



National Center for Science and  
Engineering Statistics

## Survey

# Survey of Federal Funds for Research and Development | 2021

The Survey of Federal Funds for Research and Development is an annual census completed by the federal agencies that conduct R&D programs and serves as the primary source of information about federal funding for R&D in the United States.

## Survey Description

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### Survey Overview (FYs 2020–21 survey cycle; volume 70)

#### Purpose

The annual Survey of Federal Funds for Research and Development (Federal Funds Survey) is the primary source of information about federal funding for R&D in the United States. The results of the survey are also used to help implement three federal programs: the Federal Laboratory Consortium for Technology Transfer, Small Business Innovation Research, and the Small Business Technology Transfer. The survey is sponsored by the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF).

#### Data collection authority

The information is solicited under the authority of the National Science Foundation Act of 1950, as amended, and the America COMPETES Reauthorization Act of 2010.

#### Major changes to recent survey cycle

None.

### Key Survey Information

<b>Frequency</b>	Annual.
<b>Initial survey year</b>	1951.
<b>Reference period</b>	FYs 2020 and 2021.
<b>Response unit</b>	Federal agencies.
<b>Sample or census</b>	Census.
<b>Population size</b>	A total of 33 federal agencies reported R&D data. Because multiple subdivisions of some federal departments completed the survey, there were 77 agency-level respondents: 5 federal departments, 53 agencies within another 9 federal departments, and 19 independent agencies. However, lower offices could also be authorized to enter data: in Federal Funds Survey nomenclature, agency-level offices could authorize program offices, program offices could authorize field offices, and field offices could authorize branch offices. When these sub-offices are included, there were 737 total respondents: 77 agencies, 170 program offices, 105 field offices, and 385 branch offices.
<b>Sample size</b>	Not applicable; the survey is a census of all federal agencies that conduct R&D programs, excluding the Central Intelligence Agency (CIA).
<b>Key variables</b>	<p>Key variables of interest are listed below.</p> <p>The survey provides data on federal obligations by the following key variables:</p> <ul style="list-style-type: none"> <li>• Federal agency</li> <li>• Federally funded research and development centers (FFRDCs)</li> </ul>

- Field of science and engineering
- Geographic location (within the United States and by foreign country or economy)
- Performer (type of organization doing the work)
- R&D plant
- Type of R&D
  - Basic research
  - Applied research
  - Development, also known as experimental development

The survey provides data on federal outlays by the following key variables:

- R&D (research, development, test, and evaluation [RDT&E] for Department of Defense agencies)
- R&D plant

Note that the variables “R&D,” “type of R&D,” and “R&D plant” in this survey use definitions comparable to those used by the Office of Management and Budget (<https://www.whitehouse.gov/omb>); these definitions were revised for volume 66 to match the definitions used by OMB in the July 2016 version of Circular A-11, Section 84 (Schedule C). These definitions are also used with the Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (<https://www.nsf.gov/statistics/srvyfedsupport/>), which is sponsored by NCSES.

## Survey Design

### Target population

The population consists of the federal agencies that conduct R&D programs, excluding the CIA. For the FYs 2020–21 cycle, a total of 33 federal agencies (14 federal departments and 19 independent agencies) reported R&D data.

### Sampling frame

The survey is a census of all federal agencies that conduct R&D programs, which are identified from information in the president’s budget submitted to Congress. The Analytical Perspectives volume and the “Detailed Budget Estimates by Agency” section of the appendix to the president’s budget identify agencies that receive funding for R&D.

### Sample design

Not applicable.

## Data Collection and Processing

### Data collection

Synectics for Management Decisions, Inc. (Synectics) performed the data collection for volume 70 (FYs 2020–21) under contract to NCSES. Agencies were initially contacted by e-mail to verify the contact information of each agency-level survey respondent. A Web-based data collection system is used to collect the Federal Funds Survey data.

Data collection for the Federal Funds Survey began in April 2021 and continued until September 2021. Volume 70 continued the procedure established in volume 66 to collection information for 2 government fiscal years, the fiscal year just completed and the current fiscal year. After consultation with data users, it was determined that the budget year projections for obligations based on the president's budget request to Congress were not as useful as the budget authority data presented in the budget request, so data were not requested for the president's budget year.

Actual data (representing completed transactions) were collected for FY 2020, and estimated data were collected for FY 2021. Estimated data do not represent final actions. The amounts reported for FY 2021 reflect congressional appropriation actions, as well as apportionment and reprogramming decisions, as of the end of the data collection period. Authorization, appropriation, deferral, and apportionment actions completed after data collection concluded will be reflected in later volumes in this series.

## Data processing

A Web-based data collection system is used to collect and manage data for the Federal Funds Survey. This Web-based system was designed to help improve survey reporting and reduce data collection and processing costs by offering respondents direct online reporting and editing.

All data collection efforts, data imports, and trend checking are accomplished using the Web-based data collection system. The Web-based data collection system has a component that allows survey respondents to enter their data online; it also has a component that allows the contractor to monitor support requests, data entry, and data issues.

## Estimation techniques

There is no known unit or item nonresponse, so no weighting or imputation methods are used; NCSES assumes a blank field is zero for estimation purposes.

## Survey Quality Measures

### Sampling error

Not applicable.

### Coverage error

Given the existence of a complete list of all eligible agencies, there is no known coverage error. The CIA is purposefully excluded.

### Nonresponse error

Agencies are encouraged to estimate when actual data are unavailable. The survey instrument allows respondents to enter data or skip data fields. There are several possible sources of nonresponse error by respondents, including inