MIXED METHOD EVALUATION OF THE RANDS DURING COVID-19 TELEMEDICINE AVAILABILITY QUESTION: RESULTS FROM THE FIRST TWO ROUNDS OF RANDS DURING COVID-19

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Introduction

Due to the onset of the novel coronavirus pandemic in 2020, the National Center for Health Statistics (NCHS) had to adapt its data collections to the new environment. Surveys that relied on face-to-face data collection either had to adjust data collection modes or suspend data collection completely. To provide the public with timely data on the health-related outcomes of the pandemic, NCHS expanded the mission of its Research and Development Survey (RANDS) program to not only act as the center's methodological research survey, but also to provide experimental estimates of a limited number of health-related outcomes.
NCHS' Division of Research and Methodology (DRM) consulted with both internal and external stakeholders when developing the RANDS during COVID-19 questionnaire. Through this process, telemedicine availability and use emerged as key concepts about which RANDS during COVID-19 could provide timely information. Specifically, NCHS wanted to collect and disseminate information about the prevalence of telemedicine availability prior to and before the pandemic, as well as use of telemedicine during the pandemic.

To do so, three questions were drafted: a question about current telemedicine availability (i.e. at the time of survey administration, a question about telemedicine use in the past 2 months, and finally a question about whether or not telemedicine was available before the pandemic. These questions were designed to be administered to the subset of respondents who indicated that they had one or more usual places of health care[1]. Initially, the telemedicine availability question was worded as follows:

		Does this provider offer telephone or video appointments, so that you don't need to physically visit their office or facility?
	1.	Yes
	2.	No
	77.	Don't Know

NCHS conducted a limited set of cognitive interviews on the initial RANDS during COVID-19 questionnaire to ensure the proposed items did not display any obvious interpretative errors that could negatively impact the survey's statistical analysis. Analysis of these interviews indicated that this initial version of the telemedicine availability question performed as intended and captured whether respondents' medical providers made telemedicine available as a service. However, during the survey clearance process with stakeholders such as other entities within the Centers for Disease Control and Prevention and the Office of Management and Budget, the wording was changed to the following:

TELEMEDICINE AVAILABILITY QUESTION:		**In the last two months, has this provider offered you an appointment with a doctor, nurse, or other health professional by video or by phone?**
	1.	Yes
	2.	No
	77.	Don't Know

[1] The skip pattern relied on the National Health Interview Survey's (NHIS)'s usual place of care question, which RANDS respondents received directly preceding the telemedicine availability question: "Is there a place that you usually go to if you are sick and need health care? (Yes, No there is no place, There is more than one place)"

This change occurred after the preliminary set of interviews had been completed. While a full cognitive interviewing evaluation of the RANDS during COVID-19 questionnaire was planned (and has since been completed, see Willson, 2021), no interpretive information was available about the final version of this question that appeared on RANDS during COVID-19. To obtain information about how respondents interpreted this question, NCHS' Collaborating Center for Questionnaire Design and Evaluation Research (CCQDER) incorporated an open-ended probe into the first round of the RANDS during COVID-19 questionnaire. This probe was administered directly following the telemedicine availability question. The findings from the qualitative analysis of the open-ended probe data were then used to design a close-ended probe, which was then administered directly following the telemedicine availability question in the second round of RANDS during COVID-19. Data from both the open- and close-ended probes were analyzed quantitatively, looking at the prevalence of patterns of interpretation and how prevalence differs across population subgroups of interest.

This report details the interpretative findings from the first two rounds of RANDS during COVID-19 in regards to the telemedicine availability question. Following a description of the methodology, including the wording of the probes used for this evaluation, the findings from the first and second rounds are presented. Overall, this evaluation suggests that the question used to collect information about telemedicine availability on RANDS during COVID-19 may lead to response error and potentially produce false negative responses.

Methodology

RANDS during COVID-19

Data from both Rounds 1 and 2 of RANDS during COVID-19 are presented here. Both rounds of data collection sampled respondents from both NORC's AmeriSpeak probability panel and Dynata's opt-in (non-probability) panel. Round 1 was administered between June 9 and July 6, 2020 and Round 2 was administered between August 3 and August 20, 2020. The AmeriSpeak completion rates (the percent of the sampled panelists who completed the survey) were 78.5% and 69.1%, respectively; whereas the weighted cumulative response rates (which is the overall response rate taking into account panel recruitment and retention rates) were 23.0% and 20.3%, respectively. For the Dynata sample, the completion rates for Round 1 and Round 2 were 62.2% and 55.0%, respectively; there is no equivalent of a cumulative response rate for opt-in panels as they are not systematically recruited or maintained like probability-based panels are. Table 1 provides the breakdown of the sample across the two rounds by sample source. Responses with disposition codes of "Partial," "Unqualified Complete," and "Not Qualified" were excluded by NORC from the weighting process either because the respondent did not finish the questionnaire or failed an automated quality check. The analysis presented here focuses solely on the respondents who were assigned a "Complete" disposition code.

