

# Fielding the CAHPS® Health Plan Survey

## 4.0: Commercial Version

### Sampling Guidelines and Protocols for Surveying Adults and Children

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## Introduction

This document explains how to field the CAHPS Health Plan Survey for commercial populations (adults and/or children) and gather the data needed for analysis and reporting.

You will find instructions and advice related to the following topics:

- Constructing the sampling frame
- Choosing the sample
- Maintaining confidentiality
- Collecting the data
- Tracking returned questionnaires
- Calculating the response rate

These instructions are primarily aimed at the vendors who field the survey, but they are also meant to help sponsors better understand the technical steps in the process.

## Summary of Key Requirements for Administering the Health Plan Survey

Survey Administration	Guideline Specifications
Survey instrument	CAHPS Health Plan Survey (4.0 or 4.0H)
<b>Data Collection</b>	
Administration	Survey must be conducted by a third party vendor according to CAHPS Health Plan Survey guidelines or the HEDIS protocol.
Collection mode	Mail, telephone, or mixed mode protocols are recommended. Internet enhancement is accepted.
Sample size	The sample needs to be large enough to yield 300 completed surveys per health plan product, a cost-effective method shown to produce statistically valid survey comparisons.
Response rates	Target rates are 60 percent for commercial health plans and 50 percent for Medicaid, but lower rates are accepted.
Completion criteria	A questionnaire is complete if it has responses for 10 or more of the key items. (See Appendix B for more information).
<b>Data Analysis</b>	
Case-mix adjustment	Data should be adjusted for age, education, and self-reported health status. Sponsors have the option of adjusting the case mix for other factors as well.

## Sampling Guidelines

These sampling guidelines will help you understand who is eligible to be included in the sample frame for the adult version and the child version of the CAHPS Health Plan Survey. They also explain how to select a sample for each of these surveys. By following these guidelines, you can be confident that your results will be comparable to those produced by other sponsors and vendors. This is particularly important if you are planning to participate in the National CAHPS Benchmarking Database (the CAHPS Database).

For more information on the CAHPS Database, visit [https://www.cahps.ahrq.gov/content/ncbd/ncbd\\_Intro.asp](https://www.cahps.ahrq.gov/content/ncbd/ncbd_Intro.asp).

## Determining the Number of Sampling Units You Need: Plans Versus Products

Your sample design will be based on the units for which you want to compare results once the survey is completed. These can be health insurance plans or products within health plans. “Health insurance plan” is the entity that offers the health insurance (e.g., Plan A), and the “product” is the specific benefit plan design or coverage offered by the plan (e.g., Plan A’s HMO product).

You will be drawing a sample for **each** health insurance plan or product in your sample design. Separate plans into products if there are differences in geography, provider networks, or administrative structure. Also, treat each product separately if the benefits and coverage are different, since these differences have an effect on consumers’ reports of their experiences with care and their ratings of care. Be sure to analyze and report separate results for each of the unique samples.

## Defining the Sample Frame: Eligibility Guidelines

The sample that a vendor selects to survey will be drawn from a list of individuals (adults age 18 and older, or children 17 and younger) covered by the plan or product. This list, which is provided by the sponsor, is called a sample frame. These are the CAHPS guidelines for determining who to include in your sample frame:

- **If you are surveying adults**, include all individuals 18 years or older who have been enrolled in the commercial plan for 12 months or longer, with no more than one 45-day break in enrollment during the 12 months.
- **If you are surveying children**, include all individuals 17 years or younger who have been enrolled in the commercial plan for 12 months or longer, with no more than one 45-day break in enrollment during the 12 months.
- **To identify those who have been enrolled in the plan or product for 12 months or longer**, use the anticipated start date of data collection to

determine whether the person meets the 12-month eligibility requirement. For example, if your anticipated start date is March 1, 2009, include all those who have been continuously enrolled March 1, 2008.

- Allow the sample **sample frame** to include multiple individuals from the same household, but the sample you draw should not have more than one person (adult or child) per household. (If you are surveying both adults and children, please see the guidelines for creating the two samples at the end of the section on **Sample Size**.)
- Include individuals with primary health coverage through the plan. Do not include individuals with only other types of coverage, like a dental-only plan.
- In the case of individuals who switch (or children who are switched) from one product to another within the same plan during the continuous enrollment period, count them as enrolled in the product in which they were enrolled the longest. For example, in the last 12 months, if the individual who was enrolled in a health plan’s HMO product for 8 months switched to the **same** health plan’s POS product, consider that person continuously enrolled in the health plan’s HMO product.

<b>Sample Frame Elements</b>	
The following information (data elements) should be included in the sample frame that a sponsor provides to the vendor.	
<b>Adult Questionnaire</b>	<b>Child Questionnaire</b>
Unique member ID (this number is typically provided by the health plan)	Unique child ID (this number is typically provided by the health plan)
Plan ID (unique number that identifies the health plan)	Plan ID (unique number that identifies the health plan)
Name of health plan	Name of health plan
Health plan product type (HMO, POS, PPO, PCCM, etc.)	Health plan product type (HMO, POS, PPO, PCCM, etc.)
Name of person (first and last names in separate fields)	Name of child (first and last names in separate fields)
Gender	Gender of parent or guardian
Date of birth	Date of birth of child
Complete address (includes street address, city, State, and ZIP Code each in a separate field)	Complete address of parent or guardian (includes street address, city, State, and ZIP Code each in a separate field)
	Parent or guardian’s name
Telephone number with area code (if available)	Parent or guardian's telephone number with area code (if available)

### Sample Frame Elements

The following information (data elements) should be included in the sample frame that a sponsor provides to the vendor.

Adult Questionnaire	Child Questionnaire
Date of enrollment in plan	Date of child's enrollment in plan
Months of continuous enrollment	Months of continuous enrollment of the child
	Claims and/or encounter data OR Prescreen status code (if applicable; see Tables 3-1, 3-2, and 3-2A for lists of relevant codes)

### Transforming a Sample Frame of Policyholders to a Sample of All Covered Lives

If you are conducting a survey of commercially insured consumers, you may find that the sample frame includes only policyholders because the names of covered spouses and children may not be available in the data files used to construct the sample frame. In other cases, the sample frame may include all covered lives—that is, policyholders as well as their family members who are covered by the policy.

If you have a sample frame that includes only policyholders, you have two options:

1. Survey only policyholders; or
2. Revise your sample frame so that it includes all covered lives and then select a sample drawn from that frame.

