NSF Higher Education R&D Survey Update

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National Center for Science and Engineering Statistics
Social, Behavioral and Economic Sciences
National Science Foundation

Housekeeping Notes

- A high-speed connection is required for optimal performance
- Audio
  - You have the option to listen to today's Webinar via your phone line or your computer speakers.
  - If you need to dial in from a separate device, please find a local call-in number in the webinar invitation.
    - All phones and computer microphones have been placed on **mute** and will remain so for the duration of this webinar.
    - This meeting is being **recorded**.
    - This is the link to view captioning if necessary: https://www.streamtext.net/player?event=2020_HERD_Survey
- Questions
  - **Submit questions via the Q&A pod** at any time. Some questions will be addressed throughout the presentation, but questions will mostly be addressed at the end of the presentation.
  - Note we will attempt to answer as many questions as possible but likely will not be able to answer all questions submitted.
- If you have **technical issues**, contact us via the Questions panel or e-mail Sherri.Mamon@icf.com.

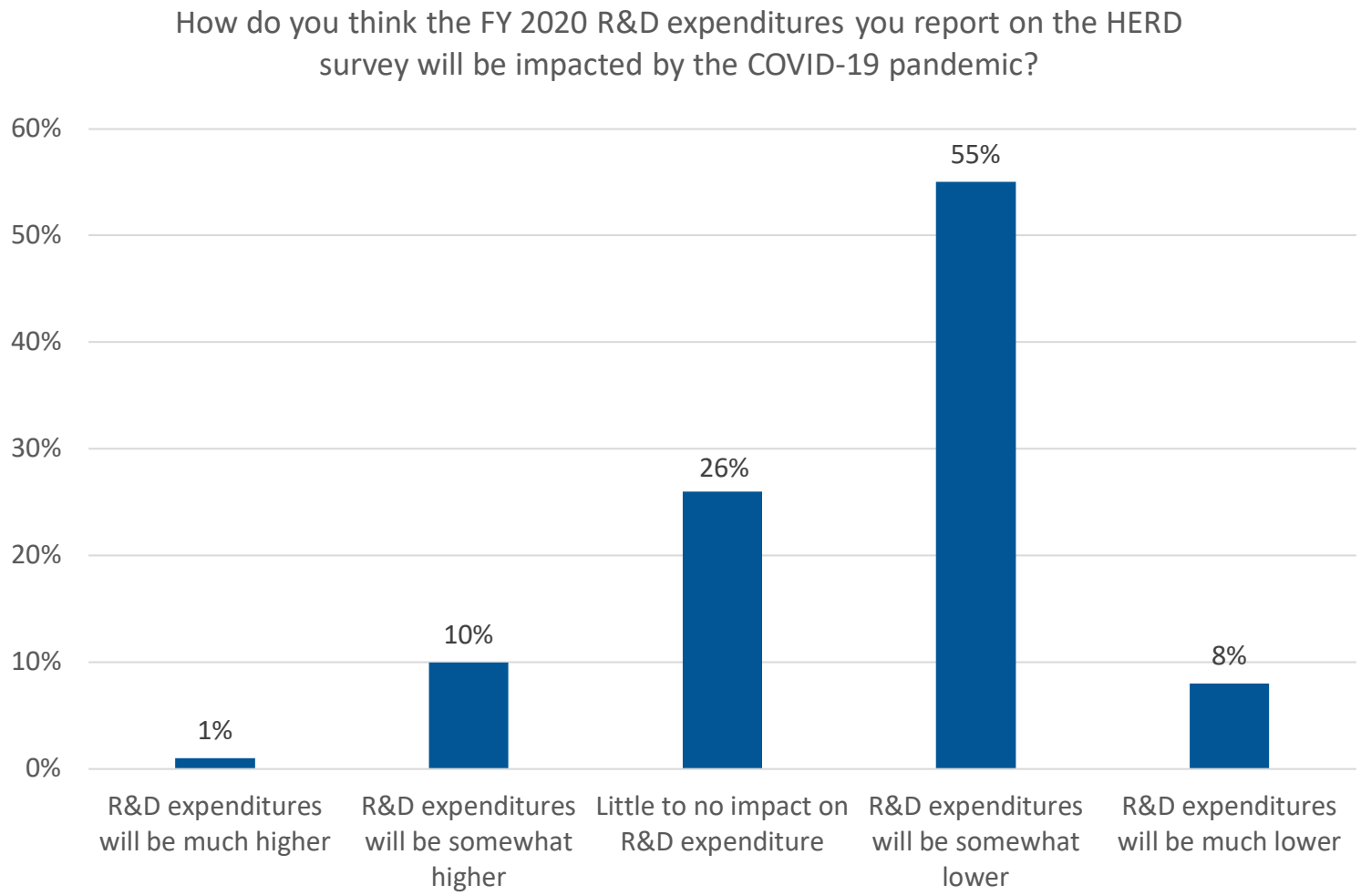
Agenda

- General information about the HERD Survey
- Potential new questions about the impacts of the COVID-19 pandemic on R&D activity
- Best practices for explaining large increases or decreases in expenditure data
- Changes coming to the FY 2020 survey
  - Allowing equipment-only awards
  - Two new questions about R&D personnel for institutions that report R&D expenditures of $1 million or more.

Information About the HERD Survey

- Conducted annually since FY 1972, significantly redesigned in FY 2010
- Census of all U.S. universities and colleges with minimum of $150,000 of R&D spending (N = 916 in FY 2019)
- Survey response rate has consistently been over 95% - thank you!
- Access to all HERD data, publications, and past questionnaires available at https://www.nsf.gov/statistics/srvyherd/
- FY 2019 data will be published in January 2021
- FY 2020 survey will launch in early November 2020
