
Treatment Group 1 (Regular Mail / FedEx / No Treatment)	37.6%	44.3%
Treatment Group 2 (FedEx / No Treatment / FedEx)	39.9%	51.0%
Eligible for 2 nd Remail (<i>Not Applicable</i> / FedEx / No Treatment)	28.8%	38.6%
Eligible for 3 rd Remail (<i>Not Applicable</i> / No Treatment / FedEx)	n/a	60.4%

Of the three initial experimental groups, the group that first received a remailed LBQ via FedEx ended the field period with the highest return rate. The experimental group with the highest return rate overall,

however, was that group that did not become eligible for a re mailing until the final bulk remain. Respondents in this experimental group had the shortest average duration between completing their NSHAP interview and receiving a remailed LBQ, so it appears likely that proximity of re mailing to interview completion may be a factor in determining response propensity. Table 1.4 below shows the average lag between interview completion and first remailed LBQ by experimental group.⁷

Table 1.4 – Impact of Lag between Interview Date and Remain

Experimental Group	Average Lag between Interview and First Retailed LBQ	Final Return Rate
Control Group	261 days	32.5%
Eligible for 2 nd Bulk Remain	117 days	38.6%
Eligible for 3 rd Bulk Remain	71 days	60.4%

Because the experiment was initiated in an attempt to boost LBQ return rates that were lagging behind previous waves of NSHAP, it was heartening to see that final LBQ return rates did indeed improve from the point they were at when we began to design and implement the experiment. Table 1.5 illustrates LBQ return rates by NSHAP’s two cohorts at the two time-points most relevant to the experimental design.

Table 1.5 – Impact of Experiment on LBQ Return Rates by Respondent Group

Respondent Group	Return Rate before Experiment	Return Rate – Final
Returning Respondents (RR)	80%	91%
New Cohort Respondents (NC)	68%	80%
All Respondents	75%	85%

In addition to the time-series results, we performed statistical analyses to control for additional respondent characteristics and investigate any interaction effects. The most important initial consideration for the experimental treatments was whether Treatment Group 1 (regular mail) and Treatment Group 2 (FedEx) saw differential return rates after receiving their remailed LBQ. Table 2.1 below demonstrates that respondents who received their initial remain via FedEx were significantly more likely to return the LBQ than those who received it via regular mail.

⁷ Treatment Groups 1 and 2 are excluded from this table because they had, on average, the same time lag between interview completion and LBQ remain.

Table 2.1 – Logistic Regression of Impact of Mail Mode on LBQ Return

Mode Tested	Estimate	Standard Error	Wald Chi-Square	Prob > ChiSq
FedEx	0.9601	0.2262	18.0221	<.0001

We also analyzed LBQ return rates by gender. Table 2.2 below shows that there was no significant impact of gender on LBQ return rates within the experimental groups.

Table 2.2 – Logistic Regression of Impact of Gender on LBQ Return

Variable Tested	Estimate	Standard Error	Wald Chi-Square	Prob > ChiSq
Female vs Male	0.0206	0.1517	0.0185	0.8917

Finally, we looked at the possible impact of respondent age on LBQ return rates. Table 2.3 below presents those results. We found a significant impact of respondent age on LBQ return rates, such that younger respondents receiving a remailed questionnaire were more likely to return their LBQ than older respondents receiving a remailed questionnaire. However, we did not find any interaction effect between age and remail mode. That is, while receiving a remailed LBQ made younger respondents more likely to return their LBQ than older respondents, it did not appear to make a difference whether that remailed LBQ was sent via FedEx or by regular mail. For the purposes of the analysis in Table 2.3, respondent age was split into three categories: Youngest (born after 1954), Middle (born 1943-1954), and Oldest (born prior to 1943).