TABLE 1: OVERVIEW OF RANDS DURING COVID-19 ROUNDS 1 AND 2 SAMPLE DISPOSITIONS

	Round 1[1]			Round 2[2]		
	AmeriSpeak	**Dynata**	**Total**	**AmeriSpeak**	**Dynata**	**Total**
Complete	6,800	6,220	13,020	5,981	5,502	11,483

Partial/Unqualified Complete/Not Qualified	258	1,060	1,318	252	1,073	1,325
Non-Response	1,605	2,720	4,325	2,418	3,425	5,843
Total Sampled Panelists	8,663	10,000	18,663	8,651	10,000	18,651

NOTE: "Partial/Unqualified Complete/Not Qualified respondents where those that NORC excluded from the weighting process either because the respondent did not finish the questionnaire or failed an automated quality check.
SOURCE: [1] National Center for Health Statistics, RANDS during COVID-19 Round 1. 2020. [2] National Center for Health Statistics, RANDS during COVID-19 Round 2. 2020.

AmeriSpeak respondents were invited to participate in both rounds of data collection. (Given the opt-in nature of the Dynata sample, maintaining the same respondents across rounds was not possible in the non-probability portion of the RANDS during COVID-19 sample.) Of the 5,981 AmeriSpeak respondents in the second round, 5,452 (91.2%) also completed the first round. AmeriSpeak panelists were surveyed using either web or phone interviews, depending on their preference. In the first round, 6.0% of completes were from phone interviews; in the second round 7.2% were phone interviews. The unweighted distributions of demographic characteristics across the two rounds, shown in Table 2, were generally similar.

TABLE 2: UNWEIGHTED PERCENTAGES OF RANDS DURING COVID-19 ROUNDS 1 AND 2 RESPONDENTS ACROSS SELECTED DEMOGRAPHIC SUBGROUPS

Variables	Description	Round 1 (%) [1]	Round 2 (%) [2]
Age (in years)	18-34	26.5	20.9
	35-49	22.3	23.2
	50-64	26.7	27.6
	65+	24.5	28.4
Gender	Male	44.9	41.6
	Female	55.1	58.5
Race/Ethnicity	Non-Hispanic White	64.4	69.0
	Non-Hispanic Black	12.3	11.5
	Hispanic	9.3	7.8
	Non-Hispanic Other	14.0	11.7
Education	High School Diploma or Less	21.4	21.0
	Some College	37.9	37.3
	Bachelor's Degree or Higher	40.7	41.7
Region	Northeast	18.6	17.5
	Midwest	23.0	24.0
	South	35.1	35.7
	West	23.4	22.9

NOTE: “Non-Hispanic Other” includes groups which were too small to disaggregate including: American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and persons of more than one race. SOURCE: [1] National Center for Health Statistics, RANDS during COVID-19 Round 1. 2020. [2] National Center for Health Statistics, RANDS during COVID-19 Round 2. 2020.

Telemedicine Probes

As noted above, to collect information about the interpretation of the telemedicine availability question, NCHS used a method typically referred to as “web probing.” Web probes are survey items designed specifically to capture information about respondents’ interpretations of, and response processes when answering, specific questions on a survey (Behr et al., 2017; Scanlon, 2020), and can either be formatted as open-ended or close-ended items. Open-ended probes are designed to elicit broad qualitative information, whereas the purpose of close-ended probes is to quantify specific patterns of interpretation or response. Even though the colloquial term for these probes is “web probes,” in the case of a multi-mode survey such as RANDS during COVID-19, these probes can be administered either in a self-response instrument on the web or by telephone interviewers.

