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Everything but the kitchen sink and $1: An effort to get 19-25 year olds to respond to a survey

Technical Paper

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Abstract

Sequential mixed-mode surveys are a cost-effective way to collect data when only mailing addresses are available (Smyth et al., 2010) and may be particularly attractive for younger adults (Smyth, Olson, & Millar, 2014). While sequential mixed-mode surveys benefit from offering a different mode of response in follow-up invitations, whether to offer the paper questionnaire in a third or fourth mailing is not clear. Additionally, whether multiple options are used by participants to access a web survey has received little empirical attention.

In this study, we report results from the 2020 Nebraska Young Adult Alcohol Opinion Survey (n=15,018), a sequential mixed-mode push-to-web survey of 19-25 year olds in Nebraska. Sample members were provided with three ways of accessing the web survey in mailed invitation materials, including a shortened URL, a QR code, and texting a number to receive the web survey link via SMS. In addition, sample members were randomly assigned to either receive the paper survey in the third mailing or fourth mailing. We examine response rates, mode selection, web access choice, the demographic makeup of respondents, and survey costs overall and by timing of the paper survey. We find slightly higher response rates when sending a paper survey in the fourth mailing compared to the third mailing. Given the sequential web-to-mail design, most respondents participated by web; among web respondents, about 55% participated by the shortened URL, about 35% by the QR code, and about 10% by inbound text message. As expected, more web responses come in when the paper questionnaire is delayed, but there are no differences in web access choices across timing of the questionnaire. Younger adults and urban adults are more likely to participate by web than mail, indicating that the mail questionnaire helps reduce the risk of nonresponse bias. However, there are no clear sample composition differences for web respondents by access choice or across the experimental conditions. Costs are higher when the paper questionnaire is included in the third instead of the fourth mailing. For a population of younger adults, multiple access options for a web survey are used, and delaying a paper questionnaire until a fourth mailing appears to be cost effective.

Introduction and Background

Every two years, the Bureau of Sociological Research (BOSR) at the University of Nebraska-Lincoln (UNL) administers the Nebraska Young Adult Alcohol Opinion Survey (NYAAOS) for the Nebraska Department of Health and Human Services (DHHS), which asks 19-25 year olds their opinions on and use of alcohol and other substances. This technical report examines how these young adults accessed the web survey in which there were multiple access options in the 2020 administration of this study. It also analyzes an experiment embedded in this study in which a paper questionnaire was sent to lingering nonrespondents in either the third or fourth follow-up mailing. The experiment and analysis were motivated by decreasing response rates on this recurring survey.

Recruiting young adults to participate in a survey is difficult. Over time, to attempt to counteract declining response rates, the study team included multiple methods to engage with young adults, instill trust and perceptions of legitimacy of the survey, and induce feelings of reciprocity, per recommendations from social exchange theory (Dillman, Smyth, and Christian 2014). These methods largely included government sponsorship and prepaid incentives. For example, in 2013, the survey used Nebraska Office of Highway Safety outgoing envelopes, Department of Roads letterhead, and a $1 prepaid incentive, resulting in a 29.8% response rate. In 2016, one of the sponsors changed, so study information was mailed out using DHHS outgoing envelopes, Department of Roads letterhead, and a $1 prepaid incentive. This method had a slightly lower response rate of 24.3%, possibly due to the change in sponsorship or simply a reflection of decreasing response rates overall. In 2018, a shift was made from visible sponsorship from the Nebraska Office of Highway Safety and DHHS on the mailing materials because of mailing supply difficulties from the state agencies. In particular, DHHS had difficulty obtaining outgoing envelopes for external uses, including this survey; UNL BOSR materials were easily available. As such, the 2018 version of this survey used UNL BOSR outgoing envelopes, UNL BOSR letterhead, and a $1 prepaid incentive. This method resulted in a 16.7% response rate. In addition to the historical trend of declining response rates, it is possible this age group thought the UNL sponsor envelope was college recruitment and discarded it without opening the survey. When planning the 2020 administration, with another change in sponsor (the Office of Highway Safety and Department of Roads no longer sponsored the project), all of the past administrations were reviewed. Historically, consistent with prior research showing that government surveys have higher response rates than academic sponsors of surveys, survey administrations that used DHHS or other government branding (2013, 2016) had higher response rates than UNL BOSR branding (2018). Thus, the survey used DHHS envelopes and letterhead as a sponsor for 2020.