Surveying a sample drawn from a sample frame of all covered lives is preferable because it gives you information about the experience of all health plan members, not just those members who are policyholders. You may also have a situation where you have a list of covered lives for some of the sampled plans but a list of policyholders for others. In this case, we recommend that you convert the frame for all of the plans to a frame of covered lives.

This section outlines a few ways in which you can create a frame of covered lives using a procedure called **two-stage sampling**. Two-stage sampling involves selecting a sample of policyholders and, at the same time, a sample of individuals from the selected policyholders' households. Such designs usually require weighting at the time of analysis to reflect the fact that the probability of selection is inversely proportionate to the number of covered adults in a household. You will need the assistance of a statistician to draw the sample.

- **Option 1.** In this option, you first select a sample of policyholders. An interviewer then calls each sampled policyholder and screens for additional individuals covered under the policy. (This total list serves as the equivalent of a sample frame of all covered lives.) During this call, the interviewer uses

a set of rules to select a person to be interviewed and completes the questionnaire, over the phone, with the sampled respondent. This selected respondent is either the policyholder or another adult covered by the policy.

- **Option 2.** This option uses a telephone screening step in which the interviewer asks each policyholder in the sample frame to list all the people enrolled under their policies. The resulting list, which is the sample frame, includes all covered lives (adults and children). You can then draw an appropriate sample from the sample frame of all covered lives and conduct the survey.
- **Option 3.** This option is similar to Option 2 in that it uses a screening step, but in this case a screening questionnaire is mailed to the policyholder. Although screening by mail is less expensive than screening over the telephone, it takes more time, and you may not get many responses to your mailing. If most of the plans in your survey already have a sampling frame of covered lives, you may decide to use telephone screening as a way to develop a sampling frame of covered lives for the plans that lack them. If you have many plans that lack a sample frame of covered lives, however, the cost of telephone screening may be prohibitive. In this case, you may need to conduct a mail screening, which sacrifices increased time efficiency and quality in favor of lower costs. Once the screening has been completed, you can then draw the sample and begin data collection.

Each of these sampling options has advantages and disadvantages; sponsors should discuss these issues in detail with their survey vendor and/or consultant. We recommend that you choose Option 1, if possible. Although it is the most expensive option, it is the most accurate and time-efficient and will generate the highest response rate.

### Calculating Sample Size

This section explains how to calculate the appropriate sample size for the CAHPS Health Plan Survey. It provides two sets of instructions:

1. Calculating the sample size for the adult questionnaire
2. Calculating the sample size for the child questionnaire

The last part of this section suggests a sampling strategy if you plan to survey both adults and children.

### Calculating the Sample Size for the Adult Questionnaire

To have a sufficient number of responses for analysis and reporting, you need to select enough individuals to obtain approximately 300 completed adult questionnaires per plan/product. Assuming you achieve a response rate of 50 percent for Medicaid

recipients,<sup>1</sup> you would need to start with a minimum sample size of 600. Figure 3-1 illustrates this calculation.

**Figure 3-1: Calculation of Estimated Sample Size Needed – Adults Only**

	<b>Commercial enrollees</b>
Goal	300 completed surveys
Target response rate	60 percent
Minimum sample size needed	500 per plan/product

If you anticipate that poor contact information (addresses and phone numbers) will decrease the number of questionnaires that reach the sampled individuals, you may need to start with a larger sample.

If one or more of the plans do not have a membership large enough to draw the required sample size, the sample will be everyone in the health plan enrollee population who meets all the eligibility criteria. But remember, even under these circumstances, the sample may include only one adult per household.

### **Calculating the Sample Size for the Child Questionnaire**

For the child questionnaire, the sample size you need depends on what kinds of information you want to collect and report.

#### ***Information on the General Child Population Only***

If you want to report results that reflect the health care experiences of the general child population only, you need to select enough children to obtain approximately 300 completed questionnaires per plan/product. Assuming a 50 percent response rate for Medicaid recipients, a sample size of 600 would be required. Figure 3-2 illustrates this calculation.

**Figure 3-2: Calculation of Estimated Sample Size Needed – Children Only (General Population)**

	<b>Commercial enrollees</b>
Goal	300 completed surveys
Target response rate	60 percent
Minimum sample size needed	500 per plan/product

If you anticipate that poor contact information (addresses and telephone numbers) will decrease the number of questionnaires that reach the sampled children, you may need to start with a larger sample.

<sup>1</sup> The CAHPS Consortium has found that a 50 percent response rate is achievable if you take steps to ensure the accuracy of the sample frame and carefully follow the recommended data collection protocol, including one or more attempts to follow-up with non-respondents.

If one or more of the plans do not have a membership large enough to draw the required sample size, the sample will be everyone in the health plan enrollee population who meets all the eligibility criteria. But remember that the sample may include only one child per household.

***Information on the General Child Population Plus Information on Children with Chronic Conditions***

If you have added the *CAHPS Item Set for Children with Chronic Conditions* to your commercial questionnaire, you can report results that reflect the health care experiences of the general child population as well as those children with chronic conditions. (This item set is highlighted in yellow in the Medicaid version of the Health Plan Survey.) In that case, the sampling strategy includes additional considerations. As shown in Figure 3-3, a much larger initial sample is required.

**Figure 3-3: Calculation of Estimated Sample Size Needed to Report on Both Children in the General Population and Children with Chronic Conditions**

	<b>Commercial enrollees</b>
Goal	300 completed surveys from each group
Target response rate	60 percent
Minimum sample size needed	Approximately 1,308 (see Figure 3-4), but varies by sampling strategy

In order to obtain valid results for the child survey that will support comparisons of children with and without chronic conditions, you must have **at least 300 responses from each category of children**. The following sampling strategy, known as the enriched sampling approach, suggests a way to reduce the overall sample size necessary to get the number of valid responses needed to analyze these groups separately. It achieves this objective by identifying children who are more likely to screen positive with the survey's five-item screener.

