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## Advances in Survey Methodology: Maximizing Response Rates and the Representativeness of CAHPS® Survey Data

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### Meeting Summary

#### Introduction

The U.S. Agency for Healthcare Research and Quality's (AHRQ) Consumer Assessment of Healthcare Providers and Systems (CAHPS®) program is aware of concerns about the impact of declining response rates for surveys, including CAHPS surveys, and questions about the representativeness of the data from such surveys. A related issue is the burden of obtaining adequate samples of respondents.

These concerns have led to calls for the assessment of alternative survey formats and methods of survey administration that might improve the efficiency of data collection, increase response rates, and/or yield more accurately represent the experiences of the target population.

On September 17, 2018, AHRQ hosted a research meeting in Rockville, Maryland, to discuss what is known about survey methods that have the potential to improve the survey response rates and representativeness and identify promising areas for future research. Specific goals of this meeting included:

- To share findings of AHRQ-funded researchers and other researchers working with CAHPS surveys,
- To hear fresh perspectives from survey experts about issues related to survey design and administration,
- To provide stakeholders an opportunity to discuss their questions and concerns with AHRQ staff and researchers from the CAHPS Consortium, and
- To identify research questions for future investigation.

These meeting goals reflect AHRQ's emphasis on attending to methodological issues, particularly in the context of competing priorities, to ensure that AHRQ's measures of quality and safety are as accurate and useful as possible.

#### Meeting Structure and Presentations

The meeting consisted of two panels, one addressing declining response rates and the other focused on the representativeness of CAHPS survey data. Each panel included researchers involved in the government-funded CAHPS research enterprise, some of whom described recent experiments designed to test data collection methods, and external researchers who shared their expertise in survey science. The speakers addressed the benefits, challenges, and trade-offs of various approaches to data collection modes, respondent invitations, survey questionnaire design, and formatting. These presentations were followed by a robust discussion among the 70 CAHPS survey users, policymakers, researchers, experts in patient-centered care, and other key stakeholders who attended.

## Topic #1: Addressing Declining Response Rates for CAHPS Surveys

Response rates to CAHPS and other surveys have been declining. The speakers in this session examined factors affecting survey response rates, including modes of data collection, survey length, outreach invitations, and incentives; they also discussed promising avenues for enhancing CAHPS survey response rates in the future.

Ron Hays, a CAHPS Team principal investigator with RAND, introduced the session by noting that the historic decline in survey response rates does not have an easy solution. Through various experiments, CAHPS researchers and others are finding that the use of email and web, for example, might be promising from a cost perspective but is not consistently yielding higher response rates than traditional methods.

[Learn More about This Topic](#)

[CAHPS Survey Administration: What We Know and Potential Research Questions](#) (PDF, 738 KB) -- A literature review by Rachel Tesler, PhD, and Joann Sorra, PhD

### *Rethinking CAHPS Surveys in Today's Mixed Mode Environment*

– Don Dillman, Ph.D., Regents Professor, Washington State University

Don Dillman presented his research on using web-push protocols (i.e., mixed mode surveys in which people are contacted by postal mail and asked to complete web surveys) with follow-up by other modes. He found that an initial contact by mail provides legitimation for a web-based survey, that a small cash incentive further legitimizes the survey, and that multiple attempts to reach respondents using multiple contact modes and combined with different response modes for follow-up maximized response rates. Drawing on his experience in the field, Don Dillman suggested some ways to use the content and design of invitation letters, reminders, and envelopes; the format of the survey; and token incentives to engage respondents and improve survey response rates.

