Higher Education Research and Development (HERD) Proposed Personnel Questions Testing

Report and Recommendations

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prepared for

National Science Foundation
National Center for Science and Engineering Statistics

by

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Introduction

The National Center for Science and Engineering Statistics (NCSES), within the National Science Foundation (NSF) conducts the Higher Education Research and Development (HERD) Survey annually. The HERD survey collects information on the financial resources allocated to R&D by universities and colleges and is one of several surveys at NCSES that collect comparable information on R&D from different sectors of the economy (e.g., businesses, nonprofits, and government). However, it does not currently collect as much information about the personnel carrying out R&D activities as other NCSES surveys, making it less effective for measurements of the R&D workforce in the United States. The Frascati Manual,[1] which is published by the Organisation for Economic Co-operation and Development (OECD) and is the internationally recognized methodology for collecting and using R&D statistics, has a full chapter on measuring R&D personnel. The United States is the only country included in OECD statistics that does not report anything in the higher education sector in terms of full-time equivalents (FTEs). NCSES intends to address this shortcoming by adding questions to the HERD survey regarding the number of researchers, technicians, and support staff involved in R&D, and the number of FTEs for those personnel. The addition of these variables will allow NCSES to provide information not available elsewhere to data users interested in science policy, the nature of the science and engineering workforce, and U.S. R&D competitiveness.

In preparation for adding those questions to the survey, ICF conducted interviews with several higher education institutions to get feedback on proposed questions. ICF conducted three rounds of testing of the proposed questions. ICF first conducted a preliminary round of interviews with four institutions to test initial understanding of the questions. Recommendations from those interviews further informed question development. In the subsequent rounds, ICF conducted initial interviews with institutions before the institutions completed the test questions. Following question completion, ICF conducted debrief interviews with each institution. Between rounds, ICF provided recommendations for changes to the interview protocols, communications, and the test questions.

This report summarizes the findings and recommendations based on the testing.

Methodology

Question Development

The Frascati Manual has a full chapter on measuring R&D personnel and measuring FTEs, headcounts, and costs. R&D personnel is comprised of three categories: researchers, technicians, and R&D support personnel (integral to the effort but do not work in the lab). The manual also says that countries should report the FTEs. NCSES has been using principal investigator (PI) headcounts as a proxy for "researchers," and there are not any FTE counts for R&D personnel for the higher education sector.

Using the Frascati manual guidelines, the questions were collaboratively designed by ICF and NCSES and informed by interviews during site visits with HERD institutions in 2017 and 2018, as well as a HERD respondent workshop in September 2019. The wording for the proposed new questions is similar to questions currently found on other NCSES surveys of R&D performers. The question and instruction

[1] OECD (2015), Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris, https://doi.org/10.1787/9789264239012-en.

format of the HERD survey further guided the design of the questions. The questions were then revised based on feedback throughout the interview and testing process.

Obtaining OMB Approval

ICF staff prepared a variety of documents that were included in the generic clearance package for OMB. These documents included the following:

- Communications
    - Invitation e-mail (signed by Michael Gibbons)
    - Invitation reminder e-mail (signed by Michael Gibbons)
    - Confirmation of initial interview e-mail
    - Reminder of initial interview e-mail
    - Reminder to complete test questions/schedule debrief interview e-mail
    - Reminder of debrief interview e-mail
- Test Questions to be added to the HERD Survey
- Interview Protocol for Initial Interview
- Interview Protocol for Debrief Interview

NCSES received generic clearance to proceed with the interviews on April 9, 2020.

Testing Timeline

Table 1 presents the timeline for each round of testing.

Table 1. Timeline for Testing

Task	Timeframe
Preliminary Cognitive Testing (4 institutions)	March 13–20, 2020
Round 1 Testing (8 institutions)	
Invitations Sent	April 13, 2020
Reminder Invitations Sent	April 17, 2020
Initial Interviews Occur	April 15–28, 2020
Institutions Complete Test Questions	April 15–May 28, 2020
Debrief Interviews Occur	May 18–29, 2020
Round 2 Testing (11 institutions)	
Invitations Sent	June 1, 2020*
Reminder Invitations Sent	June 4, 2020
Initial Interviews Occur	June 4–16, 2020
Institutions Complete Test Questions	June 4–July 8, 2020
Debrief Interviews Occur	June 30–July 10, 2020

* Three institutions from round 1 were re-sent invitations to participate in round 2 due to expressed interest but not being selected to participate in round 1.

Sample

At the time the samples were drawn for all rounds of testing, the FY 2019 HERD survey was in the field. The sample was limited to institutions that had submitted a completed survey *and* had their data approved by the data review team. Before inclusion in the sample, an institution's contact history and data were reviewed for anything unusual (e.g., some institutions were not selected because the respondent was already selected as part of another institution or attended the workshop in 2019). The sample was then divided into four quartiles of total R&D personnel for FY 2019. Eligible institutions were randomly selected from the four quartile groups. Since the sample for the preliminary round was drawn early in the FY 2019 collection, the number of qualified institutions from the fourth quartile was limited. The first quartile was not included in this preliminary round to ensure that we obtained information from institutions that had several R&D personnel.

For rounds 1 and 2 of the interviews, ICF selected an initial sample of 100 institutions with the intention of sending 50 invitations in each round.

Recruitment

Table 2 includes the number of sampled, invited, and interviewed institutions in each quartile for each round of testing. In total, there were 20 institutions in the sample for the preliminary round, and 50 institutions each for rounds 1 and 2.

Not all institutions in the sample for each round were initially invited. In the preliminary round, we first sent invitations to approximately half of the sample randomly selected from each quartile and then sent more invitations in the quartiles where interviews were not yet scheduled. Out of the 14 institutions invited, 4 were selected to interview.

In round 1, 50 institutions were sampled and sent invitations and 8 were selected for an interview. In round 2, we first sent invitations to three institutions (in quartiles 3 and 4) that expressed interest during round 1 but were not selected for an interview at that time. We then sent invitations to 41 of the sampled institutions from round 2. After reminder invitations still did not generate enough interest, we sent invitations to another 18 institutions from round 1 (in quartiles 1 and 2).

Table 2. Number of Institutions Sampled, Invited, and Interviewed in Each Round

Round	Quartile	Sampled	Invited for Each Round	Interviewed
Preliminary	1st	0	0	0
	2nd	7	3	1
	3rd	8	8	1
	4th	5	3	2
	Total	**20**	**14**	**4**
Round 1	1st	12	12	1
	2nd	13	13	2
	3rd	12	12	3
	4th	13	13	2
	Total	**50**	**50**	**8**
Round 2	1st	12	21*	4
	2nd	13	22*	3
	3rd	13	14*	2
	4th	12	5	2
	Total	**50**	**62**	**11**
Total		**120**	**126**	**23**

* Eighteen institutions sampled from quartiles 1 and 2 in round 1 were sent invitations to participate in round 2. Three institutions from quartiles 3 and 4 that expressed interest during round 1 but were not selected for interviews were invited to participate in round 2 before institutions sampled for round 2 were invited. This is why quartiles 1–3 have more invitations than sampled and quartile 4 has fewer invitations than sampled.

Participants

Information on the participating institutions are presented in table 3.

Table 3. Information about Institutions That Participated in Interviews

Round	Institution	Type of Control	Quartile	FY 2019 R&D Personnel
Preliminary	Central Washington University	Public	2nd	138
Preliminary	Tulane University	Private	4th	1,523
Preliminary	University of Chicago	Private	4th	4,934
Preliminary	Howard University	Private	3rd	629
1	Western Washington University	Public	3rd	403
1	Medical University of South Carolina	Public	4th	1,733
1	George Washington University	Private	4th	3,039
1	Central State University	Public	1st	103
1	Loyola Marymount University	Private	3rd	423
1	University of North Carolina, Wilmington	Public	2nd	312
1	Niagara University	Private	2nd	109
1	Loyola University, Chicago	Private	3rd	835
2	Texas Tech University	Public	4th	3,785
2	The University of Texas, Tyler	Public	2nd	117
2	Johnson C. Smith University*	Private	1st	57
2	Humboldt State University	Public	3rd	1,017
2	Syracuse University	Private	4th	1,641
2	California State University, Channel Islands	Public	1st	32
2	Worcester Polytechnic Institute	Private	3rd	801
2	Bradley University	Private	2nd	130
2	Swarthmore University*	Private	2nd	171
2	Long Island University*	Private	1st	96
2	Skidmore College	Private	1st	60

* These institutions were unable to participate in all parts of the research and only participated in the initial interview.

Testing Format

As previously mentioned, there were three rounds of testing and question refinement. During the preliminary round, participants were shown the test questions and asked to participate in 30 minute interviews but were not required to complete the questions and no debrief interviews were conducted. During rounds 1 and 2, participants were asked to complete two 30 minute interviews and complete the test questions.

For all rounds, the moderator sent the participants their institution's completed FY 2019 HERD Survey which included the two test questions inserted following current Question 15. This allowed the participant to review the test questions within the context of the whole survey, including the overarching survey instructions at the beginning of the questionnaire and to related questions about R&D activities. This was sent to participants approximately 5 minutes before the interview began to truly gain a participant's initial reaction to the questions.

Participants in rounds 1 and 2 had 3–4 weeks to complete the test questions because they would likely need to work with other offices such as Human Resources (HR) or Institutional Research, requiring more time than if they could complete the questions themselves. ICF scheduled 30 minute debrief interviews with participants when reminding participants of upcoming question due dates. Between each round, changes to the questions and protocol were sent to NCSES for approval.

We offered a video conference option to participants and two chose this option in round 1 for their initial interviews but did not use this option in debrief interviews. Therefore, nearly all interviews were conducted via teleconference only.

Detailed Findings

All participants generally understood what was being asked in both questions. Participants expressed more concern over the ability to respond to Test Question 2 (FTEs) than to Test Question 1 (headcounts). Nevertheless, most participants thought that responding to the questions was possible but would be time consuming. At the debrief interview, two institutions were unable to provide some data due to time constraints at their institution that coincided with testing, but in most cases thought that they would be able to respond completely if the questions were included in the FY 2020 survey. However, there were four participants who did not think the data would be available for future surveys. All institutions were able to provide headcounts, but two institutions said that citizenship would not be available. Another two institutions said that information about the highest degree of education would not be available. In all cases, it was because this information was not tracked at their institution. Only one institution said that FTE would not be available because of the complexity of the calculation across units and employment statuses at the institution.

All of the participants said that they would need to ask HR and/or individual colleges for some of the information requested in the questions. However, for this effort a few of the smaller institutions were able to complete demographic information on their own since they know most of the research personnel.