- FY 2020 survey due date is January 29, 2021

Impacts of COVID-19 Pandemic



Total institutions registered: 499
Responses were gathered through the informal webinar registration poll of HERD survey respondents and are hypothetical.

New Questions on the Impacts of COVID-19 Pandemic

- New questions about the impacts of the COVID-19 pandemic on R&D activity
  - Why questions are being added
  - How data will be used and published
  - Development and testing
  - Review questions

Question A.

In June 2020, to what degree were your institution's expected R&D activities disrupted as a result of the COVID-19 pandemic?

- Think about all R&D activities, including on-campus and off-campus activities.
- Your best estimate is acceptable.

(Select one)

- ○ Could not perform any R&D
- ○ Could perform very little R&D
- ○ Could perform some R&D
- ○ Could perform almost all R&D
- ○ Could perform all expected R&D

Question B.

1. **In FY 2020, were any R&D funds diverted from their originally-intended research focus as a result of the COVID-19 pandemic?**
   - Think about all R&D funds including sponsored research, unrestricted gifts, and institutionally financed R&D.

☐ **Yes** → Go to Question B2

☐ **No** → Go to Question C

2. **About what percentage of R&D funds did your institution divert for this purpose?**
   - Your best estimate is acceptable.

(Select one):

○ 81 – 100%

○ 61 – 80%

○ 41– 60%

○ 21 – 40%

○ 1 – 20%

Question C.

1. **In FY 2020, did your institution receive new funds for R&D as a result of the COVID-19 pandemic?**
   - This could include funding for R&D that is indirectly related to COVID-19 (e.g., effects of virtual learning on student performance, economic impacts of community job loss) or supplemental funding for ongoing R&D (e.g., modifications to support extended timelines or purchases of additional safety equipment).
   - Funds need not be spent in FY 2020.

☐ **Yes** → Go to Question C2

☐ **No** → Section complete

2. **What were the external sources of funds?**
   - If needed, see Question 1 of the survey for more information about what is included in each source.

(Select all that apply)