### *Results of Testing of Novel Administration Modes in the Emergency Department Setting*

– Liz Goldstein, Ph.D., Director, Division of Consumer Assessment and Plan Performance, CMS; Elizabeth Flow-Delwiche, Ph.D., Social Science Researcher, CMS

Liz Goldstein and Elizabeth Flow-Delwiche highlighted findings from two feasibility tests of the Emergency Department Patient Experience of Care Survey. The emergency department (ED) is a unique setting because it bridges inpatient and outpatient care. This particular survey focuses on the experiences of the 80% of ED patients who are discharged to the community. The first feasibility test in 2016 found that both letter and email invitations to a web survey yielded very low response rates. However, adding an email invitation for a web survey to the traditional two-stage mixed mode (mail with phone follow-up) offered a statistically significant increase to the response rate for the two-stage mixed mode on its own. On-site distribution of the survey was found to be infeasible in the ED setting. The second feasibility test in 2018 tested multiple invitation and response modes and emphasized “push to web.” This test found that response rates improved when multiple modes were used for both the survey invitation and survey administration.

### *Improving Response Rates: Lessons from MCAHPS, HCAHPS, and Disenrollment Experiments*

– Marc Elliott, Ph.D., Senior Principal Researcher, RAND Corporation

Marc Elliott discussed findings of six experiments that examined the impact of survey mode, survey length, and multiple language mailings on response rates for four surveys: the Medicare CAHPS Survey, the Adult version of the CAHPS Hospital Survey (HCAHPS), the CAHPS Child Hospital Survey (Child HCAHPS), and the Medicare Advantage and Prescription Drug Plan Disenrollment Reasons Survey. These

experiments showed that 1) mixed mode (mail with telephone follow-up) consistently produced the highest response rates; 2) increasing survey length with supplemental items had a modest impact on reducing response rates; and 3) offering targeted reminders and surveys in Spanish increased response rates. He also presented results of an observational study on mail survey layout and response rates that suggest that visual attractiveness improves response rates, possibly by reducing the cognitive burden of a survey, especially for older respondents.

### *Pilot of a Streamlined CAHPS for ACOs Survey*

– Rebecca Anhang Price, Ph.D., Senior Policy Researcher, RAND Corporation

Rebecca Anhang Price presented results from a 2016 CMS-funded study of a shortened CAHPS for ACOs Survey, which CMS has implemented nationally since 2012. The shortened version included 58 items, compared to the 71-item ACO-9 Survey. The study found that the shortened survey resulted in a small increase in overall response rate (3.4 percentage points) compared to the longer ACO-9 Survey. However, for at least one measure, the pilot study found the shortened survey elicited different responses, suggesting that the removal of items from this measure resulted in context effects.

## Topic #2: Addressing the Representativeness of Respondents to CAHPS Surveys

Paul Cleary, a CAHPS Team principal investigator with the Yale School of Public Health, introduced a second panel of speakers by noting a growing concern that CAHPS surveys with lower response rates may yield less accurate estimates of patients' experiences than surveys with higher response rates. He remarked that in the face of lower-than-desired response rates, it is important to assess whether the respondents are representative of the population of interest and the extent to which the data may need to be adjusted to compensate for any biases in the sample.

The speakers in this session discussed analytical methods for identifying and correcting for biases in survey data and shared the results of experiments aimed at improving the representativeness of survey responses. This panel included four presentations.

### *Analytical Methods for Improving Lack of Representativeness from Selection Bias and Nonresponse*

– Roderick Little, Ph.D., School of Public Health, University of Michigan

Rod Little summarized ways of improving representativeness in probability samples by estimating and adjusting for selection bias and nonresponse. He suggested that weighting units in the sample based on auxiliary variables that are predictive of survey variables may yield responses that are more representative of the target population.

### *Nonresponse Adjustment and Case-Mix Adjustment: What's the Target?*

– Alan Zaslavsky, Ph.D., Daniel C. Tosteson Professor of Health Care Policy, Department of Health Care Policy, Harvard Medical School

Alan Zaslavsky noted that CAHPS surveys are designed to produce comparisons among units, such as health plans, hospitals, and providers. He discussed approaches to adjusting survey results for patient mix to ensure that results are comparable across the units. Adjusting for differences in patient characteristics across units is a standard CAHPS analysis; the objective of such adjustments is to enable survey users to assess what CAHPS scores would be between different units if they served similar patients. Nonresponse or poststratification weighting is intended to make the sample representative of the general population.