Another change in 2020 involved incentives. For the 2020 administration, the State of Nebraska no longer allowed surveys from the State of Nebraska to include prepaid incentives; thus, this study required other incentive designs to encourage participation. The State of Nebraska did allow a lottery incentive to be offered for completed surveys. Because of this constraint, the study team chose to offer a lottery incentive, offering a chance for sample members who completed the survey to win one of 20 $250 Amazon virtual gift cards.

Historically, the NYAAOS was administered as a mailed paper questionnaire alone. A web mode was used for the first time in 2020. Because the target population for this study was young adults who tend to be more tech savvy, the study team wanted sample members to have many options to respond. Thus, sample members had the option to respond by entering a tiny URL web link into a browser, scanning a

QR code, or texting a phone number that automatically replied with a clickable tiny URL. Nonrespondents also received one paper survey mailing, providing an option for sample members who did not have access to a computer or internet or did not want to complete over the web.

Thus, in 2020, sponsorship, incentive design, and web mode options were all different from prior administrations. The goal of this analysis is to examine what method was used by sample members among the web access choices in the 2020 administration. These choices were not experimentally tested – all sample members received all three web access choices – and thus our analysis is observational.

Additionally, because this survey was historically administered with mailed paper questionnaires only, the clients wanted to test whether offering a paper survey in the third or fourth (and final) mailing was more beneficial for sample outcomes. Typical sequential mixed-mode push-to-web methodologies recommend sending the paper survey in the final mailing to encourage a higher proportion of web responses, thus saving on survey printing and postage costs. Little research has been done on the timing for offering a paper questionnaire in a sequential mixed-mode web-to-mail design. Thus, sample members were randomly assigned to receive the paper questionnaire in either the third or fourth mailing to test this design decision experimentally.

Research Questions

We had five research questions for this analysis.

RQ1: Does the timing of offering the paper questionnaire affect response rates?

RQ2: Which mode do respondents select? Does this vary by experimental condition?

RQ3: Of those who responded through web, which web access choice do respondents choose? Does this vary by experimental condition?

RQ4: Are there differences in sample composition across modes of completion, web survey access choice, and paper questionnaire timing experimental condition?

RQ5: How did timing of response and survey costs vary by paper questionnaire condition?

Data and Methods

This study used the 2020 Nebraska Young Adult Alcohol Opinion Survey (NYAAOS). This statewide sequential mixed-mode web and mail survey is conducted by BOSR and sponsored by Nebraska DHHS. The questionnaire asks about alcohol and substance use attitude and behavior questions. NYAAOS uses a stratified sample of young adults aged 19 (Nebraska's age of majority) to 25, drawn from the Department of Motor Vehicles' registry of driver's licenses. In 2020, NYAAOS was administered to a sample of 15,018 young adults and achieved a 28.0% response rate (AAPOR RR2) overall.

All records received an initial letter inviting them to complete the survey via web with the three web access choices – tiny URL link, QR code, or phone number to text that replied with a clickable survey link. Participants who opted in to the texting option were sent a message from Twilio, a web-based

application that automated responses to the text message survey requests. Each link was unique, allowing tracking of the participation method.

This initial letter was followed by a postcard reminder to all sample members with the three web access choices again. Nonrespondents were sent two additional mailings after the postcard. At the beginning of the project, each sampled person was randomly assigned to receive the paper survey in either the third (n=7,510) or the fourth (n=7,508) mailing, if they still had not responded prior to these mailings. Those assigned to not receive a paper survey in that mailing still received a letter with the three web access choices (see Figure 1). Thus, our key independent variable for the experimental analyses is the experimental treatment for the timing of the paper survey.

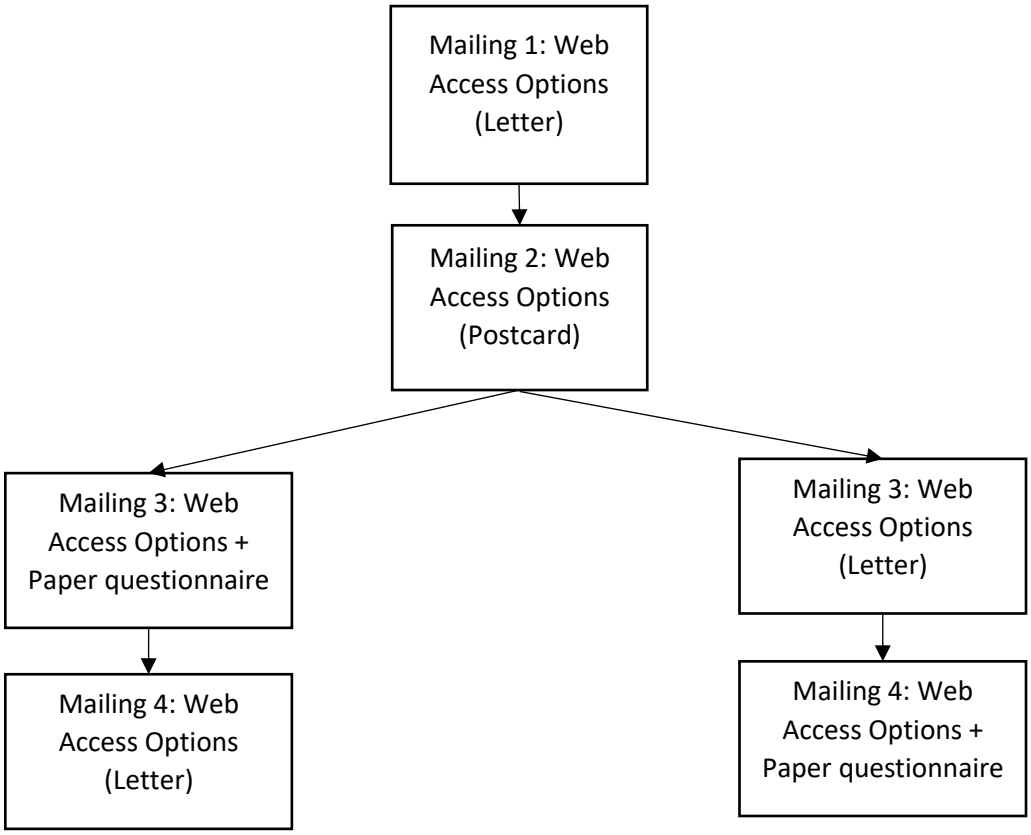

Figure 1: 2020 NYAAOS Study Design

We are interested in response rates across experimental conditions and in how the distributions of the above respondent characteristics vary across experimental conditions. We use a response indicator (1=respondent; 0= nonrespondent) as our first dependent variable. Unweighted response rates were calculated using the American Association for Public Opinion Research's (AAPOR) standard definition for Response Rate 2. Our second dependent variable is mode of completion (1=web, 0=mail). Our third dependent variable is web access choice among those who completed via web (1=link, 2=QR code, 3=texting). Our fourth group of dependent variables are the respondent demographic characteristics. We use unimputed respondent characteristics as listed in Table 4. Because the outcome variables are

categorical, we use chi-squared tests to test for statistical significance across experimental conditions. All analyses are unweighted.

We also examine speed of response, calculated as number of days after the first mailing until the completed survey was received. Finally, we look at costs overall, by condition, per complete, and by condition per complete. This was calculated using estimated costs of printing cover letters, postcards, and paper surveys, outgoing postage, return postage for completed mail surveys, outgoing and business reply envelope costs, and data entry costs.

Results

RQ1: Response Rates by Experimental Condition. Response rates are slightly higher when the paper questionnaire is included in the fourth mailing. Response rates for those who received the paper survey in the fourth mailing (28.8%) are1.5 pp higher (p=0.051) than when the paper questionnaire is included in the third mailing (27.3%) (Table 1).

