

Nonresponse Follow-up Impact on AmeriSpeak Panel Sample Composition and Representativeness

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Executive Summary

To create NORC's probability-based AmeriSpeak Panel®, the recruitment of households involves an extensive two-stage process: (i) a less expensive initial recruitment using USPS mailings, telephone phone contact, and modest incentives and (ii) a more expensive non-response follow-up (NRFU) using FedEx mailings including enhanced respondents incentives, and in-person, face-to-face recruitment by professional field interviewers. The face-to-face NRFU campaign is instrumental for producing a credible AAPOR response rate for the panel, boosting the panel recruitment response rate by a factor of 5.8 (AAPOR RR No. 3, weighted). Additionally, more than half (51.4%) of the 2014-2017 panelists were recruited during the NRFU recruitment stage.

This paper examines the impact of face-to-face nonresponse follow-up on the sample representativeness of the overall AmeriSpeak Panel and specific AmeriSpeak surveys.

The first section of the paper examines the sample composition of the 2014-2017 AmeriSpeak recruited panel households to assess the extent to which the NRFU recruitment program improves overall panel representativeness. The second section investigates samples from specific AmeriSpeak surveys to understand if and how much the NRFU recruitment program improves sample representativeness and quality for each of the study.

The overall panel and study specific sample composition analyses illustrate that NRFU recruitment improves the representativeness of the AmeriSpeak Panel sample for certain hard-to-reach segments of the population underrepresented by recruitment relying only mail and phone. The face-to-face NRFU campaign improves representation for segments typically more reluctant to respond to surveys: younger adults age 18 to 34, Hispanics, and individuals without a high school degree or with a high school or equivalent degree (no college).

For specific surveys conducted on AmeriSpeak, the face-to-face NRFU recruitment also improves the studies' sample representativeness for lower-income, non-internet, and renter households. The NRFU recruitment also improved sample representativeness for persons who are never married or who are living with a partner and those who are self-employed.

A second white paper (by Bilgen et al. 2018), focused on NRFU's impact on substantive survey estimates, is available on the research page of amerispeak.norc.org.

Introduction

Over the last few decades, the decline in response rates both nationally and globally has become a serious concern for survey researchers (Groves et al., 2009). There are three main reasons for nonresponse: 1) non-contacts (households/respondents that cannot be contacted); 2) refusals (a.k.a. lack of respondent cooperation; households/respondents that refuse to complete the survey); 3) other reasons (inability to accommodate the language or disability of respondents; administrative and technical issues) (Callegaro, Manfreda, and Vehovar, 2015; Groves et al., 2009; Lavrakas, 2008; Singer, 2006). Thus studies may not obtain responses from sample units during the recruitment stage and may miss crucial sections of the study target population. The failure to obtain responses from a key section of the sample frame causes the issue of nonresponse error (Groves, 1989; Groves and Lyberg, 2010). Nonresponse error causes both an increase in variance due to the decrease in the effective sample size and increase in bias if the respondents differ with respect to their demographics and variables of interest than nonrespondents. The consequence of nonresponse error is that we obtain less accurate estimates in our studies (Groves, 1989). This article mainly focuses on reducing the error due to respondent noncooperation/refusals. While the majority of refusals are encountered at the first interview, additional refusals are also observed within subsequent contacts. Although some households that refuse the initial interview cooperate in subsequent interviews, the net effect is one of increasing rates of refusal.

The AmeriSpeak Panel is unique among other commercially available probability-based research panels in its use in-person, face-to-face recruitment. For subsamples of households not responding during the initial recruitment stage (in which households are contacted via mail and phone), NORC sends FedEx mailings with enhanced monetary incentive, and conducts in-person face-to-face interviews. Altogether, these activities constitute the NRFU (non-response follow-up) program that is implemented to improve the AAPOR response rate, sample representativeness, and accuracy of the study estimates.

Specifically, this paper presents the results of our efforts to improve sample representation through the NRFU program.¹ Accordingly, the research questions examined in this article are as follows:

- *Does the NRFU program improve overall panel sample composition? If so, how does NRFU improve the sample panel composition based on benchmark statistics?*
- *Does the NRFU program improve panel sample composition for AmeriSpeak surveys of the general U.S. population and of target populations? If so, how does NRFU improve the sample composition for each study based on benchmark statistics?*