### *Case Study: A Comparison of Electronic and Mail Survey Results from a Well-Educated Patient Population*

– Jack Fowler, Ph.D., Senior Research Fellow, Center for Survey Research – UMass Boston

Drawing on a study conducted in three primary care practices in Greater Boston, Jack Fowler discussed the differences in response rates for four survey protocols: standard mail, mixed mode of web with mail follow-up, web with email invitations and reminders, and web through a portal with email invitations and reminders. Results from this study showed that mail and mixed mode (web and mail) survey approaches achieved higher response rates than a web-only protocol; an important conclusion was that a mixed mode is important for reaching respondents who do not use email.

### *Case Study: Findings from Administering Child HCAHPS on the Day of Discharge*

– Sara Toomey, MD, MPhil, MPH, MSc, Director/PI, Center of Excellence for Pediatric Quality Measurement; Chief Experience Officer, Boston Children’s Hospital; Assistant Professor of Pediatrics, Harvard Medical School

Sara Toomey discussed findings from a study that explored the feasibility of tablet administration of the CAHPS Child Hospital Survey (Child HCAHPS) on the day of hospital discharge. Response rates for this survey using mail administration tend to be low, in the 10-20 percent range, with even lower rates for certain groups of parents. This intervention tested a tablet-based survey with an audio option that was administered to parents by either unit staff or study staff at the end of the patient’s stay; the control survey was mail only. The staff tried to approach the parents of every patient identified for discharge and succeeded in reaching 71 percent.

Because the patient and parents hadn’t experienced the discharge process yet, questions about that aspect of their experience were pulled from the survey and asked later by mail. The response rate for those discharge items was high (approximately 80%), which suggests that the tablet-based interviews led to engagement with the survey.

Findings from the study suggested that administering patient experience surveys prior to discharge using a tablet was feasible in this setting. Compared to a mail-only survey approach, this approach tripled response rates with greater participation among hard-to-reach groups.

## **Key Questions and Issues**

After hearing these presentations, the audience and panelists discussed the following topics:

1. The promise and challenges of alternative survey modes
2. Strategies for encouraging survey responses
3. The potential impact of changes to survey length, design, and format

### **1. The Promise and Challenges of Alternative Survey Modes**

Several of the presentations concluded that a mixed mode (mail plus one or more other modes) continues to offer the best response rates, and that mail remains an effective mode of data collection. The use of web surveys is promising but poses its own data collection challenges because of the need for accurate email addresses and the uneven use of the web across various segments of the population. Most importantly, the speakers addressed the importance of not just using multiple survey modes, but also targeting the survey mode to segments of the respondent populations most likely to respond to specific modes.

Participants raised multiple questions about the use of alternative survey modes, as discussed below.

## *Use of email*

**Relationship between email address and survey scores:** Do people who respond to an email invitation to a web survey respond differently than those who respond to other modes? Bill Rogers noted that an analysis of responses to a statewide survey in Massachusetts found that higher response rates were obtained from respondents who had email addresses and they tended to report more positive experiences with care.

**Source of the message:** Does it matter who is sending the initial letter or email inviting patients to complete the survey? An analysis of response rates for a statewide survey in Massachusetts found that response rates were higher when emails came from medical groups than from health plans. Several participants agreed that it can be helpful to use a medical office for a sampling frame because people tend to pay more attention when a message comes from a medical office.

**Completeness of responses to an electronic survey:** Are there differences in the completeness of surveys administered on the web? Jack Fowler noted that there weren't many incompletes in the study he conducted in Greater Boston. The big hurdle is getting the person to open the email and click on the link to the survey.

**Differences in responses rates for mail versus web:** Why would a mail survey get a higher response rate than a web survey? Many people have a level of comfort with mailed surveys, in part because they can see what all the questions are, but some people, especially younger ones, are more comfortable with email. Another issue is that some people delete emails without giving them much consideration.

