



Disability Data Brief

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Testing Web and Paper Modes on a National Survey of Disability Beneficiaries

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In 2023, Mathematica administered Round 8 of the National Beneficiary Survey using computer-assisted telephone interviewing (CATI) technology. To test alternative survey modes, we conducted a random assignment experiment using self-administered web and paper modes with sample members who did not respond to the telephone mode. The findings suggest that the web and paper modes increased the survey's completion rate, with a larger increase for the paper mode (by 4.6 percentage points). The largest impacts for the web mode were among people ages 18 to 29, women and those with cognitive or intellectual impairments. The largest impacts for the paper mode were among those ages 18 to 29 and those ages 50 and older. Future research might address potential mode effects; questionnaire design, including how to incorporate cognitive screeners in web and paper modes; and the optimal sequence of offering alternative modes before, alongside, or after outreach for a telephone survey. The experiment demonstrates that alternative survey modes can be effective in generating additional responses from a group of resolute nonrespondents.

Introduction

Round 8 of the National Beneficiary Survey (NBS) included an experiment in which Mathematica administered a shorter version of the NBS instrument via web and paper to nonresponding sample members. We administer the NBS by telephone, using mailed, hard copy outreach and reminders. For some cases that do not respond to telephone and mail outreach attempts, we can conduct field locating, but we cannot conduct field locating for all cases on the NBS because a portion of the sample is not geographically clustered. The experiment focused on a subset of the unclustered sample to assess whether offering alternative survey modes could boost completion rates in the absence of other tools, such as field locating. We designed the experiment to answer the following questions about the unclustered cases for which field locating was not possible:

- Does offering a shorter self-administered survey reduce overall nonresponse?
- Are web and paper modes effective at reducing nonresponse among specific subgroups?

About the NBS

The NBS, conducted for the Social Security Administration, collects data on a nationally representative sample of adults ages 18 to 65 receiving Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) because of a disability. Findings from this large-scale survey help policymakers better understand beneficiaries' characteristics and experiences with the Social Security disability programs. Mathematica has conducted the NBS since its inception in 2004.

The experiment required us to develop a substantially shorter version of the NBS instrument that took no more than 25 minutes to complete by web and could fit in a 10- to 15-page paper questionnaire booklet.¹ In consultation with SSA, we identified the questions to include in the abbreviated web and paper instruments and then modified the questions to be suitable for self-administration; we kept the question wording as close as possible to the wording of the telephone mode to maximize comparability and minimize bias across modes. To assess respondents' comprehension of the revised questions, we conducted cognitive tests of the web and paper instruments with members of the SSDI and SSI populations.

Methods

We fielded the unclustered cases of the Round 8 NBS using a specified outreach protocol. At the conclusion of the protocol, we randomly assigned unclustered nonrespondents to one of two treatment groups—web (N = 502) or paper (N = 500)—or a control group (N = 506). We mailed sample members assigned to the web condition an invitation to participate that included a shortened survey web address and a username and password. The mailing also included a QR code to access the survey website, coded with sample members' unique login. We mailed sample members assigned to the paper mode an invitation to participate by completing an enclosed questionnaire booklet and returning it using a prepaid envelope. We mailed one reminder letter to the treatment groups about two weeks after the initial mailing, as needed. The field period for the experiment varied by case but averaged about 12 weeks. We provided all materials and instruments in English and Spanish. Respondents received a \$30 gift card upon completing the survey (the same incentive used for the telephone mode). Sample members assigned to the control group did not receive any survey notifications, but these cases remained open to allow them to call into the telephone center to complete the interview.

The analyses include the following three components:

1. Verifying the comparability of the web, paper, and control groups
2. Estimating the impacts of the web and paper modes on the completion rate
3. Estimating the impacts of the web and paper modes on the completion rates of specific subgroups

Findings

Comparability of the web, paper, and control groups

We produced descriptive statistics of sample members' characteristics and conducted statistical tests to assess whether there were significant differences between the web, paper, and control group members and to verify the integrity of the random assignment process. The findings indicate both web and paper mode groups are similar to the control group in terms of age, sex, impairment, and program. For age, we tested age brackets (18 to 29, 30 to 39, 40 to 49, and 50 and older) and the mean age and found no differences with either. In the analysis, we controlled for any small differences between the groups by estimating regression-adjusted impacts.

¹ The full NBS instruments takes an average of 60 to 70 minutes to complete.

Impact of mode on the completion rate

To assess whether the web and paper modes increased survey completion, we compared the completion rates for these modes with the control group's completion rate. The first row of Table 1 presents the unadjusted completion rates and impacts for the alternative modes. The findings suggest that the web and paper modes increased the completion rate relative to the control group. The paper mode (6.4 percent completion rate) performed better than the web mode (4.6 percent completion rate). The completion rate for the control group was 1.98 percent.

The second row of Table 1 presents the regression-adjusted completion rates and impacts of the alternative modes. The findings indicate that, controlling for other characteristics, the web mode increased the completion rate by 2.6 percentage points (or about 130 percent of the control group mean), and the paper group increased the completion rate by 4.6 percentage points (or about 230 percent of the control group mean). A comparison of the adjusted completion rates for the web and paper modes (not shown) suggests that the 2 percentage-point higher completion rate for the paper mode is not statistically different from the rate for the web mode ($p = 0.15$).

Table 1. Adjusted and unadjusted completion rates and impact estimates

Completion rate	Control	Web mode			Paper mode		
	Mean (%)	Mean (%)	Impact (pp)	<i>p</i> -value	Mean (%)	Impact (pp)	<i>p</i> -value
Unadjusted	1.98	4.58	2.60	0.020*	6.40	4.42	0.000*
Regression adjusted	1.98	4.61	2.63	0.020*	6.55	4.57	0.013*

Note: *p*-values are for two-sided t-tests measuring the statistical significance of the difference in completion rates between the control group and the two experimental modes. Bolded text with an asterisk indicates statistical significance at the $p < 0.10$ level.

pp = percentage points.

Impact of mode on subgroup completion rates

To assess whether the web and paper modes increased the completion rates of key subgroups, we compared the regression-adjusted rates by age, sex, impairment type, and program. The regression-adjusted estimates suggest that, other characteristics held constant, the web mode had the largest positive impacts on the completion rates of young adults ages 18 to 29 (6.1 percentage points) and on people with cognitive and intellectual disabilities (7.4 percentage points) (Table 2). It had smaller (3 to 5 percentage points), statistically significant impacts on the completion rates of people ages 40 to 49, women, and people receiving SSI only. The paper mode also had a large positive impact on the completion rate of young adults ages 18 to 29 (7.3 percentage points) as well as the completion rate of people with impairments other than mental health, cognitive, or intellectual disabilities (7.7 percentage points). The paper mode had smaller (3 to 6 percentage points), statistically significant impacts on the completion rates of people age 50 and older, both sexes, and those receiving either SSI only or SSDI only.

Table 2. Regression-adjusted completion rates, by subgroup

Subgroup	Control	Web mode		Paper mode	
	Mean completion rate (%)	Impact (pp)	<i>p</i> -value of impact	Impact (pp)	<i>p</i> -value of impact
All	1.98	2.63	0.020*	4.57	0.013*
Age					
18–29	1.43	6.11	0.006*	7.34	0.003*
30–39	3.45	-1.76	0.428	2.22	0.371
40–49	0.00	4.74	0.053*	2.77	0.314
50 and older	2.78	1.87	0.385	5.58	0.011*
Sex					
Male	2.26	1.22	0.442	4.89	0.005*
Female	1.67	4.08	0.011*	4.20	0.023*
Impairment					
Mental health	2.69	1.39	0.459	1.16	0.562
Cognitive or intellectual	1.14	7.36	0.005*	4.54	0.134
Other impairment	1.72	1.75	0.291	7.70	0.000*
Program					
SSDI only	2.21	1.66	0.321	4.65	0.014*
SSI only	1.70	3.83	0.048*	4.95	0.018*
SSDI and SSI	1.94	2.81	0.257	3.67	0.200

Note: Bold type with an asterisk indicates statistical significance at the $p < 0.10$ level.

pp = percentage points; SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

Discussion

The addition of web and paper modes increased the completion rates of nonresponding sample members, and the increases are statistically significant. The paper mode increased the overall completion rate by about 2 percentage points more than the web mode, but the difference is not statistically significant.

In prior rounds of the NBS, response rates were lower for some subgroups. For example, the Round 7 NBS response rates were lower for sample members ages 18 to 49 compared with older beneficiaries and for males relative to females (Callahan et al. 2021). We found similar patterns for these subgroups in earlier data collection rounds. The findings of the web and paper experiment suggest that offering alternative modes promotes response among the youngest age group, those ages 18 to 29; both modes substantially increased completion rates for these nonrespondents (by 6 to 7 percentage points). With respect to differences between males and females, the web mode increased completion rates among women, and the paper mode increased completion rates for men and women by a similar amount (4.9 and 4.2 percentage points, respectively). The findings suggest that offering either mode in addition to the telephone mode might reduce the gap in completion rates across age groups, and offering a paper mode can reduce the gap by sex.

Context

Some context is helpful to frame the overall findings. We did not use text or email outreach to conduct the NBS, including during the experiment. Not conducting outreach by text or email may have negatively affected the web mode completion rate by making it less convenient to complete the survey online. To complete the survey online, web respondents had to receive a hard copy mailing, open and read the mailing, and then visit a website on a phone or computer by entering a shortened URL or scanning a QR code. These steps added complexity compared with sending a text or email message with a clickable link.

Another factor that might have affected the findings is the shorter survey administration time associated with the experimental modes (about 25 minutes). The shorter administration time may have increased the survey completion rates compared with the telephone survey, which took 60 to 70 minutes on average to complete. The average administration times were noted in all outreach materials used for all modes. We cannot separate the effects of the alternative modes from the potential effects of a shorter administration time in comparing the completion rates with the telephone-only control group.

Suggestions for future work

We offer three areas for further exploration. First, it is possible that the design and administration of the experiment introduced mode effects (that is, differences in the responses to the web and paper modes, or differences in item nonresponse) (Greene et al. 2008, Dillman et al. 2009). Understanding the scope and impact of any mode effects will inform the viability of these alternative data collection methods. Respondent characteristics might also vary across the three modes. Understanding these differences is important, especially any interaction they have with mode effects, so that coverage error and nonresponse bias are appropriately addressed in weights. Second, we suggest web and paper survey design research in areas that address special NBS situations, such as administering a cognitive screener to sample members or screening for and documenting information about cases that completed the survey via a proxy. All NBS sample cases go through a cognitive screener before the telephone interview, and nearly 10 percent of interviews for the sample relevant to the experiment were conducted via proxy in Round 8. These situations are not anomalies in the NBS, but they are not straightforward to reproduce in web or paper modes. Third, the experiment tested alternative survey modes among sample members who did not complete the survey during a lengthy telephone outreach process. Testing alternative survey modes before or alongside the telephone mode will likely yield different results and inform the ideal sequencing of alternative modes.

References

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