Both open- and close-ended probes were used in the evaluation of the telemedicine availability question discussed in this report. In the first round of RANDS during COVID-19 respondents were eligible for the telemedicine questions and subsequent probes if they responded in a previous question that they had one or more usual places of health care. All eligible respondents were then administered the following open-ended probe immediately after the telemedicine availability question:

OPEN-ENDED PROBE:	**How do you know whether your provider offers telemedicine, or not?** [Open Response]

Of the 13,020 respondents in Round 1, 11,335 (87.06%) were eligible and received the telemedicine availability question and the follow-up probe. Of these individuals, 10,657 provided some information in response to the open-ended probe. This text data was coded, or assigned labels according to patterns of responses, by a team of CCQDER researchers (the codes used are shown below in Table 3). Development of the coding scheme followed a typical qualitative analysis approach using the constant comparative method (Glaser and Strauss, 1967), with new codes added and previous responses re-coded as new data was considered. The final codes were then appended to the RANDS file for further quantitative analysis.

For the second round of RANDS during COVID-19, a close-ended probe was developed to further refine understanding of respondents’ interpretation of the telemedicine availability question. As is typical in the design of close-ended probes, answer categories are based on previous qualitative findings, in this case specifically, findings from the first round. The box below presents the close-ended probe for round 2.

CLOSED-ENDED PROBE:	**How do you know whether your provider offers telemedicine or not? (Select all that apply)**
1.	The provider told you in an email, phone call, or mailing

2.	Had a previous telemedicine appointment
3.	Checked provider's website or social media pages
4.	Told by a family member
5.	Do not know whether the provider offers this
6.	Some other way, please specify

Half of the eligible Round 2 sample were randomly assigned to receive the close-ended probe, which like the open-ended probe in Round 1, was administered directly following the telemedicine availability question. Because assignment to this condition occurred at the sampling stage, the total number of respondents who received this probe was not exactly half of the total Round 2 respondents: of the 11,483 respondents, 5,797 (50.48%) were assigned to this condition. Of these respondents, 5,129 (88.48%) were eligible to receive the availability question and close-ended probe, and 5,088 (99.20%) answered the probe.

Quantitative analyses of both rounds of data were conducted using R's survey[2] and srvyr packages[3]. Associations were tested with the second-order, design-adjusted Rao-Scott chi-square tests using a significance level of 0.05. Unweighted results are presented throughout this paper as the primary focus of this analysis is on question response by the sample, and not extrapolation of response patterns to a wider population.

Findings

Qualitative Analysis of the RANDS During COVID-19 Round 1 Open-Ended Probe

As noted above, CCQDER researchers coded 10,657 open-ended responses from the first round's telemedicine probe question. The researchers followed the constant comparative method and continually recoded responses based on new data until the full set was complete. The probe was designed to collect information about how respondents interpreted the telemedicine availability question; instead of asking about comprehension directly (i.e. "what were you thinking about when you answered the previous question?"), CCQDER determined that a factual probe asking about the source of the respondents' knowledge about their telemedicine availability ("How do you know whether your provider offers telemedicine, or not?") could provide not only information about question interpretation, but also about response error.

As illustrated in Figure 1, respondents understood the telemedicine availability question in two ways—as either asking about whether or not their provider offered telemedicine as a service ("Telemedicine Availability), or whether or not they had previously participated in a telemedicine appointment with their provider ("Telemedicine Use"). These patterns were also independently found during the cognitive interviewing assessment of the RANDS during COVID-19 questionnaire (Willson, 2021).

[2] Lumley, T (2020). "survey: analysis of complex survey samples." R package version 4.0.

[3] Freeman Ellis G, Lumley, T, Żółtak, T, Schneider, B, and PN Krivitsky (2020). "srvyr: 'dplyr'-Like Syntax for Summary Statistics of Survey Data." R package version 1.0

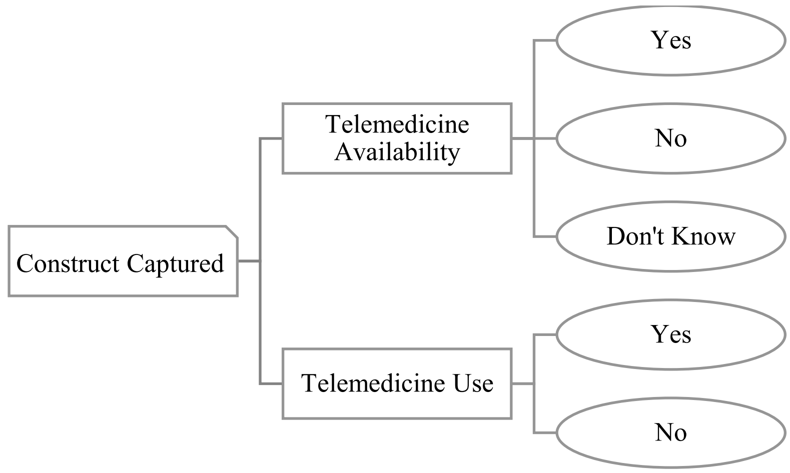


FIGURE 1: INTERPRETATIVE SCHEMA FOR THE RANDS DURING COVID-19 TELEMEDICINE AVAILABILITY QUESTION WITH ASSOCIATED SURVEY RESPONSES

Telemedicine Availability

First, some respondents understood this question to be asking about the intended construct—telemedicine availability. These respondents answered using all three answer categories available—"Yes," "No," and "Don't Know"—and generally understood the question to be asking whether or not their doctor's office offered appointments via a video application or the telephone. For instance, one respondent who answered "Yes" wrote: "They told me when I called for an appointment" whereas another respondent wrote:

> Received an email from my health care provider and my insurance carrier letting me know they provide telemedicine services should I need anything during these uncertain times.

Another respondent who answered "No" to the availability question went on to explain in the probe that: "It [their provider] is a state hospital and only working face-to-face." Likewise, another respondent who answered "No" wrote: "They told us that it was not available to us on our plan when we renewed in back in December."

Most respondents who answered "Don't Know" noted in the probe that they have not needed medical care, and therefore were not sure about whether their provider offered this service. For instance, one respondent wrote in the probe that, "I haven't needed medical care, but I would call or visit their website to see if they offer telemedicine."

In sum, respondents who used this pattern of interpretation based their answer to the initial telemedicine question on availability alone, and not whether they actually used that service. For instance, one respondent who answered "Yes" noted the following:

> They offer this service; but I prefer to go in person to my doctor's appointment to speak with my P.C.P. in person about my overall health and medications that I am currently on.

Telemedicine Use

Other respondents instead interpreted the telemedicine availability question to be asking whether they had used telemedicine. A separate question asking about telemedicine use directly followed the open-ended probe, but respondents had no way of knowing that a question specifically about the use of telemedicine would be administered when interpreting this question. Regardless of whether respondents answered "Yes" or "No," those who used this pattern of interpretation believed the question was asking whether they had actually participated in a telephone or video appointment with their primary provider. For instance, one respondent who answered "Yes" noted that, "They told me. I had a long standing appointment. As the date approached, they reached out to me to set-up a TeleMed visit" whereas another person who answered "Yes" clearly interpreted the initial question to be about use, writing in the probe, "Because I had an appointment...did you see the previous question?"

While these respondents who answered the telemedicine availability question "Yes" but understood it to be asking about telemedicine use may have misinterpreted the question, their answers do not in fact represent response error since the respondent must logically have had access to telemedicine if they responded that they used it. Even if they based their positive response on misinterpretation of the question, they still accurately represent someone who had access to telemedicine. However, the respondents who answered "No" while interpreting the question as asking about use do potentially represent instances of not only interpretive error, but also potential false negative responses. Consider for instance one respondent who answered the survey question "No," but then wrote for the probe that:

> [The provider] Offered to do annual exam electronically, if that's what you're referring to, but my computer crashed at time of appointment, so I didn't re-book after it was fixed.

Likewise, another respondent who answered "No" explained in the probe that, "They sent an email that they will do phone visits. I didn't need one." Others noted that their spouses had used the service, such as one respondent who told the interviewer, "I know they do because my spouse had a telehealth visit with our doctor 3 weeks ago." In all of these examples, and the cases like them, the respondents express that while their healthcare provider does in fact offer telemedicine as a service, they have not either needed or wanted to use it and therefore answered the survey question "No." Given that the intent of the question was to capture telemedicine availability, these responses represent false negatives and response error.

Quantitative Analysis of RANDS During COVID-19 Round 1

After the full set of open-ended probes were analyzed by CCQDER researchers, each response was assigned 0/1 indicator variables for the set of codes shown in Table 3. Codes were assigned at three separate analytic levels: "Interpretation," relating to a response's alignment with the interpretive schema shown in Figure 1; "Open Text Data Quality," relating to indicators of the quality of the written (or spoken in the case of phone interviews) open text responses; "Measurement Error," relating to the probable cases of measurement error based on the other two levels of analysis. As is typically the case in qualitative analysis, the codes are not necessarily mutually exclusive.