☐ Federal government

☐ State or local government

☐ Business

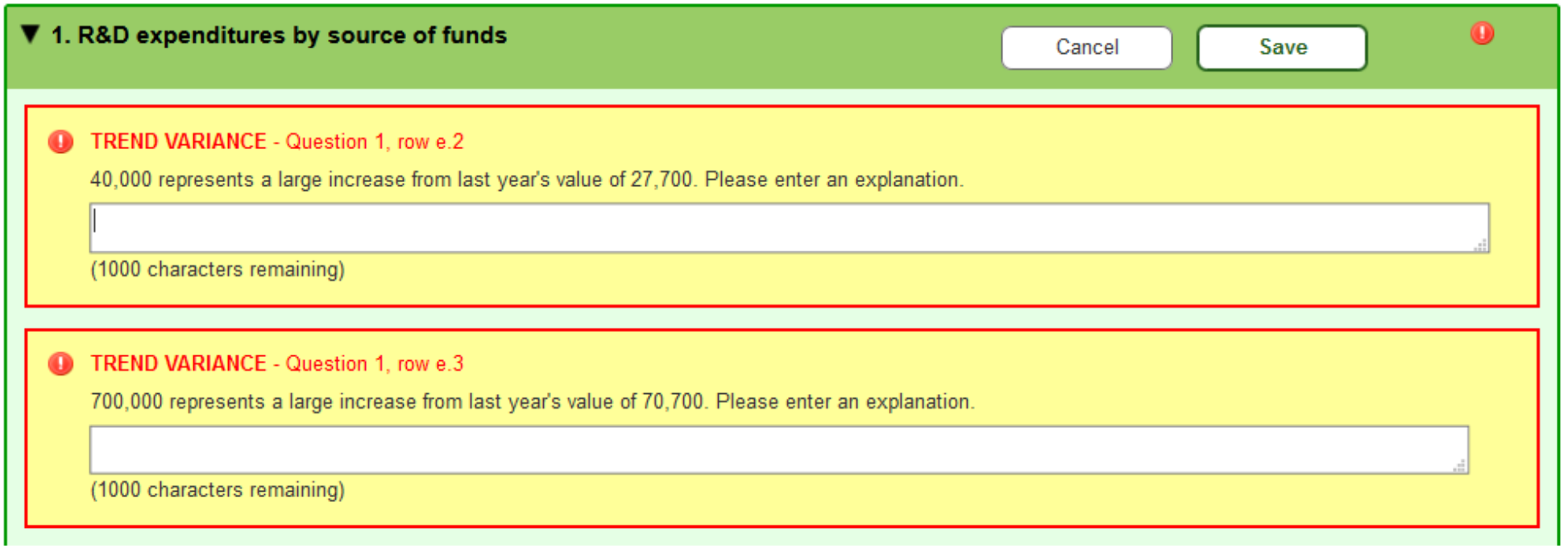
☐ Nonprofit organization

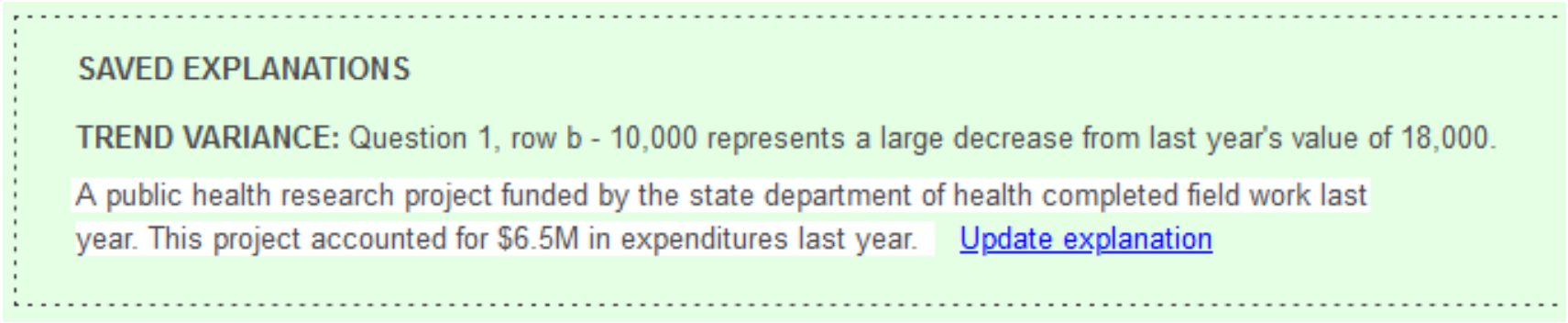
☐ Other sources, including foreign governments, other universities and gifts

COVID-19 Related Questions

- Will we have to report CARES Act funding separately?
- Will there be special reporting requirements for COVID-19 expenditures?

Responding to Trend Variances





Responding to Trend Variances

Why are trend variance checks and explanations included on the survey?

- To help you find errors.
- To help us identify when survey instruction may have been misinterpreted.
- So we have explanations to share with analysts when asked about specific large changes.