Below, we summarize the feedback provided by respondents for both test questions during initial interviews and debriefs after completing the test questions.

Test Question 1: Headcounts

Once participants were given a few minutes to read the question, they were asked for their initial reaction. Most participants focused on the demographic data asked for in the question and which departments they would have to work with to get the information. Some of the participants only focused on the function split, wondering out loud where they would place students or how they would be able to determine which personnel fall under R&D technicians or support staff. This is often where participants said that it would take a lot of time to pull the requested data. This was primarily because either they would need to wait on HR to provide responses (noting this would not be a priority for them) or they would need to talk to individual colleges to get the requested information. However, there were a few participants who said that this question would not be difficult to complete because their institution keeps this data and they would simply need to synthesize it.

During the first round of interviews, we asked participants how this test question compared to the survey's current Question 15, "How many principal investigators and other personnel (headcount) were paid from the R&D salaries, wages, and fringe benefits you reported in Question 12, row a?" Participants mostly said that the new question is adding demographic information or is now asking them to further split out "all other personnel" requested in Question 15. In round 2, we did not ask this question during the initial interviews as we felt it was leading participants to complete the question in a specific way, and we only asked about it in debrief interviews. However, headcounts provided for Test Question 1 did not always match totals for Question 15. Half of the participants provided total headcounts that matched the total in Question 15, but of those, only four participants had matching PI counts (from Question 15) and researcher counts (from Test Question 1). Of the participants whose totals did not match:

- Two participants provided total and researcher counts in Test Question 1 very close to the total and PI counts in Question 15.
- Three participants said that their totals should have matched Question 15 but did not because they either provided a sample for this effort, updated reports to "do a deeper dive" into their personnel, or they used FY 2020 data instead of FY 2019 data.
- One said that Question 15 data was likely overstated and included some non-R&D personnel.
- One said that this was an extension of Question 15 but never addressed why the counts were much higher on Test Question 1.
- One participant did not include PIs in Test Question 1 counts.

Of the four participants with matching total counts but non-matching researcher and PI counts, three had higher researcher counts due to expanding it to include more than just PIs (e.g., all faculty, some students, program directors).

Function

Participants understood that this question is asking for headcounts for staff who work in R&D functions. Some participants said that they might use "category" instead, but participants said that they understood the term "function" in the context of the question. During the preliminary interviews, the question did not include definitions or clarification on which personnel to include in each function. This was added before round 1 interviews and it provided some but not complete clarification.

There were some points of confusion or uncertainty, with the most common being how to classify types of jobs or positions into the three research functions: researchers, R&D technicians and equivalent staff, and R&D support staff. Many of the participants (16 of 23) wanted more clarification or instruction on function classification. Participants noted wanting examples, guidance on titles, where to include students, and some were unsure which R&D support staff would be included (e.g., should people in accounting or HR be included here). Two participants noted that it might be helpful to have a clarifying statement about R&D technician versus R&D support staff like there is for researcher versus R&D technician.

Many participants said that their institution does not classify employees by function in the way the question asks. There were a few participants who said that their institution does classify employees in this way or they think using a job code would make it easy enough to determine function. However, others were unsure initially if they would easily be able to determine personnel's function. During the debrief interviews, participants stated that they took various approaches to gathering this information. Many started with a report they use annually to complete HERD's Question 15 while others pulled reports of employees who received R&D wages or were paid from R&D accounts. From here, participants used a combination of job codes, profiles/descriptions of roles, asking colleagues, and using their own knowledge of staff members (mostly done in small institutions) to place staff into the three functions.

Most participants said that researchers include PIs, a research associate at a PI level that does not teach, or faculty. However, three participants made comments in the initial interview about whether and/or how a PI should be included in counts or not. One participant did not include PIs in the final count; note that we think having Test Question 1 immediately following Question 15 might have added confusion about who to include. One participant asked a question about whether the PI count was removed (but ultimately included them in the count) while another asked what to do with a PI that is not doing the research but is overseeing the research. Two participants asked for clarification on what “R&D managers” means in the description.

Participants were less certain how to classify and separate R&D technicians and support staff from one another. Several participants said if they looked at the job titles, they would assume anyone with the term “tech” or “technician” in their title would go under R&D technician. In the debrief interviews, participants confirmed that this was the case and that they categorized lab managers and anyone who did not fit under researcher or support staff categories as a technician. Some participants included students under the technician category. It is worth noting that “lab manager” is not an example provided, and one participant wondered where someone with this title should be placed.

Support staff included clerical or administrative staff and grant specialists/administrators, and some participants included students here.

As noted above, where participants would place students was mixed. During the preliminary round, participants had different answers: one participant said students would be included under the researcher or support function, one said under technician, one said under support, and one did not know. Round 1 and 2 participants were asked where they would place students in the initial interviews and then asked where students were included, if at all, in the debrief interview. During the initial interviews round 1 and 2 participants again varied in their responses with the following responses:

- Researcher – 1 institution
- Technician – 5 institutions
- Support – 2 institutions
- Technician and support – 2 institutions
- All functions – 1 institution
- No answer/not sure – 8 institutions

During the debrief interviews, participants said they placed students in the following functions:

- Researcher – 1 institution
- Technician – 8 institutions
- Support – 3 institutions
- Technician and support – 3 institutions
- No answer/not sure – 1 institution
- Did not participate in debrief – 3 institutions

Four participants altered their response from the initial interview to the debrief interview regarding placement of students. However, two participants narrowed down their placement of students once they completed the questions (e.g., said students may be under technicians and support but placed students under support staff when completing the question). One participant who said that students would likely be placed under support staff placed students under technicians and support staff once completing the question. Another participant said that students may be considered researchers during the initial interview but placed them under technicians when completing the questions.

Two participants commented that having the categories as R&D faculty, staff, and students would be easier and more interesting to their institution.

R&D Personnel Included

Another area of uncertainty in this question is whether participants included sponsored research and institutionally funded research in their counts. During the initial interviews, several participants wondered out loud if only paid personnel should be included and whether volunteers and staff paid from indirect costs should be excluded. During the interviews, ICF and NCSES did not directly respond to these questions but asked for more information on who was included during the debrief interviews.

Eleven of the participants included both types of research but others did not. Of those who did not include institutionally funded research, two said that they could not pull this information easily and one said that they could in the future. It was clear from some participants that this was not included in their test question counts nor was it included in the survey’s current Question 15. It seemed as though including this type of R&D did not occur to them, at least initially.

Demographic and Educational Categories

All participants agreed that once they determined where staff should be placed under the functions, that entering the total (line a) and sex (line b) would not be a problem. There was some uncertainty around the difficulty of obtaining information on citizenship (line c) and highest level of education completed (line d).

Three participants did not provide citizenship data. One of the participants said that they may be able to provide this in the future, but two said that they will not be able to because their institution does not track this information or HR will not provide the information.

In round 1, we did not clearly specify that the highest level of education was only required for researchers. Two participants provided degree counts for all personnel. In round 2, we clarified that this information was only required for researchers, and all participants provided the information as requested. In round 1, two institutions did not provide highest level of education at all and said that they would not be able to provide it in the future either. One of these institutions provided all other data requested while the other did not provide FTE data either.

All participants provided data for sex.

Sensitivity

Several participants expressed concern over how the demographic data, particularly citizenship and sex, would be reported. Three smaller institutions worried that if this data were reported by institution, an employee could be identified. Further, during the initial interviews, about half of the participants were not sure if HR would provide the information. Participants mentioned citizenship as potentially being the hardest demographic information to obtain, although some participants expressed concern over sex. The concern over providing data for sex was more about whether we should ask for gender instead.

While this was mentioned during initial interviews, no institutions refused or were unable to provide data for sex.

During the debrief, the participants that initially said that there may be pushback in getting demographic information also said that they did not think their institution would have any concerns with publishing the aggregate data by institution. Four participants who said that there may be concerns about providing this data in the initial interview also said that there was no pushback or questions raised about how this information would be used and/or reported. However, five participants said that they would need approval elsewhere in the institution to know if it was acceptable to publish this data by institution.

Changes to Test Question 1 Between Rounds

Following the preliminary interviews, a few changes were made to Test Question 1.

- **Descriptors of the functions were removed from Test Question 2 and added to Test Question 1.** Because all of the participants asked for clarification on which staff would be included under the functions, we removed some descriptors present under Question 2 (e.g., researchers including R&D scientists, engineers, and their managers) and added a table with more of an explanation of the types of staff to include under all functions in Question 1.
- **Added an Unknown category to citizenship section of Test Question 1.** Although no interviewee mentioned it as a shortcoming, it is a notable difference from the sections asking for headcounts by sex and highest level of education, both of which have an **unknown or not stated option**.

Following round 1 interviews, several changes were made to Test Question 1.

- **Replaced an instructional bullet regarding including paid personnel.** We removed the bullet "Include all personnel and students paid from R&D accounts regardless of how much they received" and replaced it with "Include all personnel and students that worked in an R&D function regardless of the amount of time spent in that role." The original instruction came directly from Question 15 on the HERD survey. That question was written so personnel headcount was tied directly to expenditures reported on other questions. The test question was purposefully written to be silent on the relationship between expenditures and headcount. One participant during the first round of interviews noted that they did not report some people because they were not "paid" for their time on specific research.
- **Clarified that only headcounts for researchers was desired for the highest level of education completed.** Several changes were made to clarify what information is desired because two interviewees in round 1 mistakenly reported highest level or education for all R&D personnel and one asked what personnel to include for this prior to completing the question.
  - Added "Researchers only" to column a of Test Question 1.
  - The instruction "Do not included highest level of education for R&D technicians and R&D support staff." was added in the blank space under columns b, c, and d of Test Question 1 D.

Test Question 2: Full-time Equivalents

Initially, all participants said that they understood this question was asking for information on FTEs but said they wanted more time to think about how they would calculate this for their institution. The participants said that they would need to work with payroll or other departments to get the needed information; however, they all said that they would personally need to make the calculations. This mostly remained true once they spent time completing the questions. Two participants were unable to provide FTE calculations. One said that timing was the main issue as he was trying to complete this question during the institution's year-end close and the staff he needed to help him had other priorities. The other participant was not certain that this information would be available even for the FY 2020 survey. He explained that their institution has two different effort reporting systems and both 12-month and 9-month appointed staff. He said it was difficult to work through the complications at this time, and if it could not be worked through for the FY 2020 survey, it would not be reported as he would not want to provide data that was not accurate.

Most of the participants said that the same individuals included in Test Question 1 were included in Test Question 2. For those who said that this was not the case, it was primarily due to students who are paid a stipend or are volunteers, and it is difficult to know their effort on a research project. Additionally, most of the participants said that individuals were only counted under one function on Test Question 2, but six participants said that some individuals were included or could be included in the future under researcher and R&D technician based on their role on a research project.