Table 2.3 – Logistic Regression of Impact of Age on LBQ Return

Group Tested	Estimate	Standard Error	Wald Chi-Square	Prob > ChiSq
Youngest vs Oldest	0.6793	0.2052	10.9616	0.0009
Youngest vs Middle	-0.2995	0.2368	1.5993	0.2060

Discussion

The most robust finding from the remail experiment is that receiving a remailed LBQ via FedEx provided a much larger boost to return rates than receiving it via regular mail. From the testing of additional mailings in sequence, it was also very interesting to see that even a single FedEx mailing had a more powerful impact than an initial mailing via regular mail followed by a second mailing via FedEx (see

Table 1.2 above). This indicates strongly to us that for any future NSHAP remailings, the slightly higher cost of a FedEx mailing more than makes up for itself, compared to a regular mail package possibly requiring secondary FedEx follow-up. Another key finding (although not unexpected) is that the proximity of remail date to interview completion was an important factor. Additionally, based on conversations with the telephone prompting team, we have no evidence that unannounced bulk remailings alienated any of our respondents (who, after all, had already been cooperative enough to complete a lengthy in-person interview and likely consent to some physical measures and biospecimen collection). Taken together, these two findings strongly suggest that future rounds of NSHAP should institute a standard LBQ remailing regimen much earlier in the field period, and with a much shorter lag between interview completion and remail than we had originally used. Finally, because the cost of FedEx could be prohibitive for some study budgets, it is useful to bear in mind that although its effect was less than that of FedEx, mailings sent via regular mail also provided a sizable return rate boost relative to the control group. It is possible that studies on a leaner budget could more carefully tailor mail mode to the predicted response propensity of certain segments of the sample, using some combination of regular mail and then more targeted FedEx delivery for cases deemed more difficult or less prone to respond.

As with any experiment, there are some limitations with this one. First, the fact that NSHAP respondents overwhelmingly belong to older age ranges may limit the generalizability of our findings to studies with a younger or more diverse sample. Additionally, NSHAP's Returning Respondents – for whom the current interview round was either their second or third NSHAP interview – tended to be already highly engaged with the study, which could have artificially boosted their return rates. This caution is mitigated somewhat by the fact that the experiment was only conducted with those people who did not originally return their questionnaires, but this also reminds us that the experimental sample may not be representative of the total survey population in some important ways. Finally, although this is not a limitation inherent in the present experiment, the fact that this mail prompting was done as a follow-up to a *completed* and *in-person* interview may somewhat limit the generalizability of these findings to surveys conducted in other modes (for example, a total survey population for a mail-only survey).

Conclusion

Based on the results of this experiment (and budget permitting), NSHAP will plan to utilize FedEx in remailing questionnaires to non-responders in future waves. To maximize the effectiveness of this protocol, we intend to remail the LBQs at designated intervals more closely timed after the completion of the respondent's in-person interview. We also received anecdotal evidence from NSHAP's telephone

prompters that a successful strategy was to send the remailed LBQ, wait a day or two, and then call the respondents right away. This allowed them to frame the call as a proactive attempt to confirm they received the questionnaire and see if they had any questions, rather than as a reactive reminder or scolding for not having returned the questionnaire. The additional money spent to re-mail questionnaires via FedEx proved to be a more cost-effective way of increasing response rates in comparison to only phone follow-up (which is what we had done prior to the experiment).

It also seems important to highlight again that getting *any* type of remailed questionnaire was more of a boost for younger respondents than older respondents. As part of a longitudinal study, one might expect that the response rate for New Cohort Respondents will increase naturally over time as respondents become more invested in the study (as seems to be the case with the Returning Respondents). However, we believe that the lessons learned from these experimental strategies will be significantly more important with the New Cohort Respondents, because we have significant evidence even from within this single round of data collection that they are harder to find and track, and that many had moved or became difficult to recontact during the course of the field period.

Broadly speaking, these results may be applicable to studies in the midst of data collection and looking for an option to increase response rates. There are many decisions that can be made at the beginning of a study to help improve response rates based on advance letter content and design, incentives, planned follow-up mailings, etc. Unfortunately, studies that find they are not reaching their targeted response rates often have limited funds or resources and therefore have limited options, because unplanned follow-ups and interventions are often costly. This experiment shows that simply re-mailing a questionnaire might help, especially in particular age groups, but even more significantly, that using FedEx instead of regular First Class U.S. mail can increase response rates. There is a minimal operational burden on a project to send a bulk re-mail by FedEx instead of U.S. mail. The cost is slightly higher and might prove to be prohibitive in some instances, but in general the difference in price was less than it would have cost to include a nominal incentive. Because the NSHAP LBQ is given to the respondent in-person, initial response rates and circumstances are likely to be different than a traditional mail questionnaire, but follow-up procedures may prove to be more similar. Ultimately, we will use these results to calibrate more carefully follow-up strategies for NSHAP's different respondent types, with the aim of maintaining (or improving) LBQ response rates while incurring the lowest cost and causing the least respondent burden.