Responding to Trend Variances

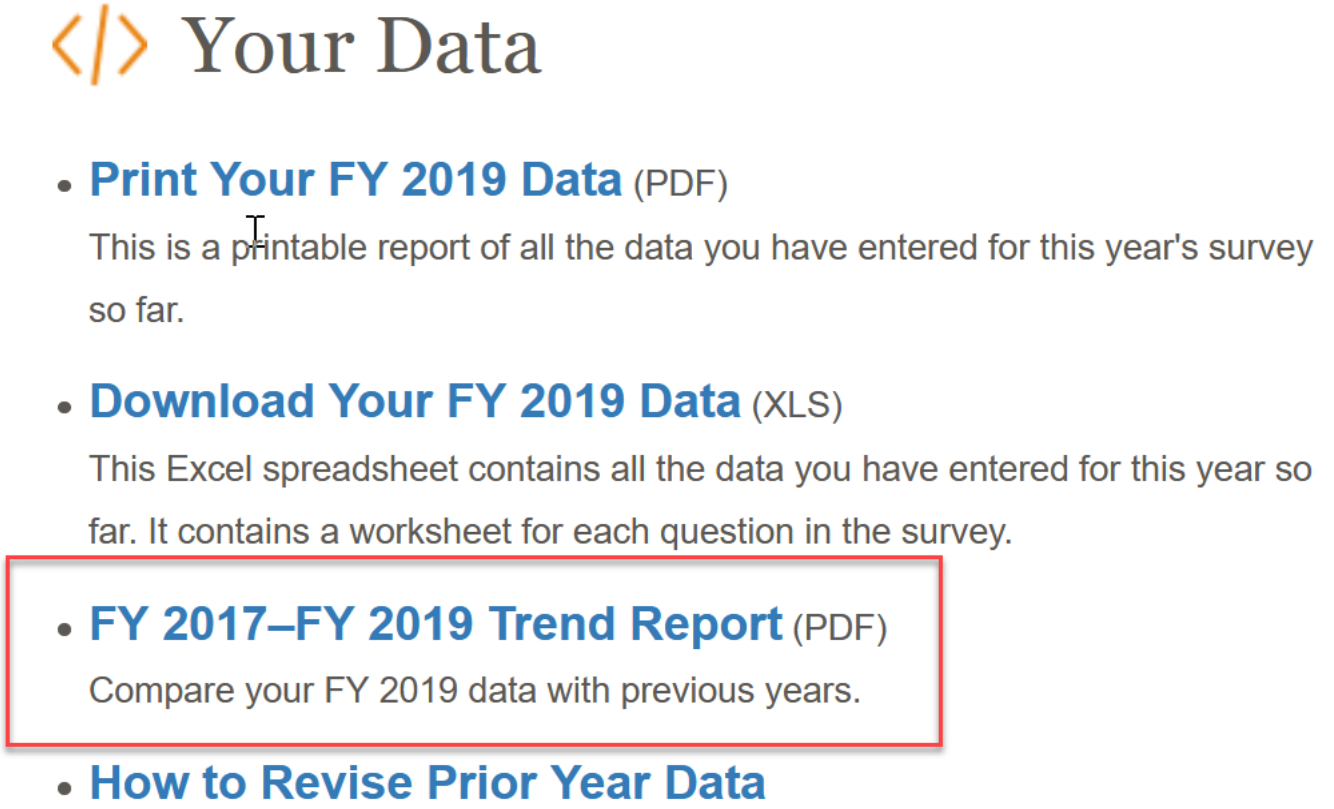
How do you decide what is a large increase or decrease from last year?

- Algorithms that differ from question to question, and may include consideration of:
  - Size of change (current year – last year)
  - Percent change ((current year – last year) / last year) * 100
  - Change as proportion of a total ((current year – last year) / total expenditures)
  - Change in proportion of total ((current year / current year total) – (last year / last year total))
- Variance algorithms are reviewed and revised routinely based on frequency of occurrence and types of explanations received.