In round 1, institutions reported FTEs as whole numbers and to 1 and 2 decimal places. Half of the institutions reported whole numbers, three institutions rounded to two decimals, and one institution rounded to one decimal in some places and two decimals in others. For round 2, we added an instruction to round FTEs to one decimal place, and all institutions followed this instruction.

Methods of Calculating FTEs

Most participants were familiar with the concept of FTE, knew generally how it should be calculated, and thought that the examples provided in the question made sense. Only one participant expressed any confusion about what FTE was. A couple of participants said that their institution has a calculated FTE in their records, but it was not for R&D specifically, so it was only minimally useful. All participants reported doing the FTE calculation themselves or with the help of team members, even if the raw data was provided by another office.

Participants used various ways to calculate FTEs, but there were two primary approaches: using effort reporting or payroll accounts.

The majority of participants used effort reporting to calculate FTEs. Participants often obtained effort reports either through HR or another department (e.g., research department). The level of detail and ability to extract the detail varied from institution to institution. One participant said they used personnel action forms that give hours and start and end dates for specific R&D projects. Another participant used a similar approach by using their time and effort report, which provides the percentage or time and time period of each staff person but noted that this was not available for part-time staff and students and instead used the maximum number of hours these staff are allowed to work in a week. Other participants that used time and effort reports noted that this was not necessarily available for all R&D personnel, particularly students. In these cases, if they could provide it, they used timesheets or tried to reach the PIs for information to determine estimates. One participant said that there is an FTE field in the HR database that was useful in their calculation. When a job assignment is made, a percentage of FTE time is noted, which the respondent then sums up for each individual's various projects.

Five participants used payroll accounts to calculate FTEs, dividing R&D salary by annual or annualized salary. Most participants used payroll information and annual salary, while one participant said that they used an individual's FTE status and R&D pay to obtain the FTE. This allowed them to easily count 9-month faculty as 1.0 FTE. A couple of participants said that they combined this approach with calculations based on effort reporting when R&D personnel were paid hourly.

Internally funded effort was not always available or included even if it was. A couple of participants said that they could not include internally funded effort in the calculation because the information was not available at the time. However, these participants said that they could likely obtain this information for the FY 2020 survey but needed more time than was allotted to complete the test questions.

Participants primarily used our example of a 40-hour work week and a 52-week year (2,080 hours) as 1.0 FTE despite our instruction to use the hours per week and weeks per year that typically represent a full-time employee at their institution. While many staff are on the 2,080 hours, some faculty are appointed differently, such as 9-month appointments and may do their research in the summer. Participants expressed wanting to follow the 2,080 example we provided because it made it easier based on the information they had to make their calculations regardless of whether they used effort reporting or payroll accounts. We asked some participants in round 2 debrief interviews if an alternate approach was considered and if examples for an alternate approach would be helpful, specifically FTE based on payroll. While some participants said that a different approach was not considered, a couple of participants said that it was considered and either a mix of approaches were used, or they ultimately did not use a different approach. However, all of them said that examples of a different approach would be helpful.

Changes to Test Question 2 Between Rounds:

Following the preliminary interviews, one change was made to Test Question 2.

- **Descriptors of the functions were removed from Test Question 2 and added to Test Question 1.** We also added "See Test Question 1 for descriptions of each function." As the first instructional bullet on this question.

Following round 1 interviews, several changes were made to Test Question 2.

- **Clarified what decimal place FTEs should be reported to.** Participants reported FTEs at various decimal places. Of the seven participants who provided FTEs, four participants reported whole numbers, and three reported to the second decimal place. After discussion with NCSES, we made several changes to specify rounding to one decimal place.
    - Added the instruction to "(round to 1 decimal place)" was added under the FTEs column header on Test Question 2.
    - Added a decimal place two places over from the right margin of the data entry fields on the question.
    - Adjusted values in 3 of the examples of how to calculate FTE on Test Question 2 so that the final amount could be easily rounded to 1 decimal place without confusion.

Estimated Time to Complete Questions

Prior to completing the questions, participants were asked to estimate the time to complete both questions, including time spent by all persons gathering the data and the time it takes to talk to others. Responses ranged from 2–3 hours to more than 100 hours. The participant who estimated 100 hours was by far an outlier, and most responses ranged from 2–3 hours to 20 additional hours. Some participants also gave responses in weeks versus hours and said it would take 2–4 weeks. Participants said that it would be easier to estimate in weeks since they would need to go to HR or other departments, and response time could be slow and require multiple reminder contacts. Four participants were not sure how much time it would take and did not give an estimate initially.

Participants were asked the same time estimate question after they completed the two questions, and responses ranged from 3–4 hours to 40 hours. Nearly all of the participants said that it would take less time in the future to complete these questions; however, two smaller institutions said that it would take the same amount of time.

Five of the participants said that it took approximately 10 hours, and three of those said that it would take less time in the future. Four said that it took less than 10 hours, and 7 said that it took more than 10 hours (3 said 12–15 hours, 1 said 24 hours, and 3 said 30 hours or more). Based on this information, we estimate that it could add 10–15 hours for most institutions to complete the new questions for the first time but less time after the first year since many said that they would develop reports to help them pull this information, and a lot of the time they spent was determining the approach to complete the questions.

Recommendations

Following all interviews, ICF recommends changes to both questions.

- **Decide if only personnel paid from separately accounted for R&D (e.g., as in Question 15) should be reported and revise questions or instructions on both proposed questions to clarify.** All institutions assumed that they should report a similar headcount as Question 15 on the HERD survey. For many schools, that meant that they were including personnel working on internally funded R&D projects, because they already had a process for tracking those expenditures. Several others were not including headcounts for personnel working on internally funded R&D and noted that this was because it was not stated in the question or did not occur to them. No institution indicated that Test Question 1 was meant to be capturing all personnel doing any R&D, or any personnel that would not be included in Question 15. The same assumptions were made for Test Question 2; all schools reported that the same personnel would be included in both questions. If NCSES desires headcounts for all R&D personnel, including those not paid from "separately accounted for" R&D projects, which would almost exclusively be institutionally financed research, this should be clearly stated in the question as done in other places on the survey or in the instructions.

We recommend these additional changes to Test Question 1.

- **Add instruction that student headcounts can be included in multiple functions.** Several participants said that they wanted more guidance on where to include students despite making determinations on where to include them in the current instructions and function descriptions. We do not think we should prescribe where students should be included, but it would be beneficial to state that they may be included in multiple functions if that is appropriate based on student R&D roles.
- **Consider adding more examples or further explanation defining the difference between R&D technician and support staff.** It was difficult for some participants to tease out where some staff, especially students, should be placed based on their roles. Some participants said that more examples of technicians would be helpful. A few participants mentioned that the

additional information about the difference between a researcher and technician was helpful, but two participants said it would be helpful to have something similar differentiating technicians and support staff.

- **Determine whether data provided in Test Question 1 will be published in aggregate or by institution and state this on the questionnaire.** Some participants expressed concern or said that they were uncertain about whether their institution would provide some demographic information. In round 2, we asked participants in both interviews if their institution would be comfortable if this data was published by institution. While most said that it would be fine in aggregate, some participants were still uncertain and would need to clear it at a higher level.
- **Clarify in the definitions that personnel that would be considered indirect staff should not be included with support staff.** Although no one seemed to have included those staff when completing the test questions, a few mentioned that personnel from the sponsored programs office or research administration might be considered support staff. This change would be particularly important if the question instructions were revised to clarify that all R&D personnel should be reported.

We recommend these additional changes to Test Question 2.

- **Provide additional examples using payroll rather than hours for calculating FTEs.** Many participants used our example of using 40 hours week/52 weeks a year to create FTE calculations based on effort reporting and labor hours. A few participants used a different approach by basing their calculations on payroll accounts. Even a few participants who did not use this approach said that examples with different approaches would be helpful.
- **Remove the "and equivalent staff" from the R&D technicians line.** Only one participant commented on this, and it was in a passing comment. But it may raise questions as to what "equivalent staff" means and if it is different than what is described in Test Question 1.
- **Consider removing "(paid)" from the instruction, "FTE research personnel are calculated as the total working (paid) effort spent on research during a specific period divided by the total effort representing a full-time schedule within the same period."** Removing the word "paid" from this instruction will it make more consistent with what is asked in Test Question 1 and the rest of the survey. This is particularly the case if clarifications are made to include all R&D personnel.

Participant Questions and Other Changes Made

Participant Questions

Several participants asked questions during the process that were not related to new question content. These questions are presented below and to the extent possible should be addressed in future communications about the addition of the new questions.

- Why are the new questions being added to the HERD survey?
- Will the information provided in the new questions be used for ranking purposes?

Changes to Interview Protocol Throughout

Several changes were made to the preliminary interview protocol between the preliminary interviews and round 1. For more detail on the changes, see the summary report following the preliminary interviews. The major changes were:

- Ask how the information requested in Test Question 1 would compare to current Question 15.

- Consider rephrasing or reordering the question in the protocol that asks what “functions” means in the context of the question.
- Ask specifically about how citizenship and education information was collected.
- Flip the order of the initial reaction question and the question about what information the question is asking for.
- Add a probe to ask participants if they noticed to use whatever hours equate to a full-time employee in the example instructions.

Following round 1 interviews, changes were made to both the initial interview protocol and the debrief interview protocol. The major changes are summarized below.

- Initial interview protocol changes:
    - Remove the question asking participants how Test Question 1 compares to what is reported in Question 15. While we added this question in round 1, we stopped asking it after a few interviews because it seemed to lead the participants to answer Test Question 1 in a specific way. This line of questioning was determined to be better for the debrief interviews.
    - Add a question to gauge whether participants thought their institution would be comfortable with demographic data published by institution. An institution brought up the topic of personally identifying information, and NCSES and ICF deemed it important to specifically ask this question.
- Debrief interview protocol changes:
    - Add more detailed probes about personnel included in headcounts and how they are placed in each function. Probes were added to determine how personnel working in R&D functions were identified; if counts include those working on R&D funded only by internal sources; how it compares to data reported in current Question 15; and if (and which) students are included.
    - Add more detailed probes about personnel included and the calculations used to obtain FTEs. Probes were added to specifically ask if the same personnel from Test Question 1 were included in Test Question 2; whether hours used were based on financial accounts, effort reporting, or something else; calculations used for various personnel types (e.g., hourly versus salaried); and if (and which) students are included.