AmeriSpeak Panel Recruitment Methodology

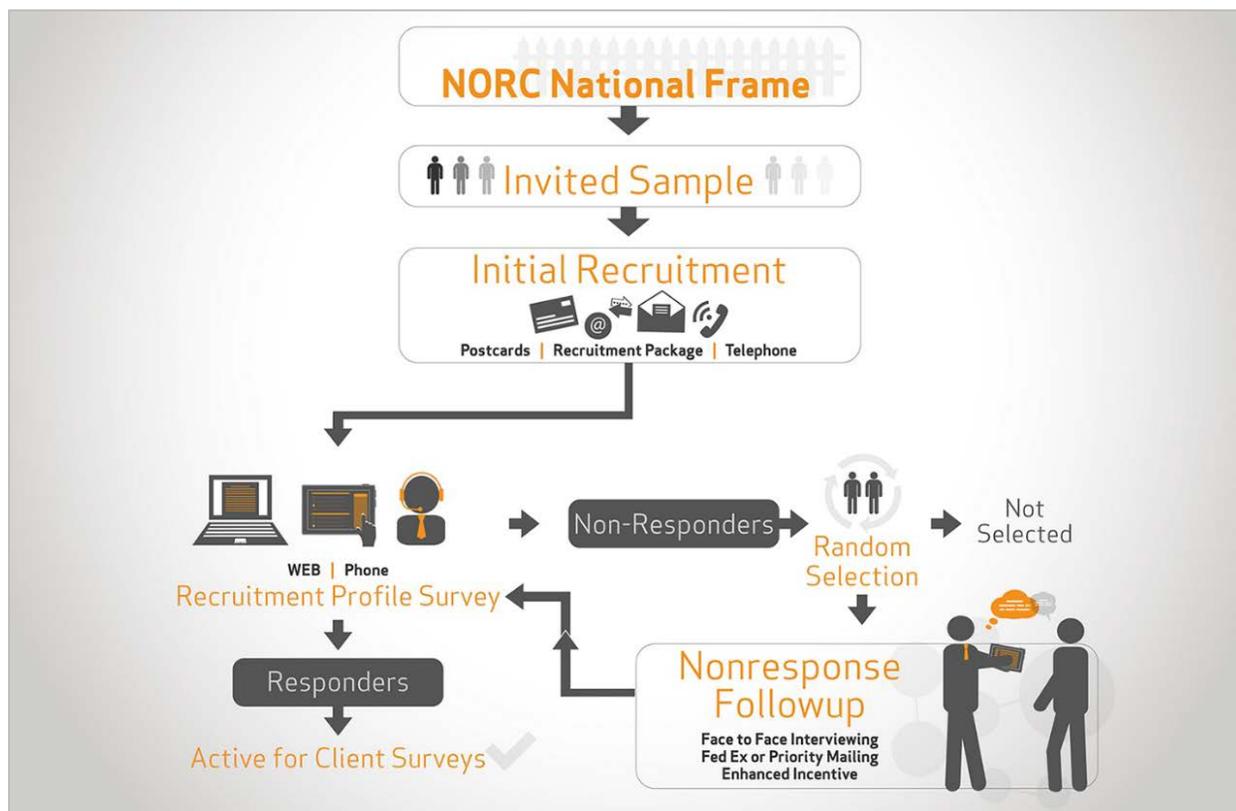
The AmeriSpeak Panel is managed by NORC at the University of Chicago and designed to obtain a representative sample of the general U.S. household population.² AmeriSpeak studies include cross-sectional and longitudinal surveys on a variety of topics across disciplines for government, not for profit, foundation, academic, and commercial clients. The panel utilizes a probability-based sampling methodology in which U.S. households are sampled with a known, non-zero probability of selection from

¹ A second white paper (by Bilgen et al. 2018) that examines NRFU's impact on accuracy of survey estimates, is available on the research page of [amerispeak.norc.org](https://www.amerispeak.norc.org).

² For information, see AmeriSpeak Technical Overview that is also available on the research page of [amerispeak.norc.org](https://www.amerispeak.norc.org).

the NORC National Frame.³ The panel’s sampling units are defined based on U.S. Census Bureau’s definitions of geographic areas. In 2017, the AmeriSpeak Panel included approximately 26,000 households. The panel also provides sample support for additional segments of the population through AmeriSpeak Latino, AmeriSpeak Teen, and AmeriSpeak Young Adult Panels.⁴

Figure 1: AmeriSpeak Recruitment Methodology



The panel employs a two-stage recruitment strategy as illustrated in Figure 1. During the initial stage, Census tracts and block groups are stratified based on age and race/ethnicity and tracts and block groups with higher concentrations of young adults and/or minorities are oversampled. At the initial recruitment, sample members are contacted via a series of mailings which provide information about the panel and an invitation to join AmeriSpeak either online at AmeriSpeak.org or by telephone using the toll-free number provided within the mailings. Recruitment materials and a questionnaire are provided both in English and Spanish. Mailed recruitment materials include an oversized pre-notification postcard, followed by a USPS recruitment package (containing a cover letter, a summary of the privacy policy, FAQs, and a study brochure), and two follow-up postcards. Additionally, during initial recruitment, sample members whose address was successfully matched to a telephone number are called by NORC’s telephone interviewers and administered the recruitment survey using computer-assisted telephone interviews (CATI). Before

³ See <http://www.norc.org/Research/Projects/Pages/2010-national-sample-frame.aspx>

⁴ AmeriSpeak Young Adult Panel includes an oversample of young African American, Hispanic, and Asian adults ages 18-34. More information on Technical Overview of AmeriSpeak Panel can be found at: <https://amerispeak.norc.org/research/>

becoming eligible for AmeriSpeak surveys, all respondents must complete a 10-15 minute recruitment survey and agree to the AmeriSpeak terms and conditions.

The second stage of panel recruitment, nonresponse follow-up (NRFU), targets a stratified random sub-sample of the non-responders from the initial recruitment. For NRFU, a stratified random sub-sample of the non-responders from the initial recruitment is selected using consumer vendor data and stratification variables from the initial recruitment stage. NRFU strata containing groups less likely to respond are sampled at a higher rate in order to increase the proportion of young adults, non-Hispanic African Americans, and Hispanics recruited in the panel. Units sampled for the non-response follow-up are sent a new recruitment invitation by Federal Express that includes an enhanced incentive offer. Subsequent to the Federal Express mailing, nonrespondents are contacted by NORC field interviewers who make personal, face-to-face visits to the respondents’ homes to personalize recruitment and encourage panel enrollment. NORC field interviewers administer the recruitment survey in-person using computer-assisted personal interviews (CAPI) or encourage the sampled members to register online at AmeriSpeak.org or via the toll-free AmeriSpeak telephone number.

Data and Methods

This paper examines the impact of nonresponse follow-up on overall panel composition and representativeness as well as sample compositions from four AmeriSpeak surveys examining policy issues and political attitudes within the U.S. The surveys were selected based on the variation of the study topics, the types of items/measures (such as sensitive/non-sensitive; attitudinal/behavioral), and the study target populations. Each survey examines a different topic ranging from planning for retirement, the “justice gap” in the U.S., issues regarding gun policies, and advancement and measurement of scientific literacy in the United States. While two of the four selected surveys target specific populations within the U.S. (such as low-income households and working adults), the other two target the general U.S. population. Table 1 below summarizes the key features of the surveys and sample specifics for each study.

Table 1: Summary of Examined Studies from the AmeriSpeak Panel

Study Name	<i>Justice Gap Survey</i>	<i>AARP Retirement Study</i>	<i>Gun Control Survey</i>	<i>NASA Scientific Study</i>
Sponsor	Legal Services Corporation	AARP	Johns Hopkins University	Dr. Jon D. Miller, ISR, U of Michigan
Target Population	Low-income households – adults who indicated they earned 125% of the federal poverty level or less for their household size	Working adults age 18-64 employed in private sector industries, excluding government and public sector work	General U.S. population – artificially high completion rates (frequent responders to our surveys) & oversample of likely gun owner panelists	General U.S. population
Examined Sample Size	10,480	9,606	2,817	5,518
Initial Recruits	5,983	5,034	1,477	2,690
NRFU Recruits	4,497	4,572	1,340	2,828
% NRFU Cases	42.91%	47.60%	47.57%	51.25%

Analyses and Results

AmeriSpeak Panel: Response Rates, Panel Composition and Representativeness

Based on the 2014-2017 AmeriSpeak panel response rate calculations, we found that while weighted household response rate via initial recruitment is 5.8% (AAPOR RR3); weighted household response rate via NRFU recruitment is 27.9% (AAPOR RR3).⁵ Accordingly, the overall weighted panel household response rate increases to 33.7% (AAPOR RR3) after the NRFU recruitment stage. In other words, NRFU boosts AmeriSpeak panel response rate by a factor of 5.8.

While response rates are an indicator of the panel quality, they provide only the tip of the iceberg when it comes to panel representation and sample quality (Biemer and Lyberg, 2003; Callegaro et al, 2014). So to better understand how NRFU impacted panel composition, we then compared overall AmeriSpeak panel composition as well as the composition of the panelists enrolled during the initial and NRFU recruitment stages with Census's American Community Survey (ACS) benchmark distributions. Table 2 provides unweighted demographic distribution of the first recruited panelist in a household (HH) among all recruits by initial and NRFU recruitment for the 2014-2017 AmeriSpeak Panel.

Based on the results illustrated in Table 2, we observe the following:

- **More than half (51.4%) of the panelists were recruited during the NRFU recruitment stage** since the start of the AmeriSpeak Panel (2014-2017).
- **Initial recruitment tends to under-represent younger panelists (age 18-34).** NRFU recruitment corrects this bias by bringing in more panelists in this age group: When compared to the 2016 ACS benchmark, the addition of the NRFU recruits to the initial recruits decreased the absolute error from 7.1% to 3.5% and from 3.4% to 0.2%, respectively among panelists age 18-24 and age 25-34.
- **Initial recruitment tends to over-represent older panelists (age 55+).** NRFU recruitment reduces **this over-representation.** When compared to the 2016 ACS benchmark, the addition of the NRFU panelists to the initial recruits decreased the absolute error from 4.5% to 2.2% and from 6.9% to 1.0% respectively among panelists age 55-64 and 65 years or older.
- **NRFU recruitment brings in more Hispanic minorities.** The addition of NRFU panelists increased Hispanic participation in the panel by 6.5 percentage points (from 17.0% to 23.5%). When compared to the 2016 ACS benchmark, the addition of NRFU panelists to the initial recruits decreased absolute error for the Hispanic portion from 3.9% to 2.6%. During NRFU recruitment, groups that are less likely to respond are sampled at a higher rate in order to increase the proportion. Hence, by design, AmeriSpeak over-represents some segments of the population (including Hispanics) that are usually under-represented in order to recruit hard-to-reach groups. Accordingly, our results reflect the Hispanic oversample during the NRFU recruitment. These same hard-to-reach groups are under-sampled when appropriate for AmeriSpeak client surveys.

⁵ Response rate calculations are based on the standards of the American Association for Public Opinion Research. http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf

Table 2: Unweighted demographic distribution of the first recruited panelist in a household (HH) among all recruits by initial and NRFU recruitment for 2014-2017 AmeriSpeak Panel, Comparative Benchmark⁶