**Use of texts:** What is the feasibility of using text messaging? There is not much known yet about the usefulness of texts as a way to invite respondents to complete a survey using another mode. While texts could be used to encourage people to respond to a survey, that approach would require testing. Two key issues are the need for consent before texting a patient and the need for a secure method to text. Some health systems are getting pushback on the use of texts with appointment reminders. Text messages also annoy some people because of the associated cost.

**Impact on survey questions:** How might the use of online modes affect the survey questions? CAHPS promotes the use of mode adjustment based on randomized mode experiments in addition to case-mix adjustment in part to address the effects on responses of different modes. Don Dillman suggested that the movement to web-based surveys may make it even more important for the questions to be clear and easy to understand and for the language around them to be engaging; those administering these surveys can't assume that a "just the facts" approach will be sufficient.

**Tradeoff between cost and representativeness:** What are the tradeoffs related to fielding more web-based surveys, recognizing that the response rates are lower, in order to reduce the cost of annual surveying? One significant tradeoff would be that the responses to a web-based survey are not likely to be representative; a large sample size that is not representative of the patient population is not as helpful as it may appear. This approach would be especially problematic for surveys targeted at older populations for whom mail surveys tend to be effective.

## *Use of tablets to survey at end of stay*

**Feasibility:** What is the feasibility of widespread use of tablets to survey parents of hospitalized children at discharge? Based on her experiment, Sara Toomey sees this approach as promising in a pediatric hospital setting where parents or guardians can participate while waiting for the child to be released, but noted that this method would have to be built into the workflow. She also acknowledged that it would likely be more challenging in ambulatory settings, especially if the survey asks about the experience of care over a period of time. A survey administered to patients in a provider's office would

also not effectively capture access issues because it wouldn't reach patients who were not able to make an appointment. Other participants noted that previous tests of in-office survey administration found that it was challenging to find adequate time to survey patients either before or after the visit.

**Capabilities of tablet technology:** Participants offered a few comments and questions related to the functionality of the tablet-based survey. For example, one participant suggested including a picture of the patient's care team. Some participants thought the photos might help encourage feedback, while others expressed concern that putting photos on the tablets could pose some challenges and might affect responses. Jack Fowler pointed to the value of offering an audio option, especially for low literacy respondents.

**Missing respondents:** Were there any systematic differences in which pediatric patients were missed? Sara Toomey responded that there were a few reasons why parents or guardians of pediatric patients were not surveyed: in some cases, the discharge period was too brief; in others, the parent was not available to answer the survey until just before the patient was discharged. To maximize representativeness, she suggested that, if needed, parents or guardians not surveyed in the hospital setting could be sent a survey at home. An audit could also be done to make sure that everyone is offered the opportunity to take the survey.

**Usefulness of near-time results:** What was the hospital's response to getting Child HCAHPS Survey results so soon after the stay? Speaking as the hospital's Chief Experience Officer, Sara Toomey regarded getting real-time data for four units as invaluable because it changed the way those units could approach incorporating patient experience data into their improvement efforts. Sheila Moroney also commented that providers in her health system tend to be more engaged with the results from web surveys because they come back in an average of 7 days in contrast to the paper surveys, which come back in an average of 33 days.

On the other hand, there are ways to address the desire for more frequent data, e.g., by collecting rolling data but feeding it back to providers quarterly. Also, surveys can be complemented by other approaches to getting real-time input from patients, such as inpatient rounding to ask patients about their experiences with care delivery.

Others argued that clinicians' desire for "recent" information points to a need for education, in that the purpose of the survey results is to identify systemic issues, not to say what happened last Wednesday or provide an individual assessment. Also, while having recent data can be helpful for certain aspects of the care experience, like having access to care, other aspects, like physician behavior, don't actually change much over time.

**Cost:** What is the cost of using tablets versus email/web administration? Sara Toomey could not comment on this question because the experiment did not assess and compare costs in this way. While there would be a cost to setting up the tablets and working the survey into the discharge workflow, she did not think that the cost of maintaining this approach would be significant.