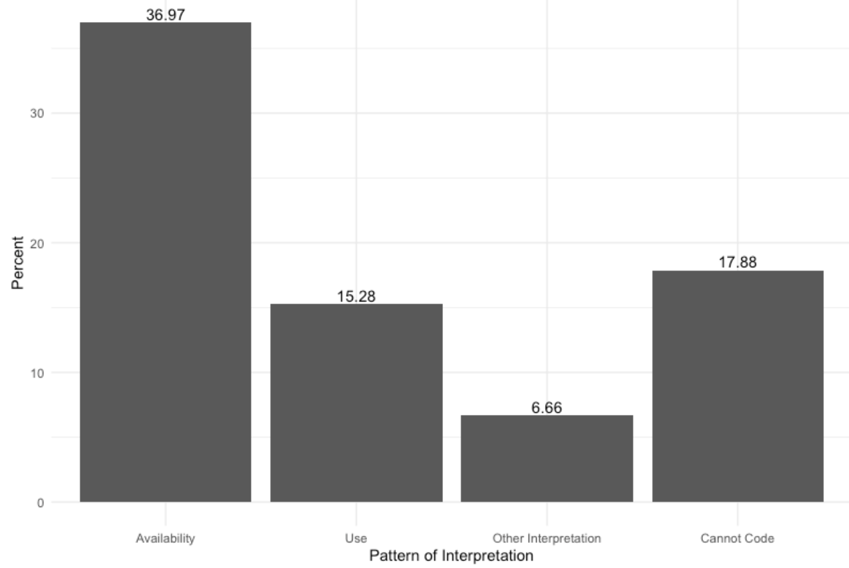
TABLE 3: QUALITATIVE CODES AVAILABLE FOR QUANTITATIVE ANALYSIS

Code	Analytic Level	Description
Availability	Interpretation	Probe response indicates "Availability" pattern of interpretation
Use	Interpretation	Probe response indicates "Use" pattern of interpretation
Other	Interpretation	Probe response indicates some other minor pattern of interpretation
Cannot Code	Open Text Data Quality	Not enough information to classify pattern of interpretation
Don't Know Probe Response	Open Text Data Quality	Response includes "Do not know" or similar indication of lack of knowledge; not enough information to classify pattern of interpretation
Potential False Negative	Measurement Error	Probe response suggests that a "No" response to the telemedicine availability question is a false negative answer.

In the analysis of web probing data such as this (Behr et al., 2017; Scanlon, 2020), the overall analytic goal is to explore whether and how patterns of interpretation vary not only across the sample, but also across subgroups of interest.

Figure 2 shows the unweighted prevalence across the "Interpretation" level of analysis for the respondents who provided an answer to the probe (n=10,657). This includes the two major patterns of interpretation shown in Figure 1, as well as those coded as using some "other" minor interpretation. As noted above, because respondent's answers to the probe can be theoretically coded into more than one of these groups, the categories are not necessarily exclusive.

Figure 2: Unweighted Percent of Telemedicine Access Open-Ended Probe Question Respondents Using Each Pattern of Interpretation Among Persons with a Usual Source of Health Care, RANDS during COVID-19, Round 1



NOTES: Total number of probe respondents = 11,335.
Categories are not necessarily mutually exclusive.
SOURCE: National Center for Health Statistics, RANDS during COVID-19 Round 1. 2020

While the intended "Availability" pattern of interpretation was used more than the "Use" pattern across the sample, approximately 22% of respondents interpreted the question as asking about something other than the intended construct of telemedicine availability (using either the "Use or "Other" patterns). Additionally, a further 18% of the sample provided a response in the probe that did not provide sufficient detail for the researcher to assign a code.

Statistically significant differences in question interpretation did emerge across some demographic subgroups. Table 4 details the percent of eligible probe respondents (i.e. those who were administered the telemedicine availability question) who answered only using an out-of-scope interpretation—that is that their text was coded as either indicating "Use" or "Other," and not using the "Availability" pattern—across a selection of subgroups.