APPENDIX A: Preliminary Cognitive Interview Communications

HERD Preliminary Cognitive Interview Communications

Invitation

To: Primary contact
Cc: others normally included in survey contacts
From: NSF Higher Education R&D Survey
Re: Contribute to changes on NSF HERD Survey ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Thank you, again, for completing the FY 2019 Higher Education Research and Development (HERD) Survey. I appreciate your time and efforts.

I am writing today to request your assistance on a proposal for the next cycle of the survey. Before we finalize the survey for FY 2020, we would like to get feedback from current survey respondents. The National Center for Science and Engineering Statistics within the National Science Foundation is considering adding two new questions about R&D personnel to the FY 2020 survey. The first would ask for the number of personnel by demographic categories and would replace the current question 15. The second would ask for full-time equivalents (FTEs) for personnel at your institution who perform R&D.

Would you be willing to participate in a brief phone interview? During this interview, we will share the proposed questions with you and ask your feedback. The interview will be less than 30 minutes. We would like to complete the interviews by **March 20**.

If you, or someone else from the team at [institution name] that completes the HERD survey, are interested in participating, please contact Melinda Scott from our survey staff at ICF at support@herdsurvey.org or 866-936-9376. She will schedule a time for the interview.

Thank you for your help and for your continued participation in the NSF HERD Survey.

Sincerely,

Michael Gibbons
Project Officer, Higher Education R&D Survey
National Center for Science and Engineering Statistics
National Science Foundation

Confirmation of Interview

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant NCSES and ICF staff
From: NSF Higher Education R&D Survey
Re: Confirming interview ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Thank you for agreeing to talk to us about two proposed questions that may be added to the FY 2020 Higher Education R&D Survey (HERD) related to head counts and full-time equivalents (FTEs) for R&D personnel at your institution.

The phone call is scheduled for **DayoftheWeek, Month XX, at X:XX AM/PM (EDT/CDT/MDT/WDT)**. At that time please call our conference line at 1-855-423-6338, conference ID 450349. Sherri Mamon will be leading the interview. I would be happy to send you a Microsoft Outlook invitation, if you prefer.

If you have further questions or need to reschedule, you may reach me by email at support@HERDsurvey.org or call toll-free at (866) 936-9376.

Thank you very much for your help.

Sincerely,
Melinda Scott
Data Collection Specialist
Higher Education R&D Survey
ICF

Reminder of First Interview

This will be sent to institutions one business day before their scheduled interview, but only if they received the first confirmation at least 4 days before the scheduled interview.

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant ICF staff
From: NSF Higher Education R&D Survey
Re: Interview Reminder ([[inst_id]])

Dear [[firstname]] [[lastname]]:

This is just a reminder about our phone call scheduled for **DayoftheWeek, Month XX, at X:XX AM/PM (EDT/CDT/MDT/WDT)**. At that time please call my conference line at 1-855-423-6338, conference ID 450349.

We will send you a copy of your completed FY 2019 survey with the new questions included prior to the interview.

If you have any trouble accessing the attachment, have further questions or need to reschedule, you may reach me by email at support@HERDsurvey.org or call toll-free at (866) 936-9376.

Thank you very much for your help.

Sincerely,
Sherri Mamon
Qualitative Researcher
Higher Education R&D Survey
ICF

APPENDIX B: Preliminary Cognitive Interview Test Questions

This is a proposed new question. None of the data collected during this study will be included in the FY 2019 data maintained or published by NCSES.

Test Question 1. How many personnel (headcount) worked in the functions listed below in FY 2019 and how many fell into the demographic and educational categories listed below?

- Count each person only once.
- Include all personnel and students paid from R&D accounts regardless of how much they received.

	(a) Researchers	(b) R&D technicians	(c) R&D support staff	(d) Total
A. Total R&D personnel				
B. Sex				
1. Female				
2. Male				
3. Sex unknown or not stated				
C. Citizenship				
1. U.S. citizens and permanent residents (non-U.S. citizens holding Green Cards)				
2. Foreign nationals holding temporary visas				
D. Highest level of education completed				
1. Doctorate (e.g., PhD, DSc, EdD)				
2. Professional degree (e.g., JD, LLB, MD, DDS, DVM)				
3. Master's degree (e.g., MS, MA, MBA)				
4. Less than Master's				
5. Education level unknown or not stated				

This is a proposed new question. None of the data collected during this study will be included in the FY 2019 data maintained or published by NCSES.

Test Question 2. **How many full-time equivalents (FTEs) worked in the functions listed below in FY 2019?**

- An individual cannot be more than 1.0 FTE.
- FTE research personnel are calculated as the total working (paid) effort spent on research during a specific period divided by the total effort representing a full-time schedule within the same period.

The following examples of FTE calculations assume a 40 hour work week and a 52 week year. However, you should use the hours per week and weeks per year that typically represent a full-time employee at your institution.

- 3 technicians that work on research full-time all year: (3 * 52)/52 = 3.0 FTE
- 2 support staff that work on research full-time for 32 weeks: (2 * 32)/52 =1.2 FTE
- 1 researcher that works on research 30% of the time for 20 weeks, 50% of the time for another 20 weeks, and full-time for 12 weeks: ((20 * 0.3) + (20 * 0.5) + 12)/ 52 = .54 FTE
- 10 researchers that work on research 40% of the time for 20 weeks: (10 * (20 *0.4))/52 = 1.54 FTE
- 20 part-time employees that work as technicians for 10 hours a week for 40 weeks: (20 * (10/40) * 40))/52 = 3.85 FTE

	FTEs
a. Researchers (including R&D scientists, engineers, and their managers)	
b. R&D technicians and equivalent staff	
c. R&D support staff (clerical and other)	
d. Total	

APPENDIX C: Preliminary Cognitive Interview Protocol

HERD Preliminary Cognitive Interview Protocol

[Interviewer introduces herself.] Thank you very much for talking with me today. As you know from our initial contact, we are considering adding some questions about head counts and full time equivalents (FTEs) in the upcoming FY 2020 NSF Higher Education R&D Survey.

Before we begin our interview, I want to review some information with you.

- Your participation in this interview is voluntary.
- The interview should last no more than 30 minutes.
- There is another person on the telephone with me who is taking notes as well as Kathryn Harper, the Project Director, listening in.
- *If appropriate:* <Name>, from NSF, is also listening to our discussion today. Is that okay? If no, NSF staff member will hang up the phone.
- I would like to audio record this interview so that I get all of your comments. Is that okay with you?

[Stop recording if consent if not given]

Just for the record, can you state your name, your title, and your role in the HERD survey?

Do you have any questions before we start?

We just sent you a copy of your completed FY 2019 survey. The proposed new questions are included in that attachment. Did you receive the copy of the survey we sent?

[If they did not receive a copy of the revised survey, be prepared to e-mail it to them immediately.]

[Give them a few minutes to review before beginning interview]

(Head counts) Let's start by going to page 29, and the proposed new question 1. I'll give you a moment to read through it. Please let me know when you're finished.

1. What information is this question requesting?
2. What are your initial reactions to this question?
    a. Can you tell me more about that?
3. This question refers to "functions" of personnel. What does "functions" mean to you, in the context of this question?
4. What office(s) or department(s) at your institution would have this information?
5. Does your institution classify its own employees by function in the way the question asks?
    a. What sort of employees would your institution consider to be "researchers"?
    b. What about "R&D technicians"?
    c. What about "R&D support staff?"
    d. How would you classify student R&D personnel?
6. Are the instructions asking you to do something that you would normally do? Or are they asking you to do something that seems unusual?

(FTEs) Now let's look at the proposed new question 2, on page 30. I'll give you a moment to read through it. Please let me know when you're finished.

7. What information is this question requesting?
8. What are your overall reactions to this question?
    a. Can you tell me more about that?
9. This question refers to "full-time equivalents (FTEs)." Does your institution typically have this information?
10. What office(s) or department(s) at your institution would have this information?
11. Are the instructions asking you to do something that you would normally do? Or are they asking you to do something that seems unusual?
12. What are your reactions to the examples provided?
    a. Are they too long, too short, or about right?
    b. Are they helpful or not helpful?
13. Do you have any questions or comments about anything that we have not covered?

That's all of our questions for this interview. Thank you so much for your time today. If we decide to put the questions on the survey, we will send an email announcing the change as soon as we can.

APPENDIX D: Round 1 Initial Interview Communications

HERD Round 1 Initial Interview Communications

Invitation

To: Primary contact
Cc: others normally included in survey contacts
From: NSF Higher Education R&D Survey
Re: Contribute to changes on NSF-NCSES HERD Survey ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Thank you, again, for completing the FY 2019 Higher Education Research and Development (HERD) Survey. I appreciate your time and efforts.

I am writing today to request your assistance on a proposal for the next cycle of the survey. Before we finalize the survey for FY 2020, we would like to get feedback from current survey respondents. The National Center for Science and Engineering Statistics within the National Science Foundation is considering adding two new questions about R&D personnel to the FY 2020 survey. The first would ask for the number of personnel by demographic categories and would replace the current question 15. The second would ask for full-time equivalents (FTEs) for personnel at your institution who perform R&D.

If you are willing to help, we would ask you to do three things:

1) **Participate in an initial interview by phone** to understand how you would go about answering these questions**.** We would like to complete the interviews by [enter date]. The interview will be less than 30 minutes.
2) **Complete the proposed new questions.** This step will likely involve working across offices at your organization (e.g., Human Resources, Institutional Research). The responses you provide will only be used for our internal question development. We would like you to complete the test questions within four weeks of your initial interview.
3) **Participate in a final interview by phone.** The interview will be less than 30 minutes. We will ask about your experience completing the proposed new questions. We would like your final interview completed within one week of completing the test questions.

If you, or someone else from the team at [institution name] that completes the HERD survey, are interested in participating, please contact Melinda Scott from our survey staff at ICF at support@herdsurvey.org or 866-936-9376. She will schedule a time for the interview. If we do not hear from you by [date], we will contact you again.

Thank you for your help and for your continued participation in the NSF HERD Survey.

Sincerely,

Michael Gibbons
Project Officer, Higher Education R&D Survey
National Center for Science and Engineering Statistics
National Science Foundation

Invitation – Reminder

To: Primary contact
Cc: others normally included in survey contacts
From: NSF Higher Education R&D Survey
Re: Please reply: Contribute to changes on NSF-NCSES HERD Survey ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Last week we sent you an e-mail asking for your assistance on some changes we are considering for the Higher Education Research and Development (HERD) Survey. We want to be sure that the universities understand the questions and can provide the newly requested data before we implement any changes. This process is critical to the survey's development. We are only inviting a few respondents to participate. We would greatly appreciate your input on these new questions.