### *Challenges of telephone mode*

**Impact of survey length:** What is the effect of survey length on response rates for telephone surveys? Marc Elliott reported that the HCAHPS mode experiment found that survey length had a bigger effect on response rates from mail with telephone follow-up administration (relative to mail administration only, perhaps because of an aversion to longer surveys by telephone when the length of the telephone survey is indicated to potential respondents).

**Use of telephone to invite or remind respondents:** What is the value of leaving a message to say that someone is going to get a survey, rather than sending that invitation or reminder by mail? Noting that

the use of telephones is no longer a strong part of our culture, Don Dillman suggested that the use of voicemail may be more consistent with current mores.

### *Surveying everyone rather than a sample*

**Census versus sample:** What are the tradeoffs involved in surveying everyone by email after every visit rather than drawing a sample? This approach has resulted in lower response rates but many more responses. Jack Fowler acknowledged that having big numbers has some advantages, such as lower variance, but questioned whether this approach would capture responses from different people with different things to say. Rod Little agreed that it is better to have more data than less but noted that the bias is likely to remain the same. Finally, Alan Zaslavsky questioned the value of asking the same people the same questions multiple times, which may not be resulting in useful information. Another option would be to use email with a census for an initial survey and then mail for follow-up with nonrespondents, and then combine the responses.

Is census sampling or physician-level sampling better in the context of ambulatory care? Noting that this is a survey design question, Alan Zaslavsky suggested that the challenge would be that one wouldn't be doing surveys year after year with the same population. It would be important to determine how much variation there is among the doctors. One possibility is that one would need to have so many patients from each doctor that surveying would not be feasible.

### *Other issues*

**The impact of too many surveys:** To what extent does oversurveying contribute to low response rates? Participants asked whether the growing number of surveys administered to patients by different kinds of providers contributes to low response rates and how they could reduce the burden. Don Dillman argued that the surveys themselves are not the problem, that is, that the issue is whether patients perceive responding to the surveys as worthwhile.

## 2. Strategies for Encouraging Responses

Several speakers addressed the potential for improving response rates by using tailored encouraging language in survey invitations and the survey itself.

### *Key messages to encourage responses*

**Content of messages:** What kind of messages engage people and make them want to respond? Some participants commented on the need for language that addresses multiple possible motivations for completing a patient experience survey. Through testing of different subject lines and messages, Jack Fowler and colleagues found that it is important to communicate that there's a purpose to the survey and that someone cares and will do something with the responses. For the Emergency Department Survey discussed by researchers at CMS, for instance, respondents received either a short cover letter or a text indicating that the purpose of the survey was to improve patient experience in the emergency department. Potential respondents also want to know what they'll be asked about so they can assess whether they will be able to answer the questions.

Don Dillman noted that it is important to learn why people aren't responding. For example, through testing with a Latino population, one health system found that some people chose not to respond because they thought no one would pay attention to the information; some were also concerned that responding might invite questions about their immigration status. It can be especially difficult to reach people who have had a bad health care experience in the past. Such respondents need to be convinced that someone wants to make things better. Also, some people also do not want to risk their ability to get care in the future or damage their physician's reputation or rating in some way.

Others noted that very small differences in language can make a big difference. A trial of different messages to introduce the CAHPS Patient Narrative Elicitation Protocol found that changes in the message had a significant impact on response rates.

Referring to an experiment testing different ways of saying that your doctor is involved and interested in your response to the survey, Carol Cosenza noted that people were concerned that their doctors would know how they answered or that their answers could have a negative effect on their doctor (e.g., that their answers could affect what their doctor is paid).

One final suggestion about messaging in invitation letters was to avoid marketing language from the survey vendor that has no meaning for the sampled population, e.g., “We have been administering this survey for 75 years...”

**Variety in messaging:** Would there be a benefit to varying messages? Messages can be delivered to the sampled population in different ways, and each communication is an opportunity for an appeal on different motivational issues. A few participants noted that it may be feasible to tailor communications to speak to the concerns of different segments of the population. Don Dillman also argued against repetition in letters and recommended including different appeals in each reminder.