TABLE 4: UNWEIGHTED PERCENTAGES (WITH STANDARD ERRORS) OF ELIGIBLE RANDS DURING COVID-19 ROUND 1 RESPONDENTS USING AN OUT-OF-SCOPE INTERPRETATION FOR THE TELEMEDICINE AVAILABILITY OPEN-ENDED PROBE QUESTION, BY SELECTED DEMOGRAPHIC SUBGROUP

Variables	**Description**	**Eligible Sample Size**	**Percent Using Out of Scope Interpretation**	**Standard Error**	**Rao-Scott Chi-square Test**
Age (in years)	18-34	2,662	13.1	0.7	$F_{3,34002} = 16.2$, $p<0.001$
	35-49	2,467	17.2	0.8	
	50-64	3,178	19.6	0.7	
	65+	3,028	19.0	0.7	
Gender	Male	4,991	16.5	0.5	$F_{1,11334} = 5.2$, $p = 0.02$
	Female	6,344	18.1	0.5	
Race/ Ethnicity	Non-Hispanic White	7,492	18.8	0.5	$F_{3,34002} = 10.5$, $p<0.001$

	Non-Hispanic Black	1,329	13.8	1.0	
	Hispanic	1,014	15.4	1.1	
	Non-Hispanic Other	1,500	14.9	0.9	
Education	High School Diploma or Less	2,326	15.0	0.7	$F_{2,22668} = 6.9$, $p = 0.001$
	Some College	4,309	17.5	0.6	
	Bachelor's Degree or Higher	4,700	18.5	0.6	
Region	Northeast	2,132	17.3	0.8	$F_{3,34002} = 1.6$, $p = 0.17$
	Midwest	2,646	18.1	0.8	
	South	3,931	16.4	0.6	
	West	2,626	18.2	0.8	

NOTES: Total number of eligible respondents in RANDS during COVID-19, Round 1 was n=11,335. Respondents eligible for the probe include those who indicated that they had one or more usual places of health care. Tests conducted using the design-adjusted Rao-Scott test via R's Survey Package and the second-order correction.
SOURCE: National Center for Health Statistics, RANDS during COVID-19 Round 1. 2020

As can be seen in Table 4, significant differences in the percent of out-of-scope interpretations emerged across several demographic subgroups, including age, gender, race and ethnicity, and education. This indicates that the use of problematic out-of-scope interpretations is not randomly distributed across the sample and could therefore lead to differential measurement error.

To examine one particular type of measurement error, CCQDER researchers coded 27.60% of the RANDS during COVID-19 Round 1 respondents as potentially providing a false negative response to the telemedicine availability question. Responses were coded as being a "Potential False Negative" response when the respondent's answer to the telemedicine availability question was "No" and their probe response indicated that their provider did in fact offer telemedicine as a service. Although these responses represent only potential cases of response error, this large prevalence indicates that any estimate produced by the telemedicine availability question could represent an undercount. Table 5 details the prevalence of these potential false negatives within the Round 1 sample across a selection of demographic subgroups.

TABLE 5: UNWEIGHTED PERCENTAGES (WITH STANDARD ERRORS) OF ELIGIBLE RANDS DURING COVID-19 ROUND 1 RESPONDENTS CODED AS HAVING A POTENTIAL FALSE NEGATIVE RESPONSE TO THE TELEMEDICINE AVAILABILITY QUESTION BASED ON THEIR RESPONSE TO THE FOLLOW-UP OPEN-ENDED PROBE QUESTION, BY SELECTED DEMOGRAPHIC SUBGROUP

Variables	Description	Eligible Sample Size	Percent Coded as Potential False Negative	Standard Error	Rao-Scott Chi-square Tes
Age (in years)	18-34	2662	25.1	0.8	$F_{3,34002} = 8.8$, $p<0.001$
	35-49	2467	25.3	0.9	
	50-64	3178	29.9	0.8	
	65+	3028	29.1	0.8	
Gender	Male	4991	28.6	0.6	