	Benchmark	Initial Recruits		NRFU Recruits		All Recruits		Absolute Error (Deviation from 2016 ACS)	
	2016 ACS	Count	%	Count	%	Count	%	Initial	All
Number of Recruited HHs	--	12,617	100.0%	13,339	100.0%	25,956	100.0%	--	--
Age									
18-24	12.6%	691	5.5%	1,683	12.6%	2,374	9.1%	7.1%	3.5%
25-34	17.7%	1,805	14.3%	2,841	21.3%	4,646	17.9%	3.4%	0.2%
35-44	16.5%	1,936	15.3%	2,372	17.8%	4,308	16.6%	1.2%	0.1%
45-54	17.4%	2,243	17.8%	2,276	17.1%	4,519	17.4%	0.4%	0.0%
55-64	16.5%	2,646	21.0%	2,210	16.6%	4,856	18.7%	4.5%	2.2%
65+	19.2%	3,296	26.1%	1,957	14.7%	5,253	20.2%	6.9%	1.0%
Race/Hispanic* Ethnicity									
Non-Hispanic White /All Other	61.5%	8,004	63.4%	6,780	50.8%	14,784	57.0%	1.9%	4.5%
Non-Hispanic Black	12.3%	2,150	17.0%	2,271	17.0%	4,421	17.0%	4.7%	4.7%
Hispanic	20.9%	2,149	17.0%	3,949	29.6%	6,098	23.5%	3.9%	2.6%
Non-Hispanic Asian	5.3%	314	2.5%	339	2.5%	653	2.5%	2.8%	2.8%
Education									
Some high school	12.9%	1,122	8.9%	2,102	15.8%	3,224	12.4%	4.0%	0.5%
High school graduate	27.9%	2,467	19.6%	3,198	24.0%	5,665	21.8%	8.3%	6.1%
Some college or above	59.1%	9,028	71.6%	8,039	60.3%	17,067	65.8%	12.5%	6.7%
Gender									
Male	49.2%	4,936	39.1%	5,266	39.5%	10,202	39.3%	10.1%	9.9%
Female	50.8%	7,681	60.9%	8,073	60.5%	15,754	60.7%	10.1%	9.9%

* AmeriSpeak bilingual recruitment began in 2016. After 2016, the Hispanic category was divided into two groups: Spanish speaking and English speaking based on their reported language proficiency.

- **A comparison with initial recruitment shows that NRFU recruitment brings in similar proportions of Non-Hispanic Black and Asian minorities.** Thus the absolute error rates for NRFU recruitment for these groups have not changed.
- **Initial recruitment under-represents panelists with some high school education.** NRFU recruitment corrects this bias by bringing in more panelists with some high school education: When compared to the 2016 ACS benchmark, the addition of the NRFU recruits to the initial recruits

⁶ NRFU strata containing groups that are less likely to respond are sampled at a higher rate in order to increase the proportion of young adults, non-Hispanic African Americans, and Hispanics recruited in the panel. In order to disentangle this oversampling impact, we also examined the base weighted demographic distributions among all recruits by initial and NRFU recruitment for 2014-2017 AmeriSpeak Panel. The base weighted distributions provided similar results to the unweighted distribution analyses.

decreased the absolute error within the education category from 4.0% to 0.5% among panelists with some high school education.

- **The results are similar for high school graduate panelists.** When compared to the 2016 ACS benchmark, the addition of the NRFU recruits to the initial recruits decreased the absolute error from 8.3% to 6.1% among panelists with a high school diploma or equivalent.
- **Initial recruitment over-represents panelists with some college degree and above education.** NRFU recruitment reduces this over-representation. When compared to the 2016 ACS benchmark, the addition of the NRFU panelists to the initial recruits decreased the absolute error within the education category from 12.5% to 6.7% among panelists with some college degree and above education.
- **A comparison with initial recruitment shows that NRFU recruitment brings in similar proportions of women and men to the panel.** Overall, the AmeriSpeak panel tends to over-represent women.

Case Studies: Sample Composition Differences and Benchmark Comparisons among Recruitment Types

The above analyses of the 2014-2017 AmeriSpeak recruited panel composition aim to determine if and how much the NRFU recruitment program improves overall panel representativeness. To further investigate the NRFU impact on sample composition, we examined samples from AmeriSpeak case studies to learn if and how much NRFU recruitment improves sample representativeness and quality for each selected study. The sample composition information from two surveys targeting the general U.S. population (Gun Control Survey; NASA Scientific Literacy Study) was compared to the ACS demographics benchmarks obtained through the Census Bureau's American FactFinder.⁷

Additionally, for studies with targeted subpopulations (Justice Gap Survey; AARP Retirement Study), the sample composition information was compared to the 2016 ACS benchmark obtained through Census's PUMS data.⁸ Specifically, the AARP Retirement Study demographics were compared to ACS demographic benchmarks restricted to working adults age 18-64 who were paid employees or self-employed in private sector industries. The Justice Gap Study socio-demographics were compared to ACS demographic benchmarks restricted to low-income households. Figures 1-4 illustrate the average absolute error comparisons for each selected key measure among initially recruited panelists and all panelists sampled for the examined studies.

Eleven identical key demographic measures were compared among panelist recruitment types for each of the studies.⁹ These key measures included gender, age, race/ethnicity, education, marital status, employment status, income, census region, household internet status, and household size. Error was assessed by calculating the difference between the proportion of respondents selecting the response category for each variable within the benchmark data and the proportion of sampled panel respondents selecting the response category for the same variable using the sample panel data for each study. Absolute

⁷ <https://factfinder.census.gov>

⁸ <https://www.census.gov/programs-surveys/acs/data/pums.html>

⁹ Studies with targeted subpopulations (Justice Gap Survey and AARP study) included ten key measures instead of eleven due to the variable availability through Census's PUMS data.

error percentage points were then averaged and compared among sampled initial panel recruits and all recruits for each selected key measure at each figure.

$$\text{Average Absolute Error} = [\text{Average } (|\text{ACS 2016 Benchmark} - \text{Unweighted Variable Percentage Point}|)]$$