Keep in mind that you cannot know for sure ahead of time how many children will meet the criteria for having chronic conditions. As a result of the research reviewed and conducted during the development of the child questionnaire, we can estimate the number of children likely to screen positive for having a chronic condition. However, for the purposes of reporting CAHPS survey data, children with chronic conditions are identified using the child questionnaire's five-item screener. To be identified during the data analysis, the respondent must say "yes" to all three parts of one or more of the five screener items. For more information about the screener, please consult *About the Item Set for Children With Chronic Conditions* (Document. No. 102):

- HTML:  
[https://www.cahps.ahrq.gov/CAHPSkit/files/102\\_Children\\_with\\_Chronic\\_Conditions\\_Set.htm](https://www.cahps.ahrq.gov/CAHPSkit/files/102_Children_with_Chronic_Conditions_Set.htm)
- PDF:  
[https://www.cahps.ahrq.gov/CAHPSkit/files/102\\_Children\\_with\\_Chronic\\_Conditions\\_Set.pdf](https://www.cahps.ahrq.gov/CAHPSkit/files/102_Children_with_Chronic_Conditions_Set.pdf)

**Enriched Sampling Approach.** In comparison to a population-based random sampling approach, the enriched sampling approach allows you to reduce the total sample size necessary to obtain a sufficient number of children with chronic conditions for the purposes of CAHPS analysis and reporting. This approach, which has been tested by researchers in the field, uses a prior diagnosis resulting from a claim or encounter to prescreen children who are more likely to have a chronic condition as identified by the screener. This strategy is also designed to generate a sufficient number of completed questionnaires from children in the general population so that you can report valid data separately for both the general population and children with chronic conditions.

This strategy is consistent with the NCQA's requirements, although the sample sizes differ. If you plan on submitting your data to NCQA, you must adhere to the specifications detailed in *HEDIS 2009 Volume 3: Specifications for Survey Measures*. For questions, contact the NCQA at (202) 955-3500 or at [www.ncqa.org](http://www.ncqa.org).

To implement this strategy, follow these steps:

**Step 1:** Assign each child in your sample frame one of the following prescreen status codes:

- **Prescreen Status Code 1:** The child has no claims or encounters in the last 12 months (measurement year) or in the year prior to that.
- **Prescreen Status Code 2:** The child has claims or encounters that meet one or more of the following criteria:
  - **One or more of the diagnosis codes listed in Table 3-1** in any setting (outpatient visits, emergency department [ED] visits, inpatient discharges, or partial hospitalizations) during the measurement year or the year prior to that. The diagnosis need not be the principal diagnosis.
  - **At least two visits on different dates of service with a diagnosis listed in Table 3-2** during the measurement year or the year prior to that in **any outpatient setting**. At least two visits must have the same diagnosis. The diagnosis need not be the principal diagnosis. Use the codes in Table 3-2A to identify outpatient visits.

- **At least one diagnosis listed in Table 3-2** during the measurement year or the year prior to that associated with **any inpatient discharge or ED visit**. Use the codes in Table 3-2A to identify inpatient discharges and ED visits.
- **Prescreen Status Code 3:** The child has a claim or encounter, but it does not meet any of the criteria listed under Prescreen Status Code 2.

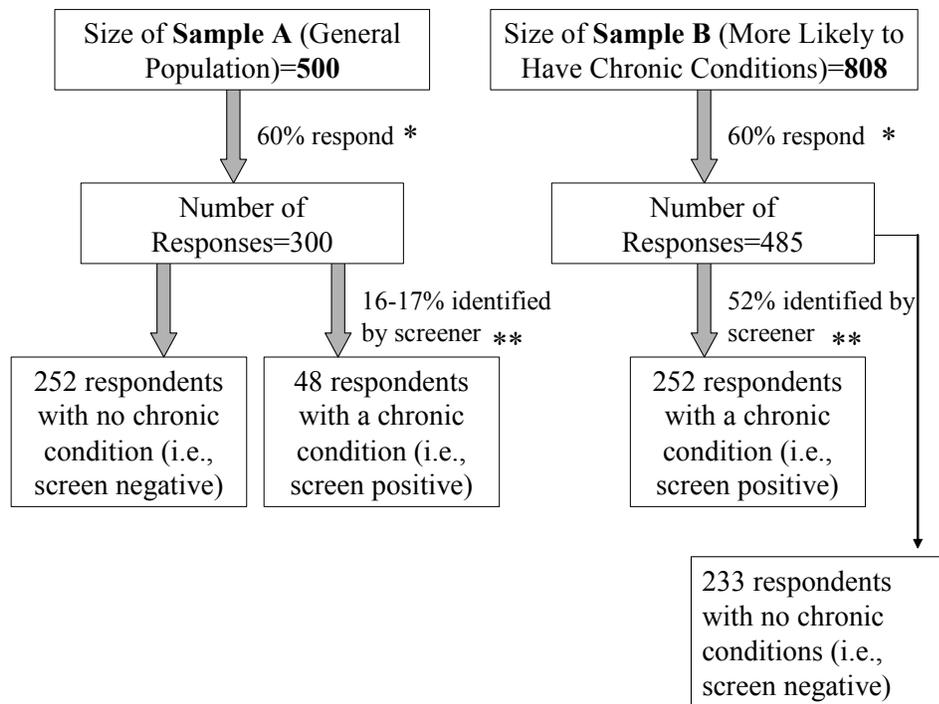
Flag all eligible children in the sample frame with one of the three prescreen status codes.

**Step 2:** From the entire frame of children, draw a random sample of 500 children with commercial coverage and call it Sample A (see Figure 3-2 for the sample size calculation). This group represents the general population of children. (Note that Sample A may include children with a prescreen status code of 1, 2, or 3.)

**Step 3:** From the frame of children with Prescreen Status Code 2, de-duplicate the population so that children who are already in Sample A cannot be selected into Sample B. Sample B represents children who are likely to be identified by the screener as having a chronic condition. Draw Sample B. Please see Figure 3-4 for the sample size calculation for commercial enrollees.

**Step 4:** Add Sample A to Sample B to get the total sample draw of 1,308.

**Figure 3-4: Calculating the Sample Draw for Commercial Plans/Products**



\* If you have a better estimate of what your response rate might be based on previously fielding a CAHPS survey, you may want to adjust your sample size accordingly.

\*\* These are estimates based on research and testing during the development of the survey.