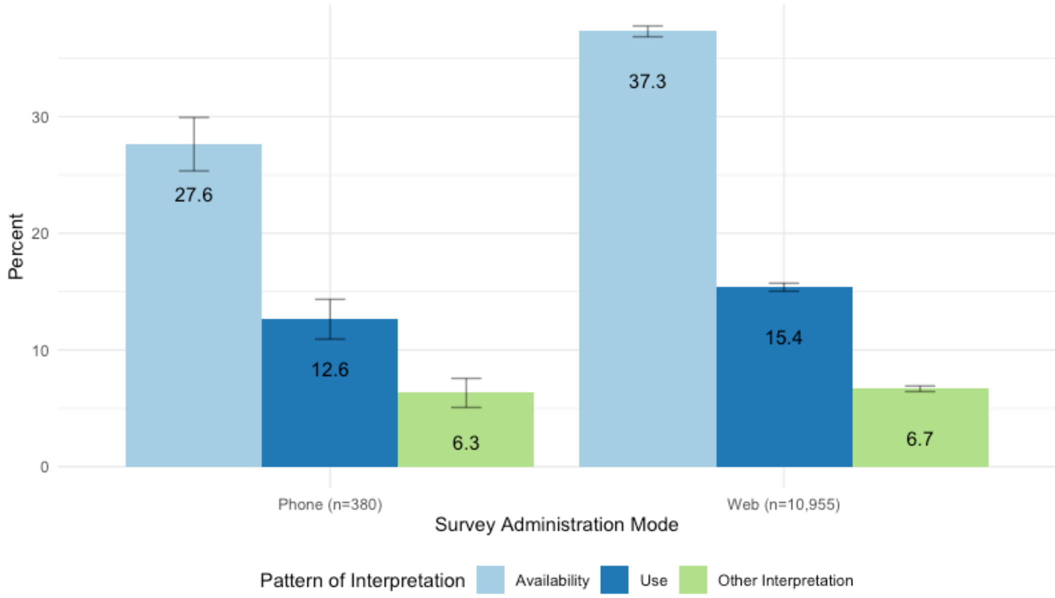
	Female	6344	26.8	0.6	$F_{1,11334} = 4.7$, p = 0.03
Race/Ethnicity	Non-Hispanic White	7492	29.4	0.5	$F_{3,34002} = 12.9$, p<0.001
	Non-Hispanic Black	1329	23.9	1.2	
	Hispanic	1014	25.4	1.4	
	Non-Hispanic Other	1500	23.2	1.1	
Education	High School Diploma or Less	2326	26.9	0.9	$F_{2,22668} = 2.2$, p = 0.12
	Some College	4309	28.7	0.7	
	Bachelor's Degree or Higher	4700	26.9	0.7	
Region	Northeast	2132	27.5	1.0	$F_{3,34002} = 1.2$, p = 0.31
	Midwest	2646	29.0	0.9	
	South	3931	27.1	0.7	
	West	2626	26.9	0.9	

NOTES: Total number of eligible respondents in RANDS during COVID-19, Round 1 was n=11,335. Respondents eligible for the probe include those who indicated that they had one or more usual places of health care. Tests conducted using the design-adjusted Rao-Scott test via R's Survey Package and the second-order correction.
SOURCE: National Center for Health Statistics, RANDS during COVID-19 Round 1. 2020

In the case of the potential false negative responses, significant differences emerged across age, gender, and race and ethnicity groups, again suggesting that the distribution of the error is not random and could therefore skew the final interpretation of the survey data.

Beyond differences across demographic subgroups, there does appear to be some mode effects related to both pattern of interpretation, as shown in Figure 3. Web respondents were most likely to use the availability pattern of interpretation. Although the percentage of respondents using the out-of-scope "Use" pattern of interpretation higher among web respondents than phone respondents, this difference is not statistically significant. There was no significant difference across the modes among respondents who used the "other" interpretation either.

Figure 3: Unweighted Percents (+/- 1 Standard Error) of Telemedicine Access Probe Respondents Using Each Pattern of Interpretation Among Persons with a Usual Source of Health Care, by Survey Administration Mode, RANDS during COVID-19, Round 1



NOTE: Total number of probe respondents = 11,335.
Categories are not necessarily mutually exclusive.
SOURCE: National Center for Health Statistics, RANDS during COVID-19 Round 1. 2020

Examining those responses that were coded as either "Cannot Code" or "Unsure/DK" by survey administration mode also suggests that there may be a difference in probe data quality across the two modes as well. 10.3% of the phone respondents provided un-codable answers to the probe, which is significantly lower than the 18.2% of the web responders who did the same (though with a relatively small effect size: $F_{1,11344} = 15.5$, , $p<0.001$, Cohen's $h = 0.2$)[4]. This is a topic for future intensive analysis and research, but it is important to mention in this context to point out how this difference in data quality across modes (potentially due to factors such as the presence or absence of an interviewer) could affect the underlying findings described in this report.

Quantitative Analysis of RANDS During COVID-19 Round 2

To examine potential measurement error, the analysis of the close-ended probe administered to eligible respondents in Round 2 ("How do you know whether your provider offers telemedicine or not?", shown above in the Methodology section) focuses specifically on the fifth answer category ("Do not know whether the provider offers this"). There is a logical disconnect if respondents indicate that they do not know whether or not their doctor offers telemedicine appointments in the probe, but answer either "Yes" or "No" to the telemedicine availability question. Table 6 shows the percent of respondents who only used the "Do not know" answer category in the close-ended probe by their response to the availability question.