#### *Outreach to encourage survey responses*

**Pre-survey outreach:** What forms of outreach prior to survey administration might help to encourage people to respond to surveys? Some practices post signs letting people know that they may be asked to respond to a survey. In the hospital context, it may be helpful to tell patients at the time of admission that they will be asked for feedback at the end of the hospital stay and why the hospital wants that input.

**Outreach by clinicians:** Is there a role for clinicians in encouraging responses, such as by talking to patients about the value of getting their feedback? Susan Edgman-Levitan noted that some practices at Massachusetts General Hospital encourage patients to respond to survey; individual clinicians actively encourage patients to sign up for the portal but avoid saying anything directly about the survey to avoid creating a bias one way or the other. Participants suggested that it would be useful to conduct research on how clinicians could engage patients in being responsive to the survey to help with quality improvement and how that kind of communication might affect the clinician-patient relationship.

**Role of PFACs:** Is there a role for a Patient-Family Advisory Council (PFAC) to encourage responses to a survey? CMS’s Comprehensive Primary Care Initiative is considering whether it could be helpful for individual institutions to present their Patient-Family Advisory Council as the sponsor of a survey.

### 3. The Potential Impact of Changes to Survey Length, Design, and Format

#### *Survey length*

**Impact of survey length:** Is there any evidence that a survey of a specified length would provide a better response rate? The research regarding survey length that was presented at this meeting used different variations of CAHPS surveys, both vendor surveys using CAHPS questions and CAHPS surveys with a large number of supplemental items. Marc Elliott pointed out that response rates were largely the same when a third of the survey items were cut from the MA CAHPS survey.

Don Dillman noted that these findings were consistent with the literature on this topic, i.e., that survey length has an impact, but not a large one. He argued that the layout of the survey is more important and questioned whether the issue is the number of pages or the number of questions.



Reporting on a 2014 experiment in California and Massachusetts with a shorter one-page survey, Bill Rogers noted that the response rates were a little better, but the amount of information they collected was not as useful. Don Dillman pointed out that when you are telling the respondent that it is really important to answer the survey, the questions need to measure up.

### *Survey content, design, and format*

**Messaging within a survey:** How can the survey itself encourage responses? Some participants suggested regarding a survey as a place to communicate with respondents, that is, using both visuals and words to engage people in filling out a survey. Conversely, bad or confusing layout can make people think that responding to the survey will be effortful or even unpleasant. Including useful information in the questionnaire, such as what to do and why it's important, also takes the pressure off of the cover letters.

**Coordinating format across modes:** How does using both mail and web modes affect formatting? Participants discussed the merits to having a consistent look across paper and web versions of a survey (e.g., by making the paper survey resemble a web layout), as well as the implications for mobile devices. For example, the use of mobile devices could affect the use of 11-point scales (e.g., 0 to 10 rating questions).

**Time to complete:** What are the implications of online surveys for the time needed to respond to the survey? Studies of other surveys, such as PROMIS, have found that people complete surveys more quickly online. On the other hand, people taking the surveys using mobile devices may go back to the survey several times to finish it.

**Displaying questions online:** What are the merits of displaying several questions on a page (which requires scrolling) versus showing one question at a time? Participants noted that this is a question that would benefit from further research.

## Topics for Future Research

While the research presented is promising, the speakers and participants at the meeting confirmed the need for continuing research to identify effective strategies for improving survey response rates and the representativeness of survey data. This work is essential for developing accurate and useful information on patient experience, which is invaluable for improving the care delivered to patients.

Research currently underway or planned by the CAHPS Consortium include:

- Continued assessment of the feasibility and effectiveness of various survey modes, including electronic survey methods, the best sequencing of survey modes, and strategies for maximizing response rates with mixed-mode survey administration.
- Further investigations of motivating language in survey invitation letters and emails and within the survey itself.
- Experimentation with survey design and layout to improve standardization across modes, ease of comprehension, and motivation to complete the questions.

## Participants in the Research Meeting

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