Figure 1: Justice Gap Survey average absolute error percentage point comparisons among initial and all recruits for key demographic variables

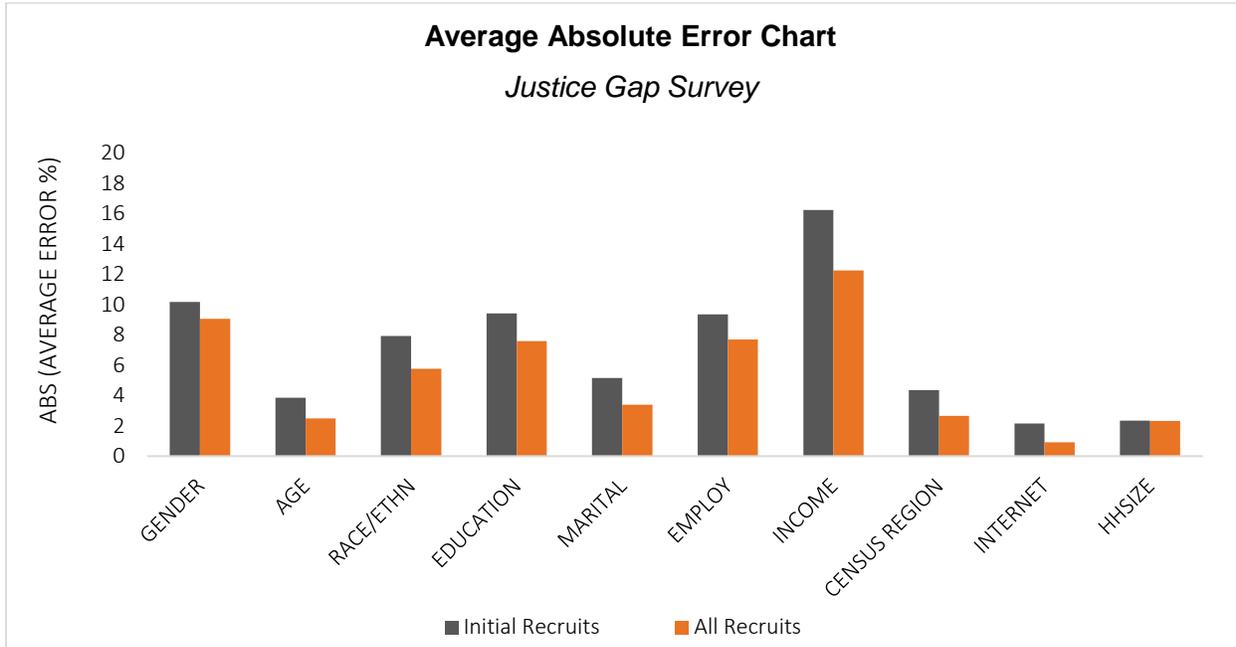


Figure 2: AARP Retirement Study average absolute error percentage point comparisons among initial and all recruits for key demographic variables



Figure 3: Gun Control Survey average absolute error percentage point comparisons among initial and all recruits for key demographic variables