References

- Brennan, Mike. 2004. "A Test of Two Procedures for Increasing Responses to Mail Surveys." *Marketing Bulletin* 15: 1-9. <http://marketing-bulletin.massey.ac.nz>
- Czajka, J. L. and A. Beyler. 2016. "Declining Response Rates in Federal Surveys: Trends and Implications." Prepared for the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services by Mathematica Policy Research. <https://aspe.hhs.gov/system/files/pdf/255531/Decliningresponserates.pdf>
- Crow, D., M. Johnson, and R. Hanneman. 2011. "Benefits – and Costs – of a Multi-Mode Survey of College Graduates." *Survey Practice* 4 (5). www.surveypractice.org.
- Dillman, D.A., J.D. Smyth, and L.M. Christian. 2009. *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method*. Wiley, Hoboken.
- Dimitropoulis, L. L., L.N. Campbell, and V.G. Iannacchione. 2003. "The Effect of Method of Delivery on Response to a Non-Response Follow-Up." *Proceedings of the Joint Statistical Meetings 2003*: 74-77. <https://ww2.amstat.org/sections/srms/Proceedings/y2003/Files/JSM2003-000415.pdf>
- Dykema, J., K. Jaques, K. Cyffka, N. Assad, R.G. Hammers, K. Elver, K. Malecki, and J. Stevenson, 2015. "Effects of Sequential Prepaid Incentives and Envelope Messaging in Mail Surveys." *Public Opinion Quarterly* 79 (4, Winter): 906-931.
- Edwards, P., I. Roberts, M. Clarke, C. DiGiuseppi, S. Pratap, R. Wentz, and I. Kwan. 2002. "Increasing response rates to postal questionnaires: systematic review." *BMJ : British Medical Journal* 324: 1-9.
- Gentry, R., and C. Good. 2008. "Offering respondents a choice of survey mode: use patterns of an internet response option in a mail survey." Presentation at the Annual Conference of the American Association of Public Opinion Research, New Orleans, 15–18 May 2008.
- Grigorian, K., and T.B. Hoffer. 2008. "2006 Survey of Earned Doctorates Mode Assignment Analysis Report." Prepared for the National Science Foundation by the National Opinion Research Center. University of Chicago, Chicago, IL, 2008.
- Griffin, D., D. Fisher, and M. Morgan. 2001. "Testing an Internet Response Option for the American Community Survey." Presentation at the Annual Conference of the American Association of Public Opinion Research, Montreal, 17–20 May 2001.
- Lozar, M., K.M. Bosnjak, J. Berzelak, I. Haas, and V. Vehovar. 2008. "Web surveys versus other survey modes; a meta-analysis comparing response rates." *International Journal of Market Research* 50 (1): 79–104.
- Medway, R. L., and J. Fulton. 2012. "When more gets you less: a meta-analysis of the effect of concurrent web options on mail survey response rates." *Public Opinion Quarterly* 76 (4): 733-746.
- Meyer, B. D., W.K.C. Mok, and J.X. Sullivan. 2015. "Household Surveys in Crisis." NBER Working Paper No. 21399. <http://www.nber.org/papers/w21399>

Morton, S. M.B., D.K. Bandara, E.M. Robinson, and P.E.A. Carr. 2012. "In the 21st Century, "What is an Acceptable Response Rate?" Australian and New Zealand Journal of Public Health 36 (2): 106-108.

Peytchev, A. 2012. "Consequences of Survey Nonresponse." The Annals of the American Academy of Political and Social Science 645 (1): 88-111.

Smyth, J. D, D.A. Dillman, L.M. Christian, and A. O'Neill. "Using the Internet to Survey Small Towns and Communities: Limitations and Possibilities in the Early 21st Century." American Behavioral Scientist 53: 1423-1448.