We are thinking about adding two questions about R&D personnel to the FY 2020 survey. The first would ask for the number of personnel by demographic categories and would replace the current question 15. The second would ask for full-time equivalents (FTEs) for personnel at your institution who perform R&D.

Before we finalize the survey, we would like to get some feedback from current survey respondents. If you are willing to help, we would ask you to do three things:

1) **Participate in an initial interview by phone** to understand how you would go about answering these questions**.** We would like to complete the interviews by [enter date]. The interview will be less than 30 minutes.
2) **Complete the test questions.** This step will likely involve working across offices at your organization (e.g., Human Resources, Institutional Research). The responses you provide will only be used for our internal question development. We would like you to complete the test questions within three weeks of your initial interview.
3) **Participate in a final interview.** The interview will be less than 30 minutes. We will ask about your experience completing the proposed new questions. We would like your final interview completed within one week of completing the test questions.

If you, or someone else from the team at [institution name] that completes the HERD survey, are interested in participating, please contact Melinda Scott from our survey staff at ICF at support@herdsurvey.org or 866-936-9376. She will schedule a time for the interview.

Thank you for your help and for your continued participation in the NSF HERD Survey.

Sincerely,

Michael Gibbons
Project Officer, Higher Education R&D Survey
National Center for Science and Engineering Statistics
National Science Foundation

Confirmation of First Interview

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant NCSES and ICF staff
From: NSF Higher Education R&D Survey
Re: Confirming interview ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Thank you for agreeing to talk to us about two proposed new questions that may be added to the FY 2020 Higher Education R&D Survey (HERD) related to head counts and full-time equivalents (FTEs) for R&D personnel at your institution.

The phone call is scheduled for **DayoftheWeek, Month XX, at X:XX AM/PM (EDT/CDT/MDT/WDT)**. At that time please call our conference line at 1-855-423-6338, conference ID [interviewer id]. [insert interviewer name] will be leading the interview. You have the option of using video for this interview. If you would like to use that option, please let us know.

Also, please note, following this interview, we ask you to complete the test questions. This step will likely involve working across offices at your organization (e.g., Human Resources, Institutional Research). We would like you to complete the test questions within four weeks of your initial interview [insert date].

If you have further questions or need to reschedule, you may reach me by email at support@HERDsurvey.org or call toll-free at (866) 936-9376.

Thank you very much for your help.

Sincerely,
Melinda Scott
Data Collection Specialist
Higher Education R&D Survey
ICF

Reminder of First Interview

This will be sent to institutions one business day before their scheduled interview, but only if they received the first confirmation at least 4 days before the scheduled interview.

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant ICF staff
From: NSF Higher Education R&D Survey
Re: Interview Reminder ([[inst_id]])

Dear [[firstname]] [[lastname]]:

This is just a reminder about our phone call scheduled for **DayoftheWeek, Month XX, at X:XX AM/PM (EDT/CDT/MDT/WDT)**. At that time please call my conference line at 1-855-423-6338, conference ID [interviewer id].

We will send you a copy of your completed FY 2019 survey with the new questions included prior to the interview.

If you have any trouble accessing the attachment, have further questions or need to reschedule, you may reach me by email at support@HERDsurvey.org or call toll-free at (866) 936-9376.

Thank you very much for your help.

Sincerely,
Sherri Mamon
Qualitative Researcher
Higher Education R&D Survey
ICF

APPENDIX E: Round 1 Test Questions

This is a proposed new question. None of the data collected during this study will be included in the FY 2019 data maintained or published by NCSES.

Test Question 1. How many personnel (headcount) worked in the functions listed below in FY 2019 and how many fell into the demographic and educational categories listed below?

- Count each person only once.
- Include all personnel and students paid from R&D accounts regardless of how much they received.
- **Functions** are defined primarily by the nature of the employee's work, not the employee's level of education. See table below for more information.

Researchers	R&D technicians	R&D support staff
Professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned. Include R&D managers in this category.	Persons whose main tasks require technical knowledge and experience in one or more fields of science or engineering, but who contribute to R&D by performing technical tasks under the supervision of researchers.	Not directly involved with the conduct of a research project, but support the researchers and technicians. These employees might include clerical staff, report writers, safety trainers, and other related employees.
Researcher versus R&D technician		
Researchers contribute more to the creative aspects of R&D whereas technicians provide technical support. For example, a researcher (scientist or engineer) would design an experiment and a technician would run the experiment and assist in analyzing results.		

	(a) Researchers	(b) R&D technicians	(c) R&D support staff	(d) Total
A. Total R&D personnel				
B. Sex				
1. Female				
2. Male				
3. Sex unknown or not stated				
C. Citizenship				
1. U.S. citizens and permanent residents (non-U.S. citizens holding Green Cards)				
2. Foreign nationals holding temporary visas				
3. Citizenship or residency status unknown or not stated				
D. Highest level of education completed				
1. Doctorate (e.g., PhD, DSc, EdD)				
2. Professional degree (e.g., JD, LLB, MD, DDS, DVM)				
3. Master's degree (e.g., MS, MA, MBA)				
4. Less than Master's				
5. Education level unknown or not stated				

This is a proposed new question. None of the data collected during this study will be included in the FY 2019 data maintained or published by NCSES.

Test Question 2. How many full-time equivalents (FTEs) worked in the functions listed below in FY 2019?

- See Test Question 1 for descriptions of each function.
- An individual cannot be more than 1.0 FTE.
- FTE research personnel are calculated as the total working (paid) effort spent on research during a specific period divided by the total effort representing a full-time schedule within the same period.

The following examples of FTE calculations assume a 40 hour work week and a 52 week year. However, you should use the hours per week and weeks per year that typically represent a full-time employee at your institution.

- 3 technicians that work on research full-time all year: (3 * 52)/52 = 3.0 FTE
- 2 support staff that work on research full-time for 32 weeks: (2 * 32)/52 =1.2 FTE
- 1 researcher that works on research 30% of the time for 20 weeks, 50% of the time for another 20 weeks, and full-time for 12 weeks: ((20 * 0.3) + (20 * 0.5) + 12)/ 52 = .54 FTE
- 10 researchers that work on research 40% of the time for 20 weeks: (10 * (20 *0.4))/52 = 1.54 FTE
- 20 part-time employees that work as technicians for 10 hours a week for 40 weeks: (20 * (10/40) * 40))/52 = 3.85 FTE

	FTEs
a. Researchers	
b. R&D technicians and equivalent staff	
c. R&D support staff	
d. Total	

APPENDIX F: Round 1 Initial Interview Protocol

HERD Round 1 Initial Interview Protocol

[Interviewer introduces herself.] Thank you very much for talking with me today. As you know from our initial contact, we are considering adding some questions about head counts and full time equivalents (FTEs) in the upcoming FY 2020 NSF-NCSES Higher Education R&D Survey.

Before we begin our interview, I want to review some information with you.

- Your participation in this interview is voluntary.
- The interview should last no more than 30 minutes.
- There is another person on the telephone with me who is taking notes.
- *If appropriate:* <Name>, from NSF-NCSES, is also listening to our discussion today. Is that okay? If no, NCSES staff member will hang up the phone.
- I would like to audio record this interview so that I get all of your comments. Is that okay with you?
- Before we continue with the interview, I need your consent to be interviewed. I'm going to read you the consent form and then I'll ask for your verbal consent.

> The National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation designs, conducts, and sponsors surveys on science, engineering, and technology. In order to produce the best information possible, NCSES routinely evaluates its surveys.
>
> You have volunteered to take part in a study to evaluate one of the NCSES's surveys. In order to have a complete record of your comments, your interview session will be audio recorded. We plan to use the recording to improve the survey. NCSES and ICF staff directly involved in this research project will have access to the recording.
>
> This study is authorized by law (42 U.S.C. 1862 Section 3.a.6). The OMB control number for this study is 3145-0174.
>
> I have volunteered to participate in this study, and I give permission for my recording to be used for the purposes stated above.
>
> If you consent to participate in this interview, please state your name and that you consent.

Do you have any questions before we start?

For the record can you tell me your role in the HERD Survey?

I just sent you a copy of your completed FY 2019 survey. The proposed new questions are included in that attachment. Did you receive the copy of the survey I sent?

[If they did not receive a copy of the revised survey, be prepared to e-mail it to them immediately.]

[Give them a few minutes to review before beginning interview]

(Head counts) Let's start by going to page 29, and the proposed new question 1. I'll give you a moment to read through the question, instructions, and definitions. Please let me know when you're finished.

1. What are your initial reactions to this question?
    a. Can you tell me more about that?
2. What information is this question requesting?
    a. How does the information this question is requesting compare to what is currently reported in Question 15?
        i. Do you think the total headcount would be the same?
3. This question refers to “functions” of personnel. What does “functions” mean to you, in the context of this question?
    a. If you were just reading this question without being able to see the definitions for column headers, what would you think “function” meant?
    b. Knowing the information included on the question, what word would you use in the question?
4. Is the information about what personnel to include in each function clear?
    a. What sort of employees at your institution would be “researchers”?
    b. What sort of employees at your institution would be “R&D technicians”?
    c. What sort of employees at your institution would be “R&D support staff?”
    d. Is the direction about functions above the table, “Functions are defined primarily by the nature of the employee’s work, not level of education” clear?
5. Does your institution already classify its own employees by function similar to the way the question asks?
    a. If yes,
        i. Tell me more about that.
        ii. What sort of employees would your institution consider to be “researchers”?
        iii. What sort of employees would your institution consider to be “R&D technicians”?
        iv. What about “R&D support staff?”
6. What office(s) or department(s) at your institution would have this information?
    a. Do you think you will be able to obtain all of the demographic and educational categories as requested?
        i. Are there any that will be more difficult to obtain than others?
7. Are the instructions asking you to do something that you would normally do? Or are they asking you to do something that seems unusual?

(FTEs) Now let’s look at the proposed new question 2, on page 30. I’ll give you a moment to read through the question, instructions, and examples. Please let me know when you’re finished.

8. What are your initial reactions to this question?
    a. Could you tell me more about that?
9. What information is this question requesting?
10. This question refers to “full-time equivalents (FTEs).” Does your institution typically have this information?
11. What office(s) or department(s) at your institution would have this information?
12. What are your reactions to the examples provided?
    a. Are they too long, too short, or about right?
    b. Are they helpful or not helpful?

c. Did you notice the instruction to use the hours per week and weeks per year that represent a full-time employee at your institution?
    i. Does that help you determine how you will provide this information for your institution?

13. Are the instructions asking you to do something that you would normally do? Or are they asking you to do something that seems unusual?