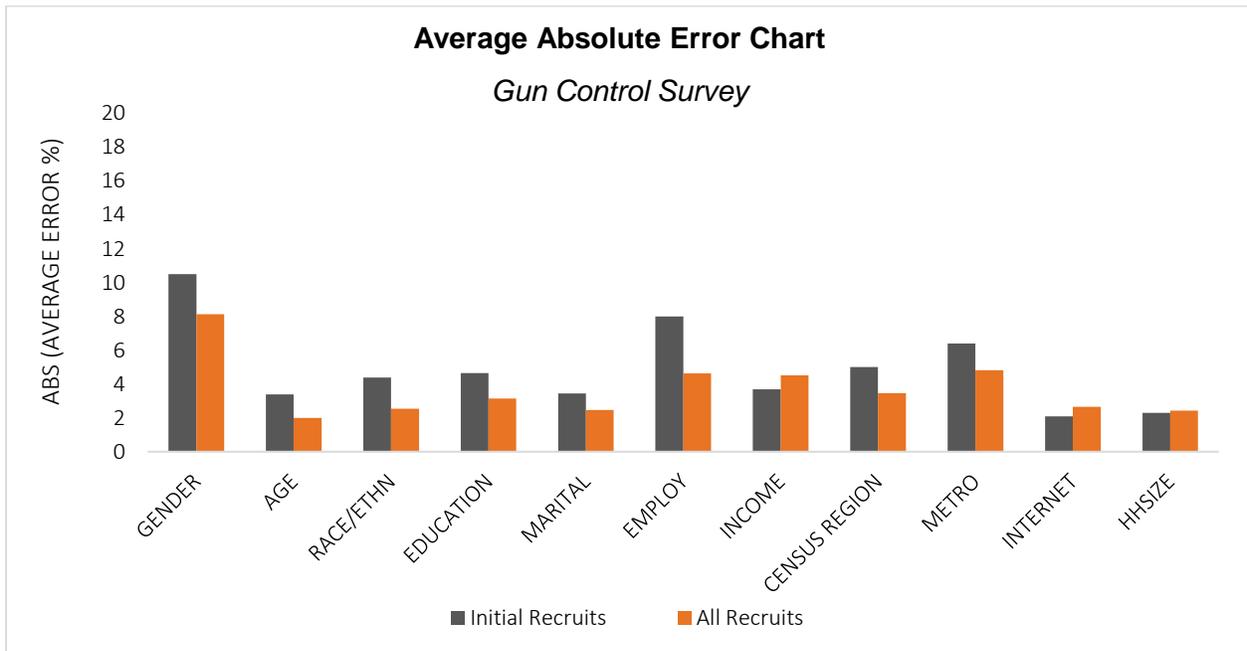
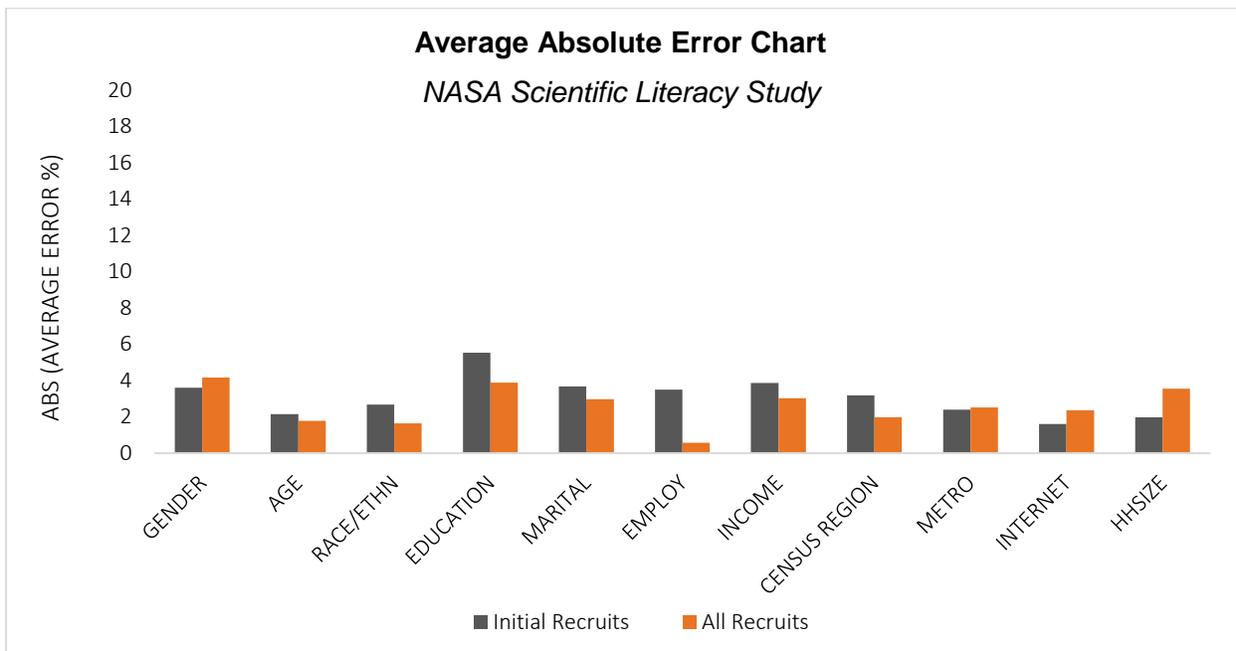


Figure 4: NASA Study average absolute error percentage point comparisons among initial and all recruits for key demographic variables



Based on Figures 1-4, overall the average absolute error is generally lower for all panel recruits than the initial recruits due to the addition of the NRFU recruits. The results from all four studies indicate that deviation from the benchmark comparison (i.e., absolute error) overall decreased for a number of

variables with the addition of the NRFU recruits, including gender, age, race/ethnicity, education, marital status, employment status, income, HH internet status, and census region.

Overall, NRFU recruitment significantly decreased the average absolute error rates among the initial recruitment sample in comparison to the overall panel sample with the exception of a few variables. Specifically, the absolute error rate for the internet status variable was consistently higher among all recruits in comparison to the initial recruits for all of the case studies. The reason is that during NRFU recruitment, groups that are less likely to respond are sampled at a higher rate in order to increase the proportion. These segments of the population are also less likely to have internet access in their households and therefore are reached through face-to-face NRFU recruitment. Hence, by design AmeriSpeak over-represents some hard-to-reach segments of society.

Additionally, in comparing the sample composition of the studies to population estimates from the ACS, we find that overall, NRFU improves the socio-demographic composition of AmeriSpeak sample surveys among groups typically more reluctant to respond. The results across the four studies are consistent with the panel composition differences among initial and NRFU recruits as discussed earlier. The findings show that subgroups who are traditionally more reluctant to respond to surveys are more likely to be covered during the NRFU recruitment stage, including younger individuals (age 18-24), Hispanics, persons without a high school degree, or those with a high school or equivalent degree (no college). Based on the case study examination, NRFU recruitment also improved the sample representativeness of individuals who never married or are living with a partner and those who are self-employed. NRFU recruitment also aids inclusion of lower income, non-internet, and renter households. These results highlight the impact and importance of NRFU recruitment on sample representativeness. Case study sample representation comparisons are as follows:

Justice Gap Legal Service Corporation Data

NORC conducted the Justice Gap Survey on behalf of Legal Services Corporation.¹⁰ This research was done to measure the “justice gap” in the United States. The term “justice gap” refers to the difference between the civil legal needs of low-income Americans and their access to available resources to meet those needs. A sample of adults age 18+ in households earning 200% of the Federal Poverty Level or less was selected from NORC’s AmeriSpeak Panel for this study. Survey respondents who indicated they earned 125% of the Federal Poverty Level or less for their household size meet the screening criteria. **The study invited 10,480 sampled panelists, 42.91% of the invited cases were NRFU recruits.** The overall completion rate for this study was 19.35% (n = 2,028; includes eligible respondents). The completion rates were higher among initial recruits in comparison to the NRFU recruits (21.68% initial recruits vs. 16.26% NRFU recruits). The study was offered in English and Spanish on both phone and web.