Responding to Trend Variances: Best Practices

Step 1:

Review your 3-year trend report



Responding to Trend Variances: Best Practices

Step 1: Review your 3-year trend report

Question 1. R&D Expenditures by Source of Funds, FY 2017-2019

Source of Funds	R&D Expenditures (Dollars in thousands)			
	Fiscal Year			% Change 2018-19
	2019	2018	2017	
a. U.S. federal government	1,000,000	989,200	952,700	1.1%
b. State and local government	10,000	18,000	28,000	-44.4%
c. Business	60,000	58,000	53,800	3.4%
d. Nonprofit organizations	170,000	173,700	153,100	-2.1%
e. Institutional funds				
1. Institutionally financed research	40,000	46,000	53,000	-13.0%
2. Cost sharing	40,000	27,700	21,200	44.4%
3. Unrecovered indirect costs	70,000	70,700	53,700	-1.0%
4. Total institutional funds	150,000	144,400	127,900	3.9%
f. All other sources	30,000	30,700	32,700	-2.3%
g. Total	1,420,000	1,414,000	1,348,200	0.4%

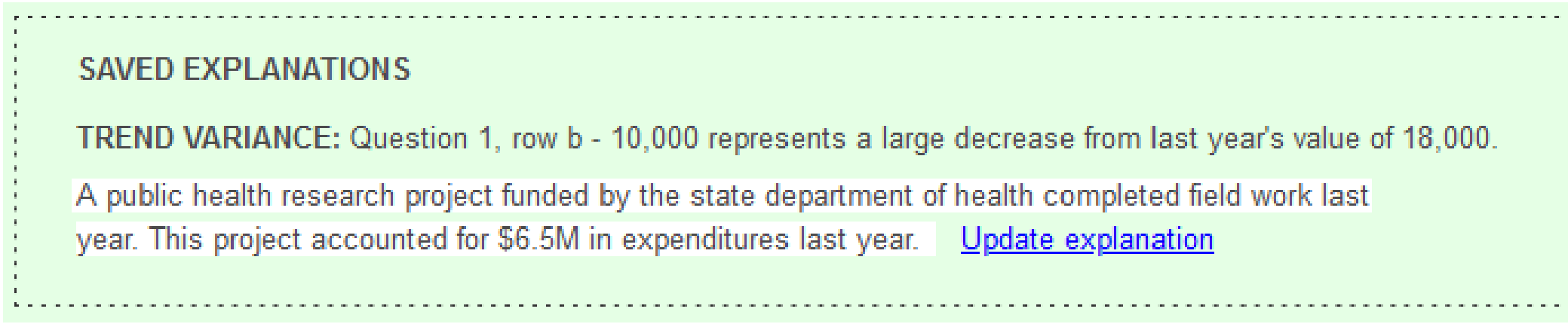
FY 2019 Trend Variance Explanations:

State and local government R&D: A public health research project funded by the state department of health completed field work last year. This project accounted for $6.5M in expenditures last year.

Responding to Trend Variances: Best Practices

Step 2: Correct your data, if needed

Step 3: Enter an explanation for the trend variance



Responding to Trend Variances: Best Practices

What should be included in a trend variance explanation?

- Information about specific projects with increased or decreased spending including, as appropriate, title, sponsor, and expenditure amount, OR
- The number of projects with increased/decreased spending and if they are predominantly in a certain field OR
- A description of changes in accounting/recording keeping practices that led to reporting larger or smaller amounts.
- Spell out acronyms specific to your institution.
- Explanations should be consistent across questions.
- Individual explanations should be able to stand on their own.

Changes to the FY 2020 Survey

- Allowing equipment-only awards
  - Such as NSF Major Research Instrumentation grants
- Adding a question on headcounts and full-time equivalents (FTE) of R&D personnel
  - Why questions are being added
    - Greater details on personnel demographics and effort (FTE) that are not available elsewhere
    - Better totals for international comparability of R&D statistics
  - How data will be used and published
    - Data tables
    - Analytical reports
  - Development and testing
  - Review questions

Revised Question 15: R&D Personnel Headcounts

How many personnel (headcount) worked in the functions listed below in FY 2020, and in which demographic and educational categories would these personnel be placed?

- All items on this question are confidential.
- Count each person only once.
- Include all personnel and students paid from R&D accounts regardless of how much they were paid. Pay could be a salary, a stipend or tuition remission.
- Exclude personnel that would be considered indirect research support such as research administration and other personnel not paid for work on specific research projects.
- Functions are defined primarily by the nature of the employee's work, not the employee's level of education. Depending on the nature of their work, a student could be placed in any functional category.