Table 3-1: ICD-9-CM Codes to Use to Assign the Prescreen Status Code

Description	ICD-9-CM Codes
Infectious Disease	010-018, 030, 040.2, 042, 046, 079.5, 135, 136.3
Malignancies	140-208, 230-239
Neurofibromatosis	237.7-237.9
Thyroid Disorders	240-246.9
Diabetes	250
Other Endocrine Disorders	252, 253, 255
Nutritional Deficiencies	260-263, 268.0-268.1
Metabolic Disorders	270-273, 275, 279
Cystic Fibrosis	277
Blood Disorders	281-284, 286, 288
Psychoses	290-299
Neuroses, Alcohol/Drugs, Depression, Eating Disorders	300-311
Developmental Delay (speech, reading, coordination)	315
Mental Retardation	317-318.2
Central Nervous System Diseases, Hereditary and Degenerative	330, 331.3-331.4, 333.5, 333.7, 334-335
Central Nervous System Diseases, Other	340-341, 344, 352.6, 356
Cerebral Palsy	343
Epilepsy	345
Muscular Dystrophy	359
Eye Disorders	365.14, 369
Hearing Loss	389
Heart Disease	393-398, 424.1, 424.3, 425, 446
Other Respiratory Diseases	496, 516
Ulcer	531-534
Noninfectious Enteritis and Colitis	555-556
Other Digestive Diseases	571, 577.1, 579.0-579.1
Nephritis, Nephrosis	581-583, 585-586, 588.0-588.1
Skin Diseases	695.4
Arthropathies	710, 714
Connective Tissue Diseases or Disorders	720, 728
Osteopathies	730.1, 732
Spina Bifida	741
Congenital Anomalies (except spina bifida)	742, 745-749, 750.3, 751.2, 751.61, 751.62, 752.7, 753, 754.3, 755.2-755.3, 755.55, 756, 758, 759.5, 759.7-759.8, 760.71
Prematurity	765
Perinatal Diseases	770.7, 771.1-771.2
Severe Injury	854, 952.1, 994.1

**Table 3-2: ICD-9-CM Codes to Use to Assign the Prescreen Status Code**

Description	ICD-9-CM Codes
Conduct Disorder	312
Emotional Disturbance	313
ADHD	314
Asthma	493
Failure to Thrive	783.0, 783.4

**Table 3-2A: Codes to Identify Inpatient, Emergency Department (ED), Observation Room, and Outpatient Visits in Conjunction with Table 3-2**

Description	CPT Codes	UB-92 Revenue Codes	UB-92 Type of Bill Codes
Inpatient/Emergency Department/ Observation Room	90816-90819, 90821-90824, 90826-90829, 99217-99223, 99231-99236, 99238, 99239, 99251-99255, 99261-99263, 99281-99285, 99288, 99291, 99292, 99295-99298, 99301-99303, 99311-99313, 99356, 99357, 99431, 99433, 99435	10X-17X, 19X-22X, 45X, 72X, 76X, 80X, 981, 987	11X, 12X, 41X, 42X, 18X, 84X
Outpatient	90804-90815, 90918, 99201-99205, 99211, 99215, 99241-99245, 99321, 99323, 99341-99345, 99347-99350, 99354, 99355, 99381-99384, 99391-99394, 99401-99404, 99411, 99412, 99420, 99429, 99432, 99450, 99499	510, 513, 516, 517, 520, 521, 523, 82X-85X, 982, 983	13X, 7XX

**Alternatives to the Enriched Sampling Approach.** If for some reason you cannot follow the recommended approach described above but want to report survey results separately for children with chronic conditions, you may want to consider an alternative sampling strategy. The CAHPS User Network can assist you in developing an alternative sampling approach that suits your needs and available data. Please contact the User Network by e-mail ([cahps1@ahrq.gov](mailto:cahps1@ahrq.gov)) or telephone (1-800-492-9261).

- **Participating in the National CAHPS Benchmarking Database:** If you choose an alternative approach and wish to participate in the CAHPS Database, you will need to provide the CAHPS Database additional information on this strategy. The CAHPS Database will review your

approach to determine if they can accept and report your data. Because of the differences in sampling methodologies, the CAHPS Database cannot guarantee that it will report results for your first submission. For more information about the CAHPS Database, visit [https://www.cahps.ahrq.gov/content/ncbd/ncbd\\_Intro.asp](https://www.cahps.ahrq.gov/content/ncbd/ncbd_Intro.asp).

- **Submission to the National Committee for Quality Assurance:** If you will be submitting your data to NCQA but cannot implement the recommended sampling approach found in *HEDIS 2009 Volume 3: Specifications for Survey Measures*, please contact NCQA at (202) 955-3500 or at [www.ncqa.org](http://www.ncqa.org).

### ***Creating a Sample to Survey Both Adults and Children***

If you plan to field both the adult and child questionnaires, the CAHPS Team recommends that you select enough individuals to obtain at least 300 completed adult questionnaires per plan/product and 300 child questionnaires per plan/product, assuming a 60 percent response rate for both adults and children. However, the sample should include only **one child or adult per household**. Once you have drawn your sample frame, you will need to fine tune it to remove any duplicate names from the lists.

You can use the following procedure to sample only one person per household:<sup>2</sup>

1. Separate the sample into two groups: (A) adults and (B) children.
2. Randomly select adults (from Group A) until you have a sample large enough to obtain 300 completed surveys.
3. Check the adult sample to ensure that there is only one adult per household.
4. Remove children (from Group B) who are in the same household as a selected adult.
5. Randomly select children from Group B until you have a sample large enough to obtain 300 completed surveys.
6. Check the children's sample to ensure that there is only one child per household.

This approach has the advantage of most closely approximating a self-weighting sample in which every person has an equal probability of being selected. This is because there are typically two adults in a household, but the number of children can be much larger

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<sup>2</sup> Also refer to: Sudman, S. *Applied Sampling*. New York: Academic Press, 1976. Kalton, G. *Introduction to Survey Sampling*. Sage. 1983.

(and the median number of adults is less than the median number of children per household).

However, if the sampled plan is too small to create the two mutually exclusive Groups A and B, you should consult a sampling statistician to determine the optimal design and how to appropriately weight the result.

### Preparing Sample Files for Data Collection

Once the sample has been selected, the vendor assigns a unique identification (ID) number to each sampled person. This unique ID number should **not** be based on an existing identifier such as a Social Security number or an employee ID number. This number will be used **only** to track the respondents during data collection.

Some sample frames may have up-to-date and accurate information on plan enrollment, but others may not. When information from two sources differs, sponsors and their survey vendors should consult with each other to decide which sources of information are most accurate and should be used as the basis for decisions. Keep in mind that sample files from the plans may not contain all the information you need for your sample frame. As a result, the sponsor and vendor may need to gather additional information. This may be a complex, multistep process that requires time and rigorous quality control. In addition, because the sponsor may be responsible for some elements of this process and the vendor for others, it is important to carefully coordinate this process.

Among the key pieces of information that are critical to the success of data collection are accurate and complete names, addresses, and, for telephone surveys, telephone numbers. When you have incomplete address information or you have reason to believe that this information may be inaccurate, sponsors and/or vendors may be able to use other sources, such as CD-ROM directories, Internet sources, or directory assistance, to clean the sample file.