Overall Thoughts for Proposed Questions

14. Do you think you would be able to answer these questions yourself, or would you have to consult with others?
    a. If others, who will you consult with? Is it different for each question?
    b. If others, how will you go about getting information on this topic from that person/those people? (Phone call? E-mail? Share the questionnaire or not?)
15. Approximately how long do you think it will take you, or others pulling this data together for you, to answer these two questions, including the time it takes to gather information and talk to others?
16. Do you have any questions or comments about anything that we have not covered?

Those are all of our questions for this interview today. The next step is for you to complete the two proposed new questions we've just talked about. Just a reminder, the responses provided will not be released publicly. They will only be used for research and evaluation purposes.

Once you're finished with the new questions, we'd like to talk again. Will you be able to finish these questions within 4 weeks or even sooner? Would you prefer to schedule that meeting now, or schedule it later?

Thank you so much for your time today.

APPENDIX G: Round 1 Debrief Interview Communications

HERD Round 1 Debrief Interview Communications

Reminder to Complete Test Questions/Schedule Second Interview

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant NCSES and ICF staff
From: NSF Higher Education R&D Survey
Re: Confirming interview ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Now that you have had time to work on completing the test questions for the HERD Survey, we'd like to schedule your final interview. When you have completed the questions, please send them to us in advance of our next discussion. As a reminder, we would like your completed questions returned by [insert date].

We'd like to schedule your final 30 minute interview where we'll ask about your experience completing the survey questions. If you have availability during the days of [insert dates], please contact me at support@herdsurvey.org or 866-936-9376. I will schedule a time for the phone call.

Thank you very much for your help.

Sincerely,
Melinda Scott
Data Collection Specialist
Higher Education R&D Survey
ICF

Reminder of Second Interview

This will be sent to institutions one business day before their scheduled interview, but only if they received the first confirmation at least 4 days before the scheduled interview.

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant ICF staff
From: NSF Higher Education R&D Survey
Re: Interview Reminder ([[inst_id]])

Dear [[firstname]] [[lastname]]:

This is just a reminder about our phone call scheduled for **DayoftheWeek, Month XX, at X:XX AM/PM (EDT/CDT/MDT/WDT)**. At that time please call my conference line at 1-855-423-6338, conference ID [interviewer id].

Please be sure to send us your completed questions in advance of the call.

If you have any trouble accessing the attachment, have further questions or need to reschedule, you may reach me by email at support@HERDsurvey.org or call toll-free at (866) 936-9376.

Thank you very much for your help.

Sincerely,
Sherri Mamon
Qualitative Researcher
Higher Education R&D Survey
ICF

APPENDIX H: Round 1 Debrief Interview Protocol

HERD Round 1 Debrief Interview Protocol

[Interviewer introduces herself.] Thank you very much for talking with me today and for taking the time to complete the proposed questions for the upcoming FY 2020 NSF-NCSES Higher Education R&D Survey.

Before we begin our interview, I want to remind you of some things.

- Your participation in this interview is voluntary.
- The interview should last no more than 30 minutes.
- There is another person on the telephone with me who is taking notes.
- *If appropriate:* <Name>, from NSF-NCSES, is also listening to our discussion today. Is that okay? If no, NCSES staff member will hang up the phone.
- I would like to audio record this interview so that I get all of your comments. Is that okay with you?
- Before we continue with the interview, I need your consent to be interviewed. I'm going to read you the consent form and then I'll ask for your verbal consent.

> The National Center for Science and Engineering Statistics within then National Science Foundation designs, conducts, and sponsors surveys on science, engineering, and technology. In order to produce the best information possible, NCSES routinely evaluates its surveys.
>
> You have volunteered to take part in a study to improve one of NCSES's surveys. In order to have a complete record of your comments, your interview session will be audio recorded. We plan to use the recording to improve the survey. NCSES and ICF staff directly involved in this research project will have access to the recording.
>
> This study is authorized by law (42 U.S.C. 1862 Section 3.a.6). The OMB control number for this study is 3145-0174.
>
> I have volunteered to participate in this study, and I give permission for my recording to be used for the purposes stated above.
>
> If you consent to participate in this interview, please state your name and that you consent.

Do you have any questions before we start?

If you don't have it in front of you already, please pull up your responses to the proposed new questions.

(Head counts) Let's start with your overall reactions to proposed new question 1.

1. Can you tell me how you went about gathering this information?
    a. Were you able to do it yourself, or did you get help from other people?
        i. If you got help from others, were those people in your own office or department, or in other offices/departments? What other offices or departments were they in? Did they have any feedback on the question?

        ii. How did you go about determining which staff were included in each function?
        iii. [If it is not mentioned, specifically ask about each demographic type to see if it was gathered through different offices or in different ways]
    b. What records did you use? Where are those records kept? (In what offices or departments are they kept? In what system(s) are they kept?)
2. Did you have to make any assumptions about what the question was asking? If so, what were they?
    a. How does the information this question is requesting compare to what is currently reported in Question 15?
        i. Do you think the total headcount would be the same?
        ii. If you made the assumption that the total for this question should be the same as Question 15, then how would it be different if you had not made that assumption?

            Note to interviewer*: if respondent asks specifically if it should match Q15, respond with something like, "right now we're seeing how different institutions are interpreting this question. If they are the same as Q15, we want to know what institutions can do with the additional breakouts. This will help us further refine instructions before it is finalized."*
    b. Some schools have told us that their system does not capture co-PIs, so on Question 15 co-PIs are included in *all other personnel*. Where are co-PIs at your institution reported on Test Question 1?
    c. Some schools have also told us that employees can only be categorized as PIs on externally sponsored projects, so faculty whose R&D salary only comes from institutional funds would be included in all other personnel on Question 15. Where are faculty performing R&D reported on Test Question 1?
3. Did you or anyone that you consulted with have questions while working on this question?
    a. If yes, what were your (or their) questions? Were you able to answer them?
4. How easy or difficult was it to gather this information?
    a. If difficult, tell me more about that.
    b. Were any of these things easier or harder to gather than others?
5. [If some of the survey question was not answered] I noticed that [line/column X] was blank. Is there any particular reason for that?
    a. Do you believe you will be able to provide those data points for the FY 2020 survey, or would they also be blank?
        i. If no, why not and do you think the information could be provided for a survey beyond FY 2020?
6. Did you refer to the instructions as you were completing the question, or not?
    a. If referred, what parts of the instructions were helpful? Which parts were not helpful? Were there any parts of the instructions that you thought were confusing, or could be confusing to another person?
7. Did you or any of your colleagues have concerns about reporting this data?

(FTEs) Now let's look at proposed new question 2.

8. Can you tell me how you went about gathering this information?

   a. Were you able to do it yourself, or did you get help from other people?
      i. If you got help from others, were those people in your own office or department, or in other offices/departments? What other offices or departments were they in? Did they have any feedback on the question?
      ii. ***Note**, we want to know the hours were R&D if not specified.*
   b. Was anyone counted under both functions? For example, could someone be 0.2 FTE under researcher and 0.2 under R&D technician and equivalent staff?
   c. Do the numbers you reported represent estimates, or figures from records? If they were estimates, how did you estimate?
   d. What records did you use? Where are those records kept? (In what offices or departments are they kept? In what system(s) are they kept?)
   e. We noticed you reported in whole numbers, which we were vague about in our instructions. Would specifying if we wanted decimal places or not make it easier to complete or would it matter?
9. Did you have to make any assumptions about what the question was asking? If so, what were they?
   a. Did you see the instruction to use the hours per week and weeks per year that typically represent a full-time employee at your institution? Did that influence how you calculated the FTEs?
   b. What calculation did you use to get to these numbers? (e.g., Did you base this on a 40 hour work week and 52 week year or something else?)
   c. Was it different for full-time vs. part-time?
10. How easy or difficult was it to gather this information?
    a. If difficult, tell me more about that?
    b. Were any of these things easier or harder to gather than others?
11. Did you or anyone that you consulted with have questions while working on this question?
    a. If yes, what were your (or their) questions? Were you able to answer them?
12. [If some of the survey question was not answered] I noticed that [line/column X] was blank. Is there any particular reason for that?
    a. Do you believe you will be able to provide those data points for the FY 2020 survey, or would they also be blank?
    b. If no, why not and do you think the information could be provided for a survey beyond FY 2020?
13. Did you happen to refer to the instructions as you were completing the question, or not?
    a. If referred, what parts of the instructions were helpful? Which parts were not helpful? Were there any parts of the instructions that you thought were confusing, or could be confusing to another person?
    b. What did you think of the instruction that "an individual cannot be more than 1.0 FTE?"
14. Did you happen to refer to the examples for calculating the FTEs as you completed the question?
    a. Were they helpful or not helpful?
    b. What did you think of the level of detail in the examples: was it too much, too little, or about right?

Overall Thoughts for Proposed Questions

15. Approximately how many hours did it take you, and others who contributed, to answer these two questions, including the time it takes to gather information, talk to anybody you'd need to talk to, etc.?
    a. Do you think it would take less time now that you've answered it the first time?
16. Do you have any questions or comments about anything that we have not covered?

Those are all our questions. Thank you so much for your time today. If we decide to put the question on the survey, we will send an email announcing the change as soon as we can.

APPENDIX I: Round 2 Initial Interview Communications

Round 2 Initial Interview Communications

Invitation

To: Primary contact
Cc: others normally included in survey contacts
From: NSF Higher Education R&D Survey
Re: Contribute to changes on NSF-NCSES HERD Survey ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Thank you, again, for completing the FY 2019 Higher Education Research and Development (HERD) Survey. I appreciate your time and efforts.

I am writing today to request your assistance on a proposal for the next cycle of the survey. Before we finalize the survey for FY 2020, we would like to get feedback from current survey respondents. The National Center for Science and Engineering Statistics within the National Science Foundation is considering adding two new questions about R&D personnel to the FY 2020 survey. The first would ask for the number of personnel by demographic categories and would replace the current question 15. The second would ask for full-time equivalents (FTEs) for personnel at your institution who perform R&D.

If you are willing to help, we would ask you to do three things:

1) **Participate in an initial interview by phone** to understand how you would go about answering these questions**.** We would like to complete the interviews by **June 10**. The interview will be less than 30 minutes.
2) **Complete the proposed new questions.** This step will likely involve working across offices at your organization (e.g., Human Resources, Institutional Research). The responses you provide will only be used for our internal question development. We would like you to complete the test questions within three weeks of your initial interview.
3) **Participate in a final interview by phone.** The interview will be less than 30 minutes. We will ask about your experience completing the proposed new questions. We would like your final interview completed within one week of completing the test questions.

If you, or someone else from the team at [institution name] that completes the HERD survey, are interested in participating, please contact Melinda Scott from our survey staff at ICF at support@herdsurvey.org or 866-936-9376. She will schedule a time for the interview. If we do not hear from you by **June 4**, we will contact you again.