The following results highlight the significant unweighted percentage point differences among the initial recruits and overall panel sample compared against the benchmark distributions for key demographic variables:

- **Initial recruitment sample targeting low-income participants over-represented panelists age 18-24, while under-representing panelists age 25-34.** The addition of NRFU recruitment decreased this bias. When compared to the 2016 ACS benchmark, the addition of NRFU recruits to the initial

¹⁰ The final report may be accessed here: <https://www.lsc.gov/media-center/publications/2017-justice-gap-report>.

recruits decreased the absolute error from 13.6% to 7.8% and from 2.7% to 0.9% respectively among panelists who are 18-24 and 25-34 years old, with an overall decrease from 3.9% to 2.5% within the age category.

- **NRFU recruitment brought in more Hispanic minorities.** The addition of NRFU panelists increased the percentage of Hispanic participants by 4 percentage points (from 15.6% to 19.6%). When compared to the 2016 ACS benchmark, the addition of NRFU panelists to the initial recruits decreased the absolute error for the Hispanic portion of the panel from 8.3% to 4.3% and from 7.9% to 5.8% within the race/ethnicity category.
- **Initial recruitment under-represents panelists with some high school education.** NRFU recruitment corrects this bias by bringing in more panelists with some high school education. The addition of NRFU panelists increased the percentage of low- educated participants by 3 percentage points (from 12.1% to 14.9%). When compared to the 2016 ACS benchmark, the addition of NRFU panelists to the initial recruits decreased the absolute error for panelists with no high school diploma from 15.6% to 12.8 and from 9.4% to 7.6% within the education category.
- **NRFU recruitment brought in more renter households.** The addition of NRFU panelists increased the percentage of renter households by 4.6 percentage points. When compared to the 2016 ACS benchmark, the addition of NRFU panelists to the initial recruits decreased the absolute error for the renter portion of the panel from 8.5% to 3.9%.

AARP Retirement Study:

NORC at the University of Chicago conducted the 2016 Retirement Security Survey on behalf of AARP. This research was done to provide AARP key statistics measuring American preparedness, financial security, and planning for retirement. The target population was defined as working adults age 18-64 employed in private sector industries, excluding government and public sector work. Only age-eligible panelists (18-64 years old) were invited to the survey and sampled individuals were screened on eligibility for employment. **The study invited 9,606 sampled panelists, 47.6% of the sample consisted of NRFU recruits.** The overall completion rate for this study was 36.77% (n = 3,532). The completion rates were higher among initial recruits in comparison to the NRFU recruits (39.23% initial recruits vs. 34.06% NRFU recruits). The research focused on financial indicators for private sector employees who do or don't have access to employer-sponsored plans, including 401(k), Roth 401(k), 403(b), 457, SIMPLE, and SEP. The study was offered in several languages on both phone and web.

The following results highlight the significant unweighted percentage point differences among the initial recruitment and overall panel sample compared against the benchmark distributions for key demographic variables:

- **Initial recruitment sample over-represented panelists age 18-24, while under-representing panelists age 25-34.** The addition of NRFU recruitment decreased this bias. When compared to the 2016 ACS benchmark, the addition of the NRFU recruits to the initial recruits decreased the absolute error from 4.4% to 1.9% and from 3.1% to 0.6% respectively among panelists age 18-24 and 25-34 years old, with an overall decrease from 2.3% to 1.0% within the age category.
- **Initial recruitment under-represents panelists with some high school education.** NRFU recruitment corrects this bias by bringing in more panelists with some high school education. When compared to the 2016 ACS benchmark, the addition of the NRFU participants decreased the absolute

error among panelists with no high school diploma from 5.9% to 4.2% and from 7.5% to 5.6% within the education category.

- **NRFU recruitment brought in individuals living with a partner and aided inclusion of non-internet and renter households.** The addition of NRFU panelists increased the representativeness of the sample as follows:
 - ▶ **Living with a partner:** 1.6 percentage points
 - ▶ **Non-internet households:** 5.7 percentage points
 - ▶ **Renter households:** 5.3 percentage points

Johns Hopkins Gun Control Study

NORC conducted the Gun Policy Survey 2017 on behalf of Johns Hopkins University. This research was done to understand adult perspectives on issues regarding gun policy in the United States. A general population sample was selected from NORC's AmeriSpeak Panel for this study. In order to achieve the desired survey completion rate, when selecting the sample, panelists with historically higher survey completion rates were given higher priority for selection. At the second stage, in order to achieve the required oversample of gun owner respondents, we selected a small portion of panelists more likely to be gun owners. **The study invited 2,817 sampled panelists, 47.57% of them NRFU recruits.** The overall completion rate for this study was 75.40% (n = 2,124). The completion rates were higher among initial recruits in comparison to the NRFU recruits (78.74% vs. 71.72%). The study was offered in English-only and administered on phone and web.