### Data Collection Protocol

The survey sponsor will need to choose the data collection protocol that maximizes the survey response rate at an acceptable cost. Some sponsors, as well as researchers, conducting field tests have found that the mail with telephone followup method is most effective: results from the CAHPS demonstration sites indicate that the telephone followup often adds 10 to 15 percentage points to the response rate.

This section provides you with a protocol for collecting responses by mail with telephone followup. You can adapt this protocol to a mail-only or a telephone-only survey.

**Maintaining Confidentiality**

Privacy assurances are central to encouraging respondent participation. Survey vendors should already have standard procedures in place for maintaining the confidentiality of respondents' names and minimizing the extent to which identifying information, such as names and addresses, are linked to the actual survey responses. For example, the individual ID numbers that are used to track the survey must not be based on existing identifiers, such as Social Security numbers or employee ID numbers.

Many survey vendors require employees to sign statements of confidentiality ensuring that they will not reveal the names of respondents or any results linked to specific individuals.

There are several opportunities during the survey process to explain to respondents that their responses are kept strictly confidential. The key avenues are the advance and cover letters and interviewer assurances during telephone interviews.

**Conducting a Survey by Mail: Basic Steps**

This section reviews the basic steps for collecting data through the mail and offers some advice for making this process as effective as possible.<sup>3</sup>

- **Set up a toll-free number** and publish it in all correspondence with respondents. Assign a trained project staff member to respond to questions on that line. It is useful to maintain a log of these calls and review them periodically.
- **Send an advance letter to the respondent.** A well-written, persuasive advance letter authored by a recognizable organization (e.g., the sponsor or participating health care purchaser) will increase the likelihood that the recipient of the questionnaire will complete and return it within the deadline. For an example, see the *Sample Notification Letters* that were downloaded with your questionnaires.

**Tips for the letter:**

- Personalize the letter with the name and address of the intended recipient.
- Have it signed by a representative of the sponsoring organization(s).
- Spend some time on the cover letter, checking it for brevity and clarity, and ensuring that there are no grammatical or typographical errors.

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<sup>3</sup> Adapted from McGee J, Goldfield N, Riley K, Morton J. *Collecting Information from Health Care Consumers*, Rockville, MD: Aspen Publications, 1996.

**Tips for the outside envelope:**

- Make it look “official” but not too bureaucratic; it must not look like junk mail.
  - Place a recognizable sponsor’s name—such as the name of a government agency, where applicable—above the return address.
  - Mark the envelopes “forwarding and address correction” in order to update records for respondents who have moved and to increase the likelihood that the survey packet will reach the intended respondent.
- **Send the questionnaire with a cover letter and any special instructions to the respondent.** Mail the questionnaire package one week after the advance letter. Include a postage-paid envelope to encourage participation.
  - **Send a postcard reminder to nonrespondents 10 days after sending the questionnaire.** Some vendors recommend sending a reminder postcard to all respondents three to five days after mailing the survey instead of sending a postcard only to nonrespondents ten days after the survey is mailed. The reminder postcards serve as a thank-you to those who have returned their questionnaires and as a reminder or plea to those who have not. The *Sample Notification Letters* contain a sample card.
  - **Send a second questionnaire with a reminder letter to those still not responding thirty days after the first mailing.** The *Sample Notification Letters* contain a sample reminder letter.
  - **Begin followup by telephone with nonrespondents three weeks after you send the second questionnaire.** Interviewers should attempt to locate respondents who have not responded to the mailed survey. The sponsor can use either a CATI script or a paper-and-pencil method to conduct the telephone interviews.

**Conducting a Survey by Telephone: Basic Steps**

- **Check Telephone Numbers.** Check the telephone numbers of sample respondents for out-of-date area codes and partial or unlikely telephone numbers. All survey vendors should have standard automated procedures for checking and updating telephone numbers before beginning data collection. After extensive tracking, you may still be left with some respondents who do not have a working telephone number, or for whom you have only an address. Delivery of a package containing the questionnaire by an overnight service, such as a Priority Mail or Federal Express, can be an effective method of drawing attention to the need to complete the questionnaire.

- **Train the interviewers before they begin interviewing.** Ideally, the interviewer should not bias survey responses or affect the survey results. We recommend the following key procedures for conducting standardized, nondirective interviews:
  - Interviewers should read questions exactly as worded so that all respondents are answering the same question. When questions are reworded, it can have important effects on the resulting answers. Please refer to the *Sample Telephone Script* that was downloaded with your questionnaire.
  - When a respondent fails to give a complete or adequate answer, interviewer probes should be nondirective. That is, interviewers should use probes that do not increase the likelihood of one answer over another. Good probes simply stimulate the respondent to give an answer that meets the question's objectives.
  - Interviewers should maintain a neutral and professional relationship with respondents. It is important that they have a positive interaction with respondents, but there should not be a personal component. The primary goal of the interaction from the respondent's point of view should be to provide accurate information. The less interviewers communicate about their personal characteristics and, in particular, their personal preferences, the more standardized the interview experience becomes across all interviewers.
  - Interviewers should record only answers that the respondents themselves choose. The CAHPS instrument is designed to minimize decisions that interviewers might need to make about how to categorize answers.

Training and supervision are the keys to maintaining these standards. Although these principles may seem clear, it has been shown that training, which includes exercises and supervised role playing, is essential for interviewers to learn how to put these principles into practice. In addition, interviewers may not meet these standards unless their work is monitored. A supervisor should routinely monitor a sample of each interviewer's work to ensure that the interviewers are, in fact, carrying out interviews using prescribed standards and methods. When you are hiring a survey vendor, the protocol for training and supervision should be among the top criteria you consider when choosing among data collection organizations.

## Tracking Returned Questionnaires

Most vendors have established methods for tracking the sample. You should also set up a system to track the returned surveys by the unique ID number that is assigned to each respondent in the sample. This ID number should be placed on every questionnaire that is mailed and/or on the call record of each telephone case.

In order to maintain respondent confidentiality, the tracking system should not contain any of the survey responses. The survey responses should be entered in a separate data file linked to the sample file by the unique ID number. (This system will generate the weekly progress reports that sponsors and vendors should review closely.)

