

IN-BRIEF NOTES

A Second Chance at Response: A Multimode Reinterview Analysis Using Data from the National Survey on Drug Use and Health

Peter Frechtel¹, Lauren Klein Warren¹, Sara Russell¹, Taylor Lewis¹, Douglas Richesson², Tenecia Smith², Jennifer Hoenig²

¹ RTI International, ² Substance Abuse and Mental Health Services Administration

Keywords: mode effect, measurement error, reinterview

<https://doi.org/10.29115/SP-2024-0012>

Survey Practice

Vol. 17, 2024

Traditionally administered in-person, restrictions imposed by the COVID-19 pandemic prompted the National Survey on Drug Use and Health to transition to a multimode survey that offers a self-administered web option prior to in-person data collection. A relatively small portion of respondents who began the survey on the web but broke off prior to completing were later readministered the survey (from the beginning) in-person. We refer to these as "second chance" respondents. The aim of this in-brief note is to report the individual-level mode discrepancies these second chance respondents exhibited with respect to lifetime use of cigarettes, alcohol, and marijuana. In addition to higher-than-anticipated discrepancy rates overall, we found directional differences that run contrary to what would be expected from the literature on survey mode effects. Second chance respondents are more than 15 percentage points more likely to report ever smoking cigarettes or using marijuana than web-only respondents.

Since 1971, the National Survey on Drug Use and Health (NSDUH), previously known as the National Household Survey on Drug Abuse, has collected critical information regarding tobacco, alcohol, and drug use, amongst a myriad of other health indicators. Approximately 70,000 completes are obtained annually in the 50 United States and the District of Columbia. In the two decades prior to 2020, NSDUH was administered exclusively in-person, using a combination of computer-assisted personal interviewing (CAPI) and audio computer-assisted self-interviewing (ACASI). Following challenges brought on by the COVID-19 pandemic, NSDUH transitioned to a multimode data collection protocol at the beginning of 2021 in which individuals are first offered the opportunity to respond by web. For the bulk of sample dwelling units that do not complete the web screener or selected interviews by web, interviewers visit these dwelling units and complete household screening using a tablet and conduct any selected interviews via CAPI and ACASI. The new self-administered web mode has quickly become a popular way to respond to the survey: during the first two years of the multimode design, a total of 68,368 (48.4%) of the 141,219 completes were obtained by web.

NSDUH's conversion to a multimode survey has led to concern about whether respondents might be exhibiting measurement error attributable to the survey mode (Groves 1989). That is, certain individuals may be inclined

to answer the same question differently if asked in-person by an interviewer than in a self-administered, web-based setting. For example, self-administered data collection modes have been shown to reduce social desirability biases relative to interviewer-administered modes (Tourangeau and Smith 1996). Pertinent to NSDUH's key outcome variables, prior research has shown self-administration yields higher reports of alcohol consumption (Aquilino 1994) and illicit drug use (Schober et al. 1992) than an interviewer-administered mode.

Methods to quantify measurement error attributable to the survey mode include fielding concurrent surveys on separate samples (e.g., Link et al. 2008), randomizing the mode offered for a single sample (e.g., Chang and Krosnick 2010), or advanced statistical approaches (e.g., Vannieuwenhuyze, Loosveldt, and Molenberghs 2010; Ollerenshaw 2023). Another method is to reinterview respondents in two (or more) modes at two separate points in time. Reinterviews have long been utilized to assess the simple response variance component of measurement error (e.g., Hansen, Hurwitz, and Pritzker 1964; Biemer and Wiesen 2002; Harrison et al. 2007), but they can also be used to assess systematic differences that may be linked to the mode of survey administration. We take that approach here by evaluating reinterview data on a (nonrandom) subset of 776 NSDUH respondents between 2021 and 2022 who began the survey in a self-administered web setting, broke off prior to completion, and then later completed the survey during the in-person CAPI follow-up phase of the quarterly data collection cycle. The in-person reinterview started the survey from the beginning, enabling the ability to compare individual-level responses from both modes.

We focus on three binary yes/no outcome variables: whether or not the respondent had (1) ever smoked cigarettes; (2) ever consumed alcohol; or (3) ever used marijuana. These indicator variables are based on source questions that occur early in the questionnaire and have high response rates. They are also minimally time-dependent, but note that we removed one respondent whose data indicated initiating one of these three behaviors for the first time in between the two survey administrations.

Results presented in [Table 1](#) show how the three outcome variables have inconsistency percentages ranging from 14.1% to 17.8%. By comparison, a reinterview analysis of a random sample of NSDUH 2006 respondents (both in CAPI mode) found inconsistency percentages for these three outcomes to range from 3.2% to 4.2% (SAMHSA 2010). Perhaps even more surprising is that the second chance respondents are far more likely to change their answer from “no” to “yes” in the presence of an interviewer than they are to change their answer from “yes” to “no.” For instance, while 14.0% of individuals initially saying they had used marijuana claimed never to have used the drug when asked by an interviewer, 22.4% of respondents who initially said

Table 1. Consistency Statistics of Second Chance Respondents ($n = 776$) in NSDUH 2021 and 2022.

Outcome Variable	Percent of Respondents with an Inconsistent Response between Web and CAPI	Percent of Respondents Answer Yes in Web but No in CAPI	Percent of Respondents Answer No in Web but Yes in CAPI
Ever Smoked Cigarettes	16.5	10.1	24.0
Ever Consumed Alcohol	14.1	9.4	35.6
Ever Used Marijuana	17.8	14.0	22.4

Table 2. Unweighted Outcome Percentages by Response Mode in NSDUH 2021 and 2022.

Outcome Variable	Second Chance Respondents	Web-Only Respondents	CAPI-Only Respondents	All Respondents
Ever Smoked Cigarettes	65.3	48.0	53.1	51.8
Ever Consumed Alcohol	84.1	81.4	77.1	78.5
Ever Used Marijuana	61.8	45.1	46.8	46.5

“no” on the web said “yes” during the in-person interview. This finding is somewhat puzzling, as it seems at odds with the notion that abstaining from these three behaviors would be more socially desirable.

A natural follow-up question is whether the second chance respondents provide substantively different data than other web respondents. If so, this would help justify the additional effort expended to convert these breakoff cases into completes. To help answer this question, [Table 2](#) contrasts unweighted percentages of the three outcomes for second chance respondents against CAPI-only, Web-only, and all respondents. As suggested by analyses in [Table 1](#), in aggregate, second chance respondents are more likely to have engaged in these behaviors. They are over 15 percentage points more likely than web-only respondents to have ever smoked cigarettes or used marijuana, and roughly 3 percentage points more likely to have consumed alcohol.

Because our analysis data set was nonrandom, the result of a natural experiment occurring in response to data collection challenges introduced by the COVID-19 pandemic, we can only speculate on the reasons for these findings. One reason may be that the stigma of cigarette, alcohol, and marijuana use in the United States is diminishing over time, muting the effects previously found in studies such as Aquilino (1994) and Schober et al. (1992). Granted, it is also possible that usage outcomes for other substances would exhibit the expected directional change (lower reports in CAPI) than the three examined here. Future research could examine those outcomes, as well as (re)analyze outcomes over time as additional second chance respondents accumulate under the new NSDUH multimode design. Also, the order of modes offered could be influencing results. A randomized

sequential mode experiment, such as the one described in McMorris et al. (2009), could be pursued in the future to quantify the impact of mode order. Lastly, models could be fit to assess the relationships between sociodemographic variables (or other survey outcomes) and the likelihood of being a second chance respondent and/or responding inconsistently.