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[4] The subject-agnostic guidelines Cohen (1988) lays out for the *h* statistic mirror that of the more common *d* statistic: <0.2 = "minimal" effect, 0.2 = "small" effect, 0.5 = "medium" effect, 0.8 = "large" effect.

TABLE 6: UNWEIGHTED PERCENTAGES (WITH STANDARD ERRORS) OF ELIGIBLE RANDS DURING COVID-19 ROUND 2 RESPONDENTS USING THE "DO NOT KNOW" CLOSE-ENDED PROBE ANSWER CATEGORY ONLY, BY RESPONSE TO THE TELEMEDICINE AVAILABILITY QUESTION

Answer to Telemedicine Availability Question	Eligible Sample	Percent Responding with Only the "Do not know" Close-Ended Probe Answer Category	Standard Error
Yes	2119	6.4	0.5
No	2784	54.1	1.0
Don't Know	219	55.4	3.34
NOTE: Eligible respondents were those respondents assigned to the close-ended probe condition and indicating that they had a usual place of health care, total n = 5,129. There were n=7 instances of item non-response within this eligible group of respondents to the telemedicine availability question; none of those respondents answered the follow-up probe question. SOURCE: National Center for Health Statistics, RANDS during COVID-19 Round 2. 2020			

That 54.1% of the Round 2 respondents who answered “No” to the question asking about whether or not their provider offered telemedicine as an option (as well as 6.4% of the “Yes” responders) went on to answer that they did not know whether or not their provider offered this in the very next question (the probe) indicates that those respondents may not be interpreting the initial question as intended.

As with the coded data from Round 1, differences emerge across demographic subgroups as shown in Table 7.

TABLE 7: UNWEIGHTED PERCENTAGES (WITH STANDARD ERRORS) OF ELIGIBLE RANDS DURING COVID-19 ROUND 2 RESPONDENTS USING THE "DO NOT KNOW" CLOSE-ENDED PROBE ANSWER CATEGORY ONLY, BY SELECTED DEMOGRAPHIC SUBGROUP

Variables	**Description**	**Eligible Sample Size**	**Percent Using Out of Scope Interpretation**	**Standard Error**	**Rao-Scott Chi-square Tes**
Age (in years)	18-34	1841	31.3	1.5	$F_{3,34002} = 3.7$, p=0.01
	35-49	2331	32.1	1.4	
	50-64	2899	36.7	1.3	
	65+	3114	35.7	1.2	
Gender	Male	4176	35.2	1.0	$F_{1,11334} = 1.4$, p = 0.24
	Female	6009	33.7	0.9	
Race/Ethnicity	Non-Hispanic White	7200	35.6	0.8	$F_{3,34002} = 4.3$, p=0.005
	Non-Hispanic Black	1115	31.8	2.0	
	Hispanic	763	33.8	2.5	
	Non-Hispanic Other	1107	28.3	1.9	
Education	High School Diploma or Less	2031	41.2	1.6	$F_{2,22668} = 26.5$, $p < 0.001$

	Some College	3850	36.8	1.1	
	Bachelor's Degree or Higher	4304	29.0	1.0	
Region	Northeast	1785	32.6	1.6	$F_{3,34002} = 4.4$, $p = 0.004$
	Midwest	2517	36.3	1.3	
	South	3547	36.2	1.2	
	West	2336	30.6	1.3	

NOTES: Total number of eligible respondents in RANDS during COVID-19, Round 2 was n=5,129. Respondents eligible for the probe include those who were assigned to the experimental condition including the close-ended probe who also indicated that they had one or more usual places of health care. Tests conducted using the design-adjusted Rao-Scott test via R's Survey Package and the second-order correction.
SOURCE: National Center for Health Statistics, RANDS during COVID-19 Round 2. 2020

As with the findings from both the first round and the cognitive interviews (Willson, 2021), we see indications that older respondents and respondents with lower levels of educational attainment appear to have higher levels of potential measurement error. Additionally, with both race and ethnicity and geographic region emerging as having significant between-group differences, it appears as though there may be cultural differences in how the telemedicine availability question is being understood that need to be addressed in order to produce more consistent and valid survey data.

Works Cited

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