Each respondent in the tracking system should be assigned a survey result code that indicates whether the respondent completed and returned the questionnaire, completed the telephone interview, was ineligible to participate in the study, could not be located, is deceased, or refused to respond. The tracking system should also include the date the survey was returned or the telephone interview completed. The interim result code reflects the status of the case during the different rounds of data collection, and the final result code reflects the status at the end of data collection. These result codes are used to calculate response rates as shown in the next section.

## Calculating the Response Rate

In its simplest form, the response rate is the total number of completed questionnaires divided by the total number of respondents selected. For CAHPS analyses and reports, this rate is adjusted as shown in the following formula:

$$\frac{\text{Number of completed returned questionnaires}}{\text{Total number of respondents selected} - (\text{deceased} + \text{ineligible})}$$

In calculating the response rate, do not exclude respondents who refused, whom you were unable to reach because of bad addresses or phone numbers, or who were unable to complete the questionnaire because of language barriers or because they were institutionalized or incompetent. Listed below is an explanation of the categories included and excluded in the response rate calculation:

### Numerator Inclusions:

- **Completed questionnaires.** A questionnaire is considered complete if responses are available for 10 or more of a selected list of key CAHPS items. For more information about the key items in the Health Plan Survey 4.0, see Appendix B of this document.

### Denominator Inclusions:

The total number of respondents in the denominator should include:

- **Refusals.** The respondent (or parent or guardian of the sampled child) refused in writing or by phone to participate.
- **Nonresponse.** The respondent (or parent or guardian of the sampled child) is presumed to be eligible but did not complete the survey for some reason (never responded, was unavailable at the time of the survey, was ill or incapable, had a language barrier, etc.).
- **Bad addresses/phone numbers.** In either case, the respondent (or parent or guardian) is presumed to be eligible but was never located.

### Denominator Exclusions:

- **Deceased.** In some cases, a household or family member may inform you of the death of the respondent or the sampled child.
- **Ineligible - not enrolled in the plan.** The respondent or the sampled child disenrolled from the plan, was never in the plan, or was enrolled in the plan for less than 12 months.

## Improving Your Response Rate

Out-of-date addresses, inaccurate telephone numbers, answering machines, gatekeepers, and frequent travel by respondents are common problems. Sponsors and vendors have a number of methods available to them to maximize response rates:

- Improve initial contact rates by making sure that addresses and phone numbers are current and accurate (e.g., identify sources of up-to-date sample information, run a sample file through a national change-of-address database, send a sample to a phone number look-up vendor).
- Use all available tracking methods (e.g., directory assistance, Lexis-Nexis, CD-ROM directories, Internet database services and directories).
- Improve contact rates after data collection has begun (e.g., increase maximum number of calls, ensure that calls take place at different day and evening times over a period of days, mail second reminders, use experienced and well-trained interviewers).
- Consider using a mixed-mode protocol involving both a mail and telephone data collection procedure. In field tests, the combined approach was more likely to achieve a desired response rate than did either mode alone.
- Train interviewers on how to deal with gatekeepers.

- Train interviewers on refusal aversion/conversion techniques.

These methods will add to the costs of conducting a survey, but sponsors need to weigh these extra costs against the risk of obtaining low response rates and, consequently, less representative data.

Once the vendor reaches the respondent, other challenges await: Respondents throw away the envelope, sometimes unopened, or set aside the questionnaire but then never complete it. These responses draw attention to the importance of effectively communicating why the respondent should complete the survey. In addition to persistent follow-up, make sure that the outside envelope, cover letter, and questionnaire are as attractive and compelling as possible.

For additional advice and guidance, see:

- Appendix C: *Enlisting Respondents Who Are Difficult to Reach*
- McGee J, Goldfield N, Riley K, Morton J. *Collecting information from health care consumers*. Rockville, MD: Aspen Publications, 1996.

## Appendix A: Preparing the Data for Analysis

*This appendix reviews the steps that a vendor should take to transform the raw data from the CAHPS Health Plan Survey into data that the SAS analysis programs can use. Detailed instructions for using the analytical programs are provided in **Instructions for Analyzing Data from the CAHPS Health Plan Survey** (Document No. 2015).*

### Introduction

Before conducting an analysis, survey vendors must carry out several tasks to prepare the data received from completed questionnaires:

- Task 1: Identify and exclude ineligible cases
- Task 2: Code and enter the data
- Task 3: Clean the data
- Task 4: Conduct an audit

Many interim files will be created along the way. Prior to initiating this process, vendors must take steps to preserve the original data file created when the raw survey responses were entered. Any changes and corrections made during the cleaning and data preparation phase should be made on duplicate files. There are three reasons for this action:

1. The original data file is an important component of the complete record of the project.
2. Having an original file will allow you to correct data errors that were made during the cleaning process.
3. The existence of an original file is critical if the vendor or sponsor wants to go back later and conduct other analyses or tests, such as extent of error tests or tests of skip patterns.

Also, be sure to confirm whether the survey sponsor intends to participate in the National CAHPS Benchmarking Database (this information should have been incorporated into the data delivery specification in your RFP and eventual contract). If so, you can learn more about participation requirements at [https://www.cahps.ahrq.gov/content/ncbd/ncbd\\_Intro.asp](https://www.cahps.ahrq.gov/content/ncbd/ncbd_Intro.asp).

**Data File Specifications**

The data file contains the raw data from responses to the CAHPS Health Plan Survey. The names of the items for each survey can be derived from the crosswalk table in *Preparing a Questionnaire Using the CAHPS Health Plan Survey* (Document No. 1012). The responses to each question must use the code numbers contained in the questionnaires.

Vendors should construct a separate data file for each version of the CAHPS Health Plan Survey. Data from different survey instruments should not be included in the same data file. For example, do not include responses to the Adult Commercial and Child Commercial questionnaires or Adult Commercial and Adult Medicaid questionnaires in the same data file.

The number and scope of the data preparation tasks and the way they are carried out depends on the data collection protocol and the way in which the data were recorded. For example:

- If the vendor collected data with a self-administered mailed questionnaire, did respondents record answers on optical scan forms<sup>4</sup> or record data directly on the CAHPS-formatted questionnaires?
- If the vendor collected data through telephone interviews, did the interviewer use computer-assisted telephone interviewing (CATI) or paper-and-pencil forms?

**Task 1: Identify and Exclude Ineligible Cases**

Several situations render a case ineligible for analysis. One common scenario that vendors must be prepared to handle occurs when the respondent is not actually enrolled in a health plan or product included in the survey. This might be indicated by a “no” response to Question 1 (“Our records show that you are now in [*health plan name*]. Is that right?”).