Thank you for your help and for your continued participation in the NSF HERD Survey.

Sincerely,

Michael Gibbons
Project Officer, Higher Education R&D Survey
National Center for Science and Engineering Statistics
National Science Foundation

Invitation – Reminder

To: Primary contact
Cc: others normally included in survey contacts
From: NSF Higher Education R&D Survey
Re: Please reply: Contribute to changes on NSF-NCSES HERD Survey ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Earlier this week we sent you an e-mail asking for your assistance on some changes we are considering for the Higher Education Research and Development (HERD) Survey. We want to be sure that the universities understand the questions and can provide the newly requested data before we implement any changes. This process is critical to the survey's development. We are only inviting a few respondents to participate. We would greatly appreciate your input on these new questions.

We are thinking about adding two questions about R&D personnel to the FY 2020 survey. The first would ask for the number of personnel by demographic categories and would replace the current question 15. The second would ask for full-time equivalents (FTEs) for personnel at your institution who perform R&D.

Before we finalize the survey, we would like to get some feedback from current survey respondents. If you are willing to help, we would ask you to do three things:

1) **Participate in an initial interview by phone** to understand how you would go about answering these questions**.** We would like to complete the interviews by **June 10.** The interview will be less than 30 minutes.
2) **Complete the test questions.** This step will likely involve working across offices at your organization (e.g., Human Resources, Institutional Research). The responses you provide will only be used for our internal question development. We would like you to complete the test questions within three weeks of your initial interview.
3) **Participate in a final interview.** The interview will be less than 30 minutes. We will ask about your experience completing the proposed new questions. We would like your final interview completed within one week of completing the test questions.

If you, or someone else from the team at [institution name] that completes the HERD survey, are interested in participating, please contact Melinda Scott from our survey staff at ICF at support@herdsurvey.org or 866-936-9376. She will schedule a time for the interview.

Thank you for your help and for your continued participation in the NSF HERD Survey.

Sincerely,

Michael Gibbons
Project Officer, Higher Education R&D Survey
National Center for Science and Engineering Statistics
National Science Foundation

Confirmation of First Interview

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant NCSES and ICF staff
From: NSF Higher Education R&D Survey
Re: Confirming interview ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Thank you for agreeing to talk to us about two proposed new questions that may be added to the FY 2020 Higher Education R&D Survey (HERD) related to head counts and full-time equivalents (FTEs) for R&D personnel at your institution.

The phone call is scheduled for **DayoftheWeek, Month XX, at X:XX AM/PM (EDT/CDT/MDT/WDT)**. At that time please call our conference line at 1-855-423-6338, conference ID [interviewer id]. [insert interviewer name] will be leading the interview. You have the option of using video for this interview. If you would like to use that option, please let us know.

Also, please note, following this interview, we ask you to complete the test questions. This step will likely involve working across offices at your organization (e.g., Human Resources, Institutional Research). We would like you to complete the test questions within three weeks of your initial interview [insert date].

If you have further questions or need to reschedule, you may reach me by email at support@HERDsurvey.org or call toll-free at (866) 936-9376.

Thank you very much for your help.

Sincerely,
Melinda Scott
Data Collection Specialist
Higher Education R&D Survey
ICF

Reminder of First Interview

This will be sent to institutions one business day before their scheduled interview, but only if they received the first confirmation at least 4 days before the scheduled interview.

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant ICF staff
From: NSF Higher Education R&D Survey
Re: Interview Reminder ([[inst_id]])

Dear [[firstname]] [[lastname]]:

This is just a reminder about our phone call scheduled for **DayoftheWeek, Month XX, at X:XX AM/PM (EDT/CDT/MDT/WDT)**. At that time please call my conference line at 1-855-423-6338, conference ID [interviewer id].

We will send you a copy of your completed FY 2019 survey with the new questions included prior to the interview.

If you have any trouble accessing the attachment, have further questions or need to reschedule, you may reach me by email at support@HERDsurvey.org or call toll-free at (866) 936-9376.

Thank you very much for your help.

Sincerely,
Sherri Mamon
Qualitative Researcher
Higher Education R&D Survey
ICF

APPENDIX J: Round 2 Test Questions

This is a proposed new question. None of the data collected during this study will be included in the FY 2019 data maintained or published by NCSES.

Test Question 1. How many personnel (headcount) worked in the functions listed below in FY 2019 and how many fell into the demographic and educational categories listed below?

- Count each person only once.
- Include all personnel and students that worked in an R&D function regardless of the amount of time spent in that role.
- **Functions** are defined primarily by the nature of the employee's work, not the employee's level of education. See table below for more information.

Researchers	R&D technicians	R&D support staff
Professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned. Include R&D managers in this category.	Persons whose main tasks require technical knowledge and experience in one or more fields of science or engineering, but who contribute to R&D by performing technical tasks under the supervision of researchers.	Not directly involved with the conduct of a research project, but support the researchers and technicians. These employees might include clerical staff, report writers, safety trainers, and other related employees.
Researcher versus R&D technician Researchers contribute more to the creative aspects of R&D whereas technicians provide technical support. For example, a researcher (scientist or engineer) would design an experiment and a technician would run the experiment and assist in analyzing results.		

	(a) Researchers	(b) R&D technicians	(c) R&D support staff	(d) Total
A. Total R&D personnel				
B. Sex				
1. Female				
2. Male				
3. Sex unknown or not stated				
C. Citizenship				
1. U.S. citizens and permanent residents (non-U.S. citizens holding Green Cards)				
2. Foreign nationals holding temporary visas				
3. Citizenship or residency status unknown or not stated				

D. Highest level of education completed	**Researchers only**
1. Doctorate (e.g., PhD, DSc, EdD)	
2. Professional degree (e.g., JD, LLB, MD, DDS, DVM)	
3. Master's degree (e.g., MS, MA, MBA)	
4. Less than Master's	
5. Education level unknown or not stated	

Do not include highest level of education for R&D technicians or R&D support staff.

This is a proposed new question. None of the data collected during this study will be included in the FY 2019 data maintained or published by NCSES.

Test Question 2. **How many full-time equivalents (FTEs) worked in the functions listed below in FY 2019?**

- See Test Question 1 for descriptions of each function.
- An individual cannot be more than 1.0 FTE.
- FTE research personnel are calculated as the total working (paid) effort spent on research during a specific period divided by the total effort representing a full-time schedule within the same period.

The following examples of FTE calculations assume a 40 hour work week and a 52 week year. However, you should use the hours per week and weeks per year that typically represent a full-time employee at your institution.

- 3 technicians that work on research full-time all year: (3 * 52)/52 = 3.0 FTE
- 2 support staff that work on research full-time for 32 weeks: (2 * 32)/52 =1.2 FTE
- 1 researcher that works on research 20% of the time for 20 weeks, 50% of the time for another 20 weeks, and full-time for 12 weeks: ((20 * 0.2) + (20 * 0.5) + 12)/ 52 = 0.5 FTE
- 10 researchers that work on research 25% of the time for 20 weeks: (10 * (20 *0.25))/52 = 1.0 FTE
- 20 part-time employees that work as technicians for 15 hours a week for 40 weeks: (20 * (15/40) * 40))/52 = 5.8 FTE

	FTEs (round to 1 decimal place)
a. Researchers	______.___
b. R&D technicians and equivalent staff	______.___
c. R&D support staff	______.___
d. Total	______.___

APPENDIX K: Round 2 Initial Interview Protocol

HERD Round 2 Initial Interview Protocol

[Interviewer introduces herself.] Thank you very much for talking with me today. As you know from our initial contact, we are considering adding some questions about head counts and full time equivalents (FTEs) in the upcoming FY 2020 NSF-NCSES Higher Education R&D Survey.

Before we begin our interview, I want to review some information with you.

- Your participation in this interview is voluntary.
- The interview should last no more than 30 minutes.
- There is another person on the telephone with me who is taking notes.
- *If appropriate:* <Name>, from NSF-NCSES, is also listening to our discussion today. Is that okay? If no, NCSES staff member will hang up the phone.
- I would like to audio record this interview so that I get all of your comments. Is that okay with you?
- Before we continue with the interview, I need your consent to be interviewed. I'm going to read you the consent form and then I'll ask for your verbal consent.

> The National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation designs, conducts, and sponsors surveys on science, engineering, and technology. In order to produce the best information possible, NCSES routinely evaluates its surveys.
>
> You have volunteered to take part in a study to evaluate one of the NCSES's surveys. In order to have a complete record of your comments, your interview session will be audio recorded. We plan to use the recording to improve the survey. NCSES and ICF staff directly involved in this research project will have access to the recording.
>
> This study is authorized by law (42 U.S.C. 1862 Section 3.a.6). The OMB control number for this study is 3145-0174.
>
> I have volunteered to participate in this study, and I give permission for my recording to be used for the purposes stated above.
>
> If you consent to participate in this interview, please state your name and that you consent.

Do you have any questions before we start?

For the record can you tell me your role in the HERD Survey?

I just sent you a copy of your completed FY 2019 survey. The proposed new questions are included in that attachment. Did you receive the copy of the survey I sent?

[If they did not receive a copy of the revised survey, be prepared to e-mail it to them immediately.]

[Give them a few minutes to review before beginning interview]

(Head counts) Let's start by going to page 29, and the proposed new question 1. I'll give you a moment to read through the question, instructions, and definitions. Please let me know when you're finished.

1. What are your initial reactions to this question?
    a. Can you tell me more about that?
2. Looking at the bulleted list of instructions below the question, are the instructions clear?
    a. Do you think you will be able to include headcounts for faculty, staff and students?
    b. Is the direction about functions above the table, "Functions are defined primarily by the nature of the employee's work, not level of education" clear?
3. Is the information about what individuals to include in each function clear?
    a. Does your institution already classify its own employees by function similar to the way the question asks?
    b. What sort of employees at your institution would be "researchers"?
    c. What sort of employees at your institution would be "R&D technicians"?
    d. What sort of employees at your institution would be "R&D support staff?"
4. What office(s) or department(s) at your institution would have this information?
    a. Do you think you will be able to obtain all of the demographic and educational categories as requested?
        i. Are there any that will be more difficult to obtain than others?
    b. If this question is added to the HERD survey, would your institution be comfortable with us publishing demographic data by institution?
5. Are the instructions asking you to do something that you would normally do? Or are they asking you to do something that seems unusual?

(FTEs) Now let's look at the proposed new question 2, on page 30. I'll give you a moment to read through the question, instructions, and examples. Please let me know when you're finished.