The following results highlight the significant unweighted percentage point differences among the initial recruitment and overall panel sample compared against benchmark distributions for key demographic variables:

- **Initial recruitment under-represented younger panelists age 18-34. NRFU recruitment corrected this bias by bringing in more panelists in this age group.** When compared to the 2016 ACS benchmark, the addition of the NRFU recruits to the initial recruits decreased the absolute error from 5.6% to 3.3% and from 2.9% to 0.9% respectively among panelists age 18-24 and 25-34 years old, with an overall decrease from 3.4% to 2.0% within the age category.
- **NRFU recruitment brought in more Hispanic minorities.** The addition of NRFU panelists increased the percentage of Hispanic participants by 3.5 percentage points. When compared to the 2016 ACS benchmark, the addition of the NRFU panelists to the initial recruits decreased the absolute error for the Hispanic portion of the panel from 6.4% to 2.9% and from 4.4% to 2.5% within the race/ethnicity category.
- **NRFU recruitment brought in individuals who never married and those living with a partner. It also aided inclusion of low-income (less than \$40K) and renter households.** The addition of NRFU panelists increased the representativeness of the sample as follows:
 - ▶ **Never married or living with a partner:** 2.4 percentage points
 - ▶ **Low-income (less than \$40K) households:** 2 percentage points
 - ▶ **Renter households:** 3.8 percentage points

NASA Scientific Literacy Survey

NORC is conducting the NASA Scientific Literacy Survey on behalf of Dr. Jon D. Miller, Principal Investigator and Director at International Center for the Advancement of Scientific Literacy, Institute for Social Research, University of Michigan, with funding from the NASA CAN program. This paper draws from the first year of a five-year study using NORC's AmeriSpeak Panel for the sample source. The main focus of this study was interviewing a national sample of adults in a baseline and follow-up survey regarding the advancement and measurement of scientific literacy in the United States. A general population sample of U.S. adults age 18 and older was selected from NORC's AmeriSpeak Panel for this study. **The study invited 5,518 sampled panelists, 51.25% of them NRFU recruits.** The overall completion rate for this study was 51.36% (n = 2,834). The completion rates were higher among initial recruits in comparison to the NRFU recruits (58.25% vs. 44.80%). The study was offered in English and Spanish via web and phone.

The following results highlight the significant unweighted percentage point differences among the initial recruitment and overall panel sample compared against benchmark distributions for key demographic variables:

- **Initial recruitment under-represented younger panelists age 18-24. NRFU recruitment corrected this bias by bringing in more panelists in this age group.** When compared to the 2016 ACS benchmark, the addition of the NRFU recruits to the initial recruits decreased the absolute error from 6.9% to 3.3% among panelists age 18-24, with an overall decrease from 2.1% to 1.8% within the age category.
- **NRFU recruitment brought in more Hispanic minorities.** The addition of NRFU panelists increased the percentage of Hispanic participants by 3.4 percentage points. When compared to the 2016 ACS benchmark, the addition of the NRFU panelists to the initial recruits decreased the absolute error for the Hispanic portion of the panel from 5.9% to 2.5% and from 2.7% to 1.6% within the race/ethnicity category.
- **Initial recruitment under-represents panelists with some high school education or high school degree.** NRFU recruitment corrects this bias by bringing in more panelists with some high school education. The addition of NRFU panelists decreased the percentage of low-educated participants by 3.3 percentage points (from 11.0% to 7.7%). When compared to the 2016 ACS benchmark, the addition of the NRFU recruits to the initial recruits decreased the average absolute error within the education category from 5.5% to 3.9%.
- **NRFU recruitment brought in individuals who never married and those living with a partner.** It also aided inclusion of low- income (less than \$40K) and renter households. The addition of NRFU panelists increased the representativeness of the sample as follows:
 - ▶ **Never married or living with a partner:** 4.1 percentage points
 - ▶ **Low-income (less than \$40K) households:** 2.2 percentage points
 - ▶ **Renter households:** 4.8 percentage points

Conclusion and Discussion

As reported earlier, since the beginning of the AmeriSpeak Panel (2014-2017), 51.4% of panelists were recruited during the NRFU recruitment stage. Accordingly, panelists recruited during the NRFU stage

provide approximately half of the sample for each of the AmeriSpeak case studies. Based on the 2014-2017 AmeriSpeak Panel weighted response rate calculations, NRFU boosts panel response rate (AAPOR RR3) by 5.8 times. Further analyses of the case studies show that NRFU improves overall panel composition with different target populations and characteristics.

The examination of both whole panel and sample composition for the AmeriSpeak case studies illustrate that overall, NRFU specifically improves representation among groups who are traditionally most reluctant to respond to surveys. These segments include younger individuals (age 18-34), Hispanics, persons without a high school degree or with a high school or equivalent degree (no college). Additionally, examination of the sample composition for the AmeriSpeak case studies illustrated that NRFU recruitment also brings in individuals who never married and those living with a partner. It also aids inclusion of lower income, non-internet, and renter households.

NRFU recruitment, which includes in-person, face-to-face contact by professional interviewers, is a quantifiable benefit of the AmeriSpeak Panel and one that sets it apart from other probability-based research panels. While nonresponse follow-up is a costly effort given that the majority of the panelists are recruited during face-to-face in-person interviews, NORC uses this in-person approach to increase the representativeness of the panel and decrease nonresponse error, thus raising the quality of the estimates obtained. The results detailed in this article clearly illustrate the value NRFU recruitment provides to the AmeriSpeak Panel; namely, that NRFU recruitment helps ensure the sample includes diverse and hard-to-reach segments of the population typically underrepresented by mail and phone recruitment. A second white paper (by Bilgen et al. 2018) specifically examines NRFU's impact on decreasing nonresponse bias and is available on the research page of amerispeak.norc.org.

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