However, vendors need to be alert to the fact that a respondent could be a member, but still answer “no.” For example, a respondent might be confused between the name of a plan (e.g., Blue Cross/Blue Shield) and a product offered by that plan (e.g., Blue Cross/Blue Shield’s Health Choice), and answer “no” erroneously. Or a respondent could answer “no” and furnish a provider’s or clinic’s name in answer to Question 2 (“What is the name of your health plan?”). If it is clear that the name provided refers to the same plan as that named in Question 1, or if there is sufficient confidence in the accuracy of the information in the sample file, the data processing staff should change

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<sup>4</sup> Optical scan forms are answer sheets in which respondents fill in the circle that corresponds to their answer choice. These forms are fed through an optical scanning machine, and the data are automatically captured by a computer. Standardized tests for students, such as the SAT, generally use optical scan forms.

the answer to “yes.” If not, staff should code the questionnaire as ineligible and exclude it from the analysis.

Another common reason to code a questionnaire as ineligible and exclude it from the denominator is that a respondent has been enrolled in the plan less than 12 months (if commercially insured) or less than 6 months (if covered by Medicaid).

Other questionnaires may be considered incomplete but are not excluded from the denominator. For example:

- If the respondent used a proxy to answer the questions for him or her; or
- If 10 or more of the key items on the questionnaire were not filled in (see Appendix B for a list of key items).

## Task 2: Code and Enter the Data

There are a variety of possible methods to enter data from CAHPS surveys. The exact level of coding required will depend on the method used to capture the data (e.g., questionnaires that require data entry versus questionnaires that are scanned by a computer). Your coding specialist should review each questionnaire to see whether the responses are legible and whether any responses need to be coded. After coding is completed, enter the data into a computer file.

If you use **optical scan forms** for your mailed questionnaires, the scanning equipment automatically enters the data into a computer-readable file. If you do not use optical scan forms, the mail questionnaires are designed for direct data entry without the need for coding most respondent answers. However, if it is unclear which answer the respondent selected (e.g., the respondent’s pencil mark does not neatly fit within a single answer category, or two responses are marked), then your coding specialist will have to make a decision about which response the respondent intended. If it is not readily apparent what the respondent had intended, then the coding specialist should indicate that the answer be entered as missing.

If you employ a **CATI system** for a telephone survey, data are entered directly into a data file that has already been programmed to refuse unlikely and invalid responses. If you use paper telephone questionnaires to record answers given in a telephone interview instead, the process for coding and data entry is the same as for the standard paper version of the mailed questionnaires.

To ensure quality, answers from paper/pencil questionnaires should be key entered by two separate data entry specialists. The results from the two should be compared to identify and correct data entry errors. At the end of the coding and data entry process, you will have an electronic data set of responses to all the questionnaire items.

### Task 3: Clean the Data

In many cases, the data set you have created will have imperfections. You will have to take several steps to fix these imperfections before any results are reported.

- **Check for out-of-range values.** Out-of-range responses occur when respondents provide inappropriate responses for a particular question. For example, if the valid response choices for a question are 0 or 1, a value of 2 would be out of range. Similarly, if a respondent circled two categories when he or she was supposed to provide only one answer, the response is out of the acceptable range of the question.

To detect out-of-range values, you need to review question frequencies. This can be done either by visually scanning a report showing the item distributions or frequencies or running the questionnaire data through a computer program. Often, both are used to improve the quality of the data. If a value is found that is impossible (or unlikely) given the response options, then the questionnaire should be reviewed and revisions made to the data. These revisions will often involve setting the out-of-range values to “missing,” which drops them from the data analysis for that particular question. Carefully document the results from this review process, including any changes to the data set. An audit trail (electronically and on paper) should be maintained so it is possible to go back to the original data file.

- **Check for skip pattern problems.** Response inconsistencies generally arise when a respondent misunderstands a question or does not successfully follow instructions to skip questions. An example of a response inconsistency would be if a respondent answered that he or she had no doctor visits in the past 6 months, but then answered followup questions about visits in the past 6 months. If there are inconsistencies between the response to the screener question and the following question’s response, assume the screener response is correct.
- **Check again for ineligible cases.** Take steps to identify any questionnaires that are not eligible for analysis and remove them from the data set used for the CAHPS SAS program. Questionnaires in which fewer than 10 of key items are answered should be deleted. (See Appendix B for a list of the key items in the survey.)
- **Check for duplicates.** The number of records in the data file should match the number of completes and partials in the sample file. Duplicates can occur if the vendor conducts a follow-up phone interview, the mail questionnaire arrives at the same time or soon after, and the case slips through the receipt control system, or as a result of errors in data entry. Your policy should be to keep the first questionnaire that comes in.

#### **Task 4: Conduct an Audit**

Whether surveys are collected in standard paper format, as optically scanned forms, or as paper telephone questionnaires, a small random sample of the entered data should be audited by comparing hard-copy forms with the results of data entry. This enables you to catch any systematic errors. For example, if the optical scanning program was incorrect, Question 5 may be entered in the file where Question 6 was supposed to be. These types of systematic errors will show up consistently across all questionnaires. Auditing a sample of 75 questionnaires across the entire sample is likely to be sufficient if you want to see whether less than 5 percent of the questionnaires have serious errors.

## Appendix B: Determining Whether a Questionnaire Is Complete

If you plan to apply a definition to determine if a questionnaire is complete, then your first step is to flag the key questions. Key items include questions that **all** respondents should answer:

Type of Question	Item Number in Health Plan Survey 4.0 (Adult Commercial)
Questions confirming eligibility for the survey	Q1, Q38
The screeners for the questions included in the reporting composites	Q3, Q5, Q7, Q9, Q16, Q20, Q22, Q25
The primary rating question	Q27
Demographic items	Q28, Q29, Q31, Q33, Q34, Q35, Q36, Q37

If the questionnaire has responses to 10 or more of these key items, then you can count the questionnaire as complete. The minimum is 10 because it amounts to just over 50 percent of the items, and at least 50 percent of the questionnaire should be completed for it to be accepted as complete. The 50 percent cut-off is a choice the CAHPS team made to guarantee a uniform definition of a completed questionnaire.

Table 3.3 lists the key questions from the Adult Commercial Questionnaire and the Child Commercial Questionnaire.