Table 1. Response rates, Participation Mode, and Web Access Choice Overall and by Mailing Condition

	Percent	N respondents	Total	χ^2	*p*-value
AAPOR RR2					
Overall	28.0%	4121	14697	3.818	0.051
Paper in 3rd mailing	27.3%	2008	7351		
Paper in 4th mailing	28.8%	2113	7346		
Mode					
Overall					
Web	83.7	3448	4121		
Paper	16.3	673			
Paper in 3rd mailing					
Web	80.0	1606	2008	20.22	<.0001
Paper	20.0	402			
Paper in 4th mailing					
Web	85.3	1802	2113		
Paper	14.7	311			
Web Access Choice					
Overall					
Link	55.8%	1902	3448		
QR code	34.8%	1187			
Text	9.4%	319			
Paper in 3rd mailing					
Link	54.7	879	1606	2.21	0.33
QR code	36.1	580			
Text	9.2	147			
Paper in 4th mailing					
Link	56.8	1023	1802		
QR code	33.7	607			
Text	9.5	172			

RQ2: Mode of response. Most of the study participants responded by web (83.7%) instead of paper (16.3%) (Table 1). This pattern is consistent with other sequential mixed-mode web-to-mail surveys in which web survey options are offered before paper questionnaires. In this design, there were three contacts in which a web survey link was offered without a paper questionnaire compared to one contact in which a paper survey was offered along with the web login information.

Participation mode was affected by the timing of the mail questionnaire. As expected, there was a significantly ($p<.0001$) higher proportion of responses by paper when sample members received the paper survey option in the third mailing than in the fourth mailing. One-fifth (20%) of respondents participated by paper when it was sent in the third mailing, compared to only 14.7% when it was sent in the fourth mailing.

RQ3: Web access choice. Over half of the young adults who responded by web used the link (55.8%), followed by the QR code (34.8%) and only about one-tenth used the texting option (9.4%) (Table 2). There was no difference in web access choice by the timing of the paper questionnaire ($p=0.33$).

RQ4: Respondent composition. We examined respondent composition by age range, binary sex, binary racial category, education, and urbanicity. A higher proportion of younger adults (age 19 to 21) participated by web than mail and by text message or QR code than the shortened URL than older young adults (age 22 to 25). A higher proportion of mail respondents came from rural areas than for web respondents. There were no other significant differences in respondent characteristics across mode of completion by respondent characteristics, web access choices (link, QR code, or text), or experimental condition (Table 2).

Table 2. Unweighted Sample Composition Across Completion Mode, Web Access Choice, and Experimental Condition

	Mode of completion				Web access choice					Paper survey timing			
Variable	Web	Mail	X^2	*p*	Link	QR code	Text	X^2	*p*	Third mailing	Fourth mailing	X^2	*p*
Age			6.99	0.008				9.17	0.01			0.00	0.99
19 to 21	48.2	42.7			46.0	50.1	53.6			47.2	47.2		
22 to 25	51.8	57.3			54.0	49.9	46.4			52.8	25.8		
Sex			0.04	0.83				0.65	0.72			0.28	0.60
Male	42.2	42.6			42.1	42.9	40.4			42.6	41.8		
Female	57.8	57.4			57.9	57.1	59.6			57.4	58.2		
Race			2.62	0.11				0.69	0.71			0.00	0.98
Non-Hispanic White	83.7	86.1			83.9	83.7	82.1			84.1	84.1		
People of color	16.4	13.9			16.1	16.3	17.9			15.9	15.9		
Education			1.01	0.60				6.04	0.20			0.11	0.95
High school diploma/ GED or less	24.2	24.1			24.7	23.0	24.8			24.4	24.0		
Some college or Technical/ Associate/Junior college	52.6	54.3			51.2	53.8	56.3			52.6	54.1		
Bachelor's degree or higher	23.3	21.6			24.1	23.2	18.9			23.0	23.0		
Urbanicity			12.07	0.002				1.77	0.78			0.99	0.61
Urban	30.7	25.3			31.6	29.7	28.8			29.5	30.0		
Large rural	33.5	32.8			33.1	34.0	34.2			34.1	32.7		
Small rural	35.7	41.9			35.3	36.2	37.0			36.4	37.3		

RQ5. Paper survey timing and response. We see no significant difference in number of days to respond by web access choice (F=2.80, p=0.06, Table 3). However, pairwise comparisons show that the QR code responses came in about 1.5 days faster than the response using the shortened link (t=-2.29, p=0.02). Because the paper questionnaire was sent out late in the data collection period, the mean number of days for a paper questionnaire is significantly longer (by about 43 days) than any of the web responses (t=60.0, p<.0001). Those who received a paper questionnaire in the third mailing responded about 1.5 days faster than those who received the paper questionnaire in the fourth mailing, on average (p=0.0007).