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

Revised Question 15: R&D Personnel Headcounts

Description of R&D Functions		
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 such as computer programming, data analysis, ensuring accurate testing, operating lab equipment, and preparing and processing samples 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, financial and personnel administrators, report writers, patent agents, safety trainers, equipment specialists, 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.		

New Question 16: R&D Personnel Full-Time Equivalents

Question 16. How many full-time equivalents (FTEs) worked in the functions listed below in FY 2020?

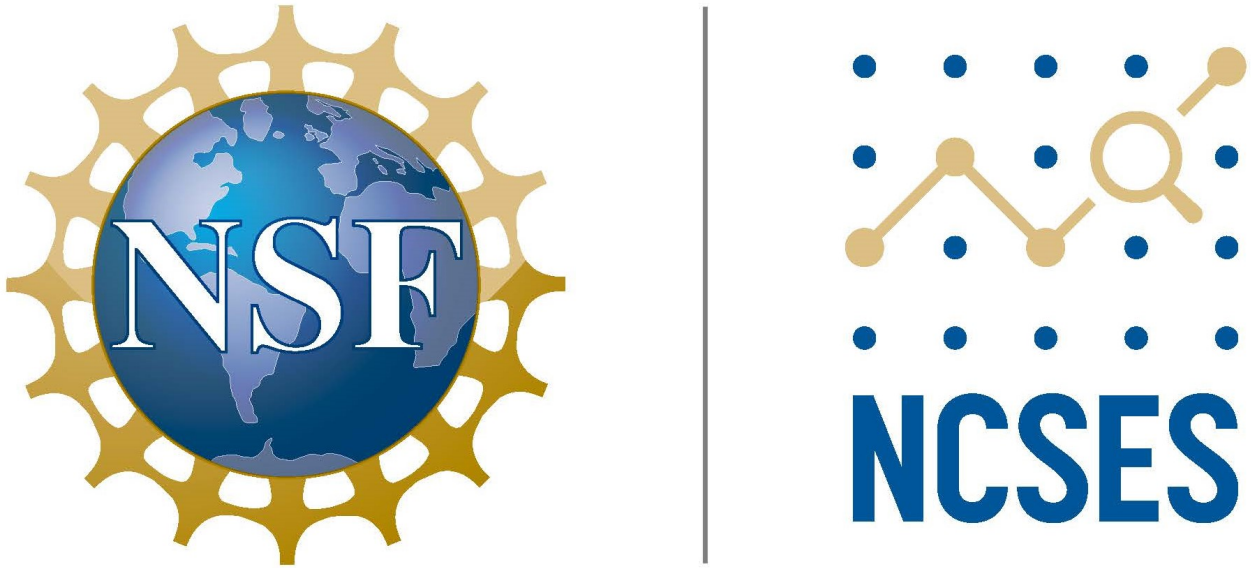
- See Question 15 for descriptions of each function.
- An individual cannot be more than 1.0 FTE.
- All personnel counted in Question 15 should be included in FTE calculations
- FTE research personnel are calculated as the total working effort spent on research during a specific period divided by the total effort representing a full-time schedule within the same period.

The following examples of FTE calculations assume a 40-hour work week and 12-month year (52 weeks). However, you should use the hours per week and weeks per year that typically represent a full-time employee at your institution.

- 2 research support staff who each work on research full-time for 32 weeks: 2 * (32/52) =1.2 FTE
- 1 researcher who 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% * 20) + (50% * 20) + 12)/ 52 = 0.5 FTE
- 10 researchers who each work on research 25% of the time for 20 weeks: 10 * 25% * (20/52) = 1.0 FTE
- 1 student who received a stipend for an assumed 200 hours of work: 200/2080 = 0.1 FTE
- 1 researcher with a $100,000 salary for a 12-month appointment, of which $30,000 of salary came from R&D accounts: 30,000/100,000 = 0.3 FTE
- 1 research support staff member with a $60,000 salary for a 9-month appointment, of which $40,000 came from R&D accounts: (40,000/60,000) * (9/12) = 0.5 FTE

	FTEs (round to 1 decimal place)
a. **Researchers**	_____.___
b. **R&D technicians**	_____.___
c. **R&D support staff**	_____.___
d. **Total**[1]	TOTAL

Questions?



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