**Table 3-3**  
**Key questions from the CAHPS Health Plan Survey 4.0: Adult Commercial Questionnaire<sup>5</sup>**

Item	Question Wording
1.	Our records show that you are now in {INSERT HEALTH PLAN NAME}. Is that right?
3.	In the last 12 months, did you have an illness, injury, or condition that <b>needed care right away</b> in a clinic, emergency room, or doctor's office?
5.	In the last 12 months, <b>not</b> counting the times you needed care right away, did you make any appointments for your health care at a doctor's office or clinic?
7.	In the last 12 months, <b>not</b> counting the times you went to an emergency room, how many times did you go to a doctor's office or clinic to get health care for yourself?
9.	A personal doctor is the one you would see if you need a check-up, want advice about a health problem, or get sick or hurt. Do you have a personal doctor?
16.	Specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors, and other doctors who specialize in one area of health care. In the last 12 months, did you try to make any appointments to see a specialist?
20.	In the last 12 months, did you try to get any kind of care, tests, or treatment through your health plan?
22.	In the last 12 months, did you try to get information or help from your health plan's customer service?
25.	In the last 12 months, did your health plan give you any forms to fill out?
27.	Using any number from 0 to 10, where 0 is the worst health plan possible and 10 is the best health plan possible, what number would you use to rate your health plan?
28.	In general, how would you rate your overall health?
29.	In the past 12 months, have you seen a doctor or other health provider 3 or more times for the same condition or problem?
31.	Do you now need or take medicine prescribed by a doctor? Do <b>not</b> include birth control.
33.	What is your age?
34.	Are you male or female?
35.	What is the highest grade or level of school that you have completed?
36.	Are you of Hispanic or Latino origin or descent?
37.	What is your race? Please mark one or more.
38.	Did someone help you complete this survey?

<sup>5</sup> The item numbers in this questionnaire and the Adult Medicaid Questionnaire are the same.

### Key questions from the CAHPS Health Plan Survey 4.0: Child Commercial Questionnaire<sup>6</sup>

Item	Question Wording
1.	Our records show that your child is in {INSERT HEALTH PLAN NAME}. Is that right?
3.	In the last 12 months, did your child have an illness, injury, or condition that <b>needed care right away</b> in a clinic, emergency room, or doctor's office?
5.	In the last 12 months, <b>not</b> counting the times your child needed care right away, did you make any appointments for your child's health care at a doctor's office or clinic?
7.	In the last 12 months, <b>not</b> counting the times your child went to an emergency room, how many times did he or she go to a doctor's office or clinic to get health care?
9.	A personal doctor is the one your child would see if he or she needs a check-up or gets sick or hurt. Does your child have a personal doctor?
19.	Specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors, and other doctors who specialize in one area of health care. In the last 12 months, did you try to make any appointments for your child to see a specialist?
23.	In the last 12 months, did you try to get any kind of care, tests, or treatment for your child through his or her health plan?
25.	In the last 12 months, did you try to get information or help from customer service at your child's health plan?
28.	In the last 12 months, did your child's health plan give you any forms to fill out?
30.	Using any number from 0 to 10, where 0 is the worst health plan possible and 10 is the best health plan possible, what number would you use to rate your child's health plan?
31.	In general, how would you rate your child's overall health?
32.	What is <b>your child's</b> age?
33.	Is your child male or female?
34.	Is your child of Hispanic or Latino origin or descent?
35.	What is your child's race? Please mark one or more.
36.	What is <b>your</b> age?
37.	Are you male or female?
38.	What is the highest grade or level of school that you have completed?
39.	How are you related to the child?
40.	Did someone help you complete this survey?

<sup>6</sup> The item numbers in this questionnaire and the Child Medicaid Questionnaire are the same.

## Appendix C: Enlisting Respondents Who Are Difficult to Reach

It may be difficult to locate some respondents, but it is especially important to interview or receive returned questionnaires from those individuals who might be difficult to reach. They are likely to be different from those individuals who immediately complete and return a questionnaire or who are easily interviewed. They may, for example, be chronically ill, have two jobs, or be different in some other way that is relevant to your results. Unless you maintain a high response rate overall and make efforts to reach them, their views and experiences will be underrepresented.

Sponsors and vendors should discuss this possibility in advance and make plans to do extensive telephone tracing. You may also want to talk about the timing of interviews. Because the Health Plan Survey is a survey of respondents at their homes (a household survey), interviewers typically work in the evenings and on weekends. However, the survey vendor should provide at least one interviewer during the daytime to maintain appointments made with respondents during the day and try to reach those respondents who do not answer during the evenings (e.g., those who have evening shift jobs). Interviewing during the daytime on weekdays is especially effective and appropriate for Medicare surveys and for surveys that include children in the sample frame.

You are likely to encounter a few special problems with which you should be familiar. Sponsors and vendors should discuss these issues and agree on appropriate procedures.

Common Problems	Some Guidance
The interviewer reaches an answering machine.	Answering machines are part of modern life. There is some debate about whether or not it is best to leave a message; unfortunately, there is no right answer to this question. However, you cannot assume that a respondent will call back, so survey vendors should continue to make an effort to reach the respondent. In essence, when an answering machine is reached, it should be handled as though the person were not at home.
The telephone number for the sampled individual is incorrect.	The vendor should make every effort to find the right number: <ul style="list-style-type: none"> <li>• If the person answering the telephone knows how to reach the sampled individual, use that information.</li> <li>• If there is no information about the sampled individual at the provided number, use directory assistance.</li> <li>• If a correct telephone number cannot be found for the individual, and you are using both mail and telephone methods of data collection, mail the questionnaire.</li> </ul>

Common Problems	Some Guidance
The sampled person has moved and the address in the sample is incorrect.	The vendor should make every effort to track down the sampled person. Stamp all mail “Address Correction Requested” so that undelivered mail gets returned. If the mail gets returned, refer to sources like Internet directories or national change of address directories to obtain the new address.
The sampled person is temporarily away.	The protocol for this situation will depend somewhat on the data collection schedule. If the person will become available before data collection is scheduled to be concluded, the right procedure is to call back later.
The sampled person does not speak English.	If the survey questionnaire has not been translated into the respondent’s language, an interview may be impossible. Occasionally, there may be a family member who is willing to serve as translator. Most survey organizations consider a translated interview, with all its imperfections, to be better than missing the interview altogether. However, serving as an interpreter for a telephone interview requires a great deal of motivation on the part of a family member.
The sampled person is temporarily ill.	Contact the person again before the end of data collection to determine if he/she has recovered and can participate.
The sampled person has a condition that prevents being interviewed, such as having a visual, hearing, or cognitive impairment.	This person becomes a nonrespondent by virtue of their condition.