6. What are your initial reactions to this question?
    a. Could you tell me more about that?
7. This question refers to "full-time equivalents (FTEs)." Does your institution typically have this information?
8. How does your institution define a full-time employee?
    a. What criteria does your institution use when considering whether an employee is full-time or part-time?
9. What are your reactions to the examples provided?
    a. Are they too long, too short, or about right?
    b. How likely are you to refer to them as you're answering this question: very likely, somewhat likely, not at all likely?
    c. Are they helpful or not helpful?
10. How do you think you will go about getting the data you need to answer this question?
    a. Will all of your institution's research related employees be reported here, or only some of them? Which ones will be included? Which will be excluded?
    b. What office(s) or department(s) at your institution would have this information?
11. Are the instructions asking you to do something that you would normally do? Or are they asking you to do something that seems unusual?

Overall Thoughts for Proposed Questions

12. Approximately how long do you think it will take you, or others pulling this data together for you, to answer these two questions, including the time it takes to gather information and talk to others?
13. Do you have any questions or comments about anything that we have not covered?

Those are all of our questions for this interview today. The next step is for you to complete the two proposed new questions we’ve just talked about. Just a reminder, the responses provided will not be released publicly. They will only be used for research and evaluation purposes.

Once you’re finished with the new questions, we’d like to talk again. Will you be able to finish these questions [by the date we provided in an e-mail]? We’ll send a reminder e-mail as we get closer and schedule a second interview at that time.

If someone from another office, such as HR or payroll, helps you complete the test questions, we encourage you to invite them to the next interview. Sometimes they can provide some additional valuable information about how the data was collected.

Thank you so much for your time today.

APPENDIX L: Round 2 Debrief Interview Communications

HERD Round 2 Debrief Interview Communications

Reminder to Complete Test Questions/Schedule Second Interview

This reminder will be sent 2 weeks after their interview/1 week before their completed questions are due.

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant NCSES and ICF staff
From: NSF Higher Education R&D Survey
Re: Confirming interview ([[inst_id]])

Dear [[firstname]] [[lastname]]:

Now that you have had time to work on completing the test questions for the HERD Survey, we'd like to schedule your final interview. When you have completed the questions, please send them to us in advance of our next discussion. As a reminder, we would like your completed questions returned by **[insert date].**

We'd also like to schedule your final 30 minute interview where we'll ask about your experience completing the survey questions. We encourage you to invite other people who contributed to gathering this information to this interview. We would like to schedule your interview sometime between [insert dates]. Please contact me at support@herdsurvey.org or 866-936-9376 to schedule a time for the phone call.

Thank you very much for your help.

Sincerely,
Melinda Scott
Data Collection Specialist
Higher Education R&D Survey
ICF

Reminder of Second Interview

This will be sent to institutions one business day before their scheduled interview.

To: Primary contact email (or other person scheduled)
CC: other attendees, including relevant ICF staff
From: NSF Higher Education R&D Survey
Re: Interview Reminder ([[inst_id]])

Dear [[firstname]] [[lastname]]:

This is just a reminder about our phone call scheduled for **DayoftheWeek, Month XX, at X:XX AM/PM (EDT/CDT/MDT/WDT)**. At that time please call my conference line at 1-855-423-6338, conference ID [interviewer id]. You have the option of using video for this interview. If you would like to use that option, please let us know. We encourage you to invite other people who contributed to gathering this information to this interview.

Please be sure to send us your completed questions in advance of the call.

If you have any trouble accessing the attachment, have further questions or need to reschedule, you may reach me by email at support@HERDsurvey.org or call toll-free at (866) 936-9376.

Thank you very much for your help.

Sincerely,
Sherri Mamon
Qualitative Researcher
Higher Education R&D Survey
ICF

APPENDIX M: Round 2 Debrief Interview Protocol

HERD Round 2 Debrief Interview Protocol

[Interviewer introduces herself.] Thank you very much for talking with me today and for taking the time to complete the proposed questions for the upcoming FY 2020 NSF-NCSES Higher Education R&D Survey.

Before we begin our interview, I want to remind you of some things.

- Your participation in this interview is voluntary.
- The interview should last no more than 30 minutes.
- There is another person on the telephone with me who is taking notes.
- *If appropriate:* <Name>, from NSF-NCSES, is also listening to our discussion today. Is that okay? If no, NCSES staff member will hang up the phone.
- I would like to audio record this interview so that I get all of your comments. Is that okay with you?
- Before we continue with the interview, I need your consent to be interviewed. I'm going to read you the consent form and then I'll ask for your verbal consent.

> The National Center for Science and Engineering Statistics within then National Science Foundation designs, conducts, and sponsors surveys on science, engineering, and technology. In order to produce the best information possible, NCSES routinely evaluates its surveys.
>
> You have volunteered to take part in a study to improve one of NCSES's surveys. In order to have a complete record of your comments, your interview session will be audio recorded. We plan to use the recording to improve the survey. NCSES and ICF staff directly involved in this research project will have access to the recording.
>
> This study is authorized by law (42 U.S.C. 1862 Section 3.a.6). The OMB control number for this study is 3145-0174.
>
> I have volunteered to participate in this study, and I give permission for my recording to be used for the purposes stated above.
>
> If you consent to participate in this interview, please state your name and that you consent.

Do you have any questions before we start?

If you don't have it in front of you already, please pull up your responses to the proposed new questions.

(Head counts) Let's start with your overall reactions to proposed new question 1.

1. Can you tell me how you went about gathering this information?
2. Did you have to make any assumptions about what the question was asking? If so, what were they?
3. Were you able to do it yourself, or did you get help from other people?

   a. If you got help from others, were those people in your own office or department, or in other offices/departments? What other offices or departments were they in? Did they have any feedback on the question?
4. How did you identify faculty, staff or students that worked in an R&D function?
   a. What records did you use? Where are those records kept? (In what offices or departments are they kept? In what system(s) are they kept?)
      [If it is not mentioned, specifically ask about each demographic type to see if it was gathered through different offices or in different ways]
   b. Does this headcount include faculty, staff, and students that worked on R&D funded only by internal sources?
   c. How does the information this question is requesting compare to what is currently reported in Question 15?
      i. Did you think the total headcount would be the same?
         Note to interviewer*: if respondent asks specifically if it should match Q15, respond with something like, "right now we're seeing how different institutions are interpreting this question. If they are the same as Q15, we want to know what institutions can do with the additional breakouts. This will help us further refine instructions before it is finalized."*
   d. If they suggest that PI status was used to determine is someone was a researcher,
      i. Some schools have told us that their system does not capture co-PIs, so on Question 15 co-PIs are included in *all other personnel*. Where are co-PIs at your institution reported on Test Question 1?
      ii. Some schools have also told us that employees can only be categorized as PIs on externally sponsored projects, so faculty whose R&D salary only comes from institutional funds would be included in all other personnel on Question 15. Where are faculty performing R&D reported on Test Question 1?
   e. Under which function did you place students?
      i. Did your institution include doctoral, masters and undergraduate students working in R&D functions?
      ii. Were they all placed in one function or split across functions? How?
         a. Were students categorized based on level (e.g., graduate versus undergraduate), type of work performed, or some other criteria?
5. Did you or anyone that you consulted with have questions while working on this question?
   a. If yes, what were your (or their) questions? Were you able to answer them?
6. In our initial interview you said your institution [would/would not] be comfortable with us publishing demographic data by institution. Now that you've gathered this data and talked to others, does this change your initial thoughts on publishing this data?
7. How easy or difficult was it to gather this information?
   a. If difficult, tell me more about that.
   b. Were any of these things easier or harder to gather than others?
8. [If some of the survey question was not answered] I noticed that [line/column X] was blank. Is there any particular reason for that?
   a. Do you believe you will be able to provide those data points for the FY 2020 survey, or would they also be blank?

        i. If no, why not and do you think the information could be provided for a survey beyond FY 2020?
9. Did you refer to the instructions as you were completing the question, or not?
    a. If referred, what parts of the instructions were helpful? Which parts were not helpful? Were there any parts of the instructions that you thought were confusing, or could be confusing to another person?

(FTEs) Now let's look at proposed new question 2.

10. Can you tell me how you went about gathering this information?
    a. Were you able to do it yourself, or did you get help from other people?
        i. If you got help from others, were those people in your own office or department, or in other offices/departments? What other offices or departments were they in? Did they have any feedback on the question?
    b. What records did you others use to complete this question? Where are those records kept? (In what offices or departments are they kept? In what system(s) are they kept?)
        i. Were the hours used to calculate FTE based on financial accounts, effort reporting or another source?
    c. Were the FTEs reported in this question the same individuals included in the headcount in the previous question? If not, where were there differences?
    d. Was anyone counted under multiple functions? For example, could someone be 0.2 FTE under researcher and 0.2 under R&D technician and equivalent staff?
11. Did you have to make any assumptions about what the question was asking? If so, what were they?
    a. Did you see the instruction to use the hours per week and weeks per year that typically represent a full-time employee at your institution? Did that influence how you calculated the FTEs?
    b. What calculation did you use to get to these numbers? (e.g., Did you base this on a 40 hour work week and 52 week year or something else?)
        i. Was it different for full-time vs. part-time?
        ii. Was it different for hourly vs. salaried employees?
        iii. Was it different for students vs faculty and staff?
12. How easy or difficult was it to gather this information?
    a. If difficult, tell me more about that?
    b. Were any of these things easier or harder to gather than others?
13. Did you or anyone that you consulted with have questions while working on this question?
    a. If yes, what were your (or their) questions? Were you able to answer them?
14. [If some of the survey question was not answered] I noticed that [line/column X] was blank. Is there any particular reason for that?
    a. Do you believe you will be able to provide those data points for the FY 2020 survey, or would they also be blank?
    b. If no, why not and do you think the information could be provided for a survey beyond FY 2020?
15. Did you happen to refer to the instructions as you were completing the question, or not?
    a. If referred, what parts of the instructions were helpful? Which parts were not helpful? Were there any parts of the instructions that you thought were confusing?

16. Did you happen to refer to the examples for calculating the FTEs as you completed the question?
    a. Were they helpful or not helpful?

Overall Thoughts for Proposed Questions

17. Approximately how many hours did it take you, and others who contributed, to answer these two questions, including the time it takes to gather information, talk to anybody you'd need to talk to, etc.?
    a. Do you think it would take less time now that you've answered it the first time?
18. If you worked with others to gather this information, how did you go about getting information on the questions to that person/those people? (Phone call? E-mail? Share the question text?)
19. Do you have any questions or comments about anything that we have not covered?

Those are all our questions. Thank you so much for your time today. If we decide to put the question on the survey, we will send an email announcing the change as soon as we can.