Table 3. Number of days to respond by web access choice and paper mailing condition

	Number of days	F	*p*-value
Mode and Web access choice			
Paper	58.95		
Link	16.63	F=2.80	0.061
QR code	15.14		
Text	16.66		
Paper mailing condition		11.49	0.0007
Paper in 3rd mailing	23.01		
Paper in 4th mailing	25.44		

Paper survey timing and cost. Total costs were estimated using four categories: 1) printing, which included cover letters, postcards, and surveys, 2) postage for all outgoing mailings and return postage for paper survey, 3) data entry labor for returned paper surveys, and 4) supplies, which included outgoing and business reply envelopes. These costs were calculated using budget estimates but using actual counts of mail pieces sent. It excludes costs for the first and second (postcard) mailings, as these were the same across conditions and we are interested in the cost differences that occurred by presenting a paper survey option in the third compared to fourth mailing.

There was a higher cost overall and by complete when the paper survey was sent in the third mailing. About 300 more paper surveys were printed and mailed in the third mailing compared to the fourth mailing, which increased the cost overall. The cost per complete is also higher when paper surveys were sent in the third mailing, and this condition had a slightly lower number of completed surveys returned (Table 4).

Table 4. Costs by mailing condition, overall and per complete

	Cost overall	Paper surveys sent	Number of completes	Cost per complete
Paper in 3rd mailing	$38,790	6269	2040	$19.01
Paper in 4th mailing	$33,504	5979	2081	$16.10

Conclusion and Discussion

Young adults responded to this survey using all three web access options provided. Although the majority who responded via web used the shortened survey URL, many respondents used the QR code and inbound texting options. Response rates were lower when offering a paper survey option in the

third mailing compared to the fourth mailing, and more people completed by paper when offered in the third mailing, increasing costs. There were few significant differences in respondent composition across mode of completion, web access choice, or paper survey condition. Mail survey respondents were more likely to be older young adults and rural adults, but no other differences were found. Respondents participated more quickly when using the QR code, but only by 1.5 days over the shortened link. Respondents also participated about 1.5 days more quickly when the paper questionnaire was sent in the third mailing than in the fourth mailing. Finally, it was cheaper overall and per complete to send a paper survey in the final mailing compared to the third mailing.

For surveys of young adults, if a sequential mixed-mode survey is used, then delaying the paper questionnaire to the final fourth mailing appears to be a cost-effective decision. Additionally, including multiple access points – QR codes, URLs, and inbound texting – was useful for this study. Researchers should consider using these options; QR codes may be especially cost effective as QR codes to a single log-in screen are free and may help with this younger group. Although over 300 participants came in via inbound text message, it did not speed up data collection and did not clearly bring in a different group of participants (other than younger young adults). Of course, this option was not experimentally tested; future research should experimentally examine the effects of including an inbound texting option on participation decisions. In general population surveys, it is not clear that the costs for this service yield sufficient benefits for continued use.

Mixed-mode surveys continue to be effective, increasing response rates and recruiting different participants, even among a population considered to be particularly tech savvy. We found, consistent with past research, that mail questionnaires increased response rates among prior nonrespondents and brought in different respondents. Researchers should continue to evaluate the timing of paper questionnaires in general population sequential mixed-mode surveys to see if similar response rate increases and reduced costs hold outside a population of young adults.

References

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: the tailored design method*. New York: John Wiley & Sons.

Smyth, J. D., Dillman, D. A., Christian, L. M., & O'Neill, A. C. (2010). Using the Internet to survey small towns and communities: Limitations and possibilities in the early 21st century. *American Behavioral Scientist*, *53*(9), 1423-1448.