Submitted: June 11, 2024 EST, Accepted: July 26, 2024 EST

REFERENCES

- Aquilino, William. 1994. "Interview Mode Effects in Surveys of Drug and Alcohol Use: A Field Experiment." *Public Opinion Quarterly* 58 (2): 210–40. <https://doi.org/10.1086/269419>.
- Biemer, Paul, and Christopher Wiesen. 2002. "Measurement Error Evaluation of Self-Reported Drug Use: A Latent Class Analysis of the US National Household Survey on Drug Abuse." *Journal of the Royal Statistical Society Series A* 165 (1): 97–119. <https://doi.org/10.1111/1467-985X.00612>.
- Chang, Linchiat, and Jon Krosnick. 2010. "Comparing Oral Interviewing with Self-Administered Computerized Questionnaires: An Experiment." *Public Opinion Quarterly* 74 (1): 154–67. <https://doi.org/10.1093/poq/nfp090>.
- Groves, Robert. 1989. *Survey Errors and Survey Costs*. New York, NY: Wiley. <https://doi.org/10.1002/0471725277>.
- Hansen, Morris, William Hurwitz, and Leon Pritzker. 1964. "The Estimation and Interpretation of Gross Differences and the Simple Response Variance." In *Contributions to Statistics (Presented to P.C. Mahalanobis on the Occasion of His 70th Birthday)*, edited by C.R. Rao. Calcutta, India: Pergamon Press. <https://doi.org/10.1016/B978-1-4832-3160-0.50013-0>.
- Harrison, Lana Debra, Steven Martin, Tihomir Enev, and Deborah Harrington. 2007. "Comparing Drug Testing and Self-Report of Drug Use Among Youths and Young Adults in the General Population." DHHS Publication No. SMA 07-4249, Methodology Series M-7. Rockville, MD: Substance Abuse and Mental Health Services Administration. <https://doi.org/10.1037/e637122007-001>.
- Link, Michael, Michael Battaglia, Martin Frankel, Larry Osborn, and Ali Mokdad. 2008. "Comparison of Address-Based Sampling (ABS) Versus Random-Digit Dialing (RDD) for General Population Surveys." *Public Opinion Quarterly* 72 (1): 6–27. <https://doi.org/10.1093/poq/nfn003>.
- McMorris, Barbara, Renee Petrie, Richard Catalano, Charles Fleming, Kevin Haggerty, and Robert Abbott. 2009. "Use of Web and In-Person Survey Modes to Gather Data from Young Adults on Sex and Drug Use: An Evaluation of Cost, Time, and Survey Error Based On A Randomized Mixed-Mode Design." *Evaluation Review* 33 (2): 138–58. <https://doi.org/10.1177/0193841x08326463>.
- Ollerenshaw, Trent. 2023. "A Difference-in-Differences Approach for Estimating Survey Mode Effects." American Political Science Association Working Paper. <https://doi.org/10.33774/apsa-2023-p5r6j-v2>.
- Schober, Susan, M. Fe Caces, Michael Pergamit, and Laura Branden. 1992. "Effects of Mode of Administration on Reporting of Drug Use in the National Longitudinal Survey." In *Survey Measurement of Drug Use: Methodological Studies*, edited by C. F. Turner, J. T. Lessler, and J. C. Gfroerer, 267–76. Rockville, MD: National Institute on Drug Abuse.
- Substance Abuse and Mental Health Services Administration. 2010. "Reliability of Key Measures in the National Survey on Drug Use and Health." DHHS Publication No. SMA 09-4425, Methodology Series M-8. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Tourangeau, Roger, and Tom W. Smith. 1996. "Asking Sensitive Questions - The Impact of Data Collection Mode, Question Format, and Question Context." *Public Opinion Quarterly* 60 (2): 275–304. <https://doi.org/10.1086/297751>.

Vannieuwenhuyze, Jorre, Geert Loosveldt, and Geert Molenberghs. 2010. "A Method for Evaluating Mode Effects in Mixed-Mode Surveys." *Public Opinion Quarterly* 74 (5): 1027–45. <https://doi.org/10.1093/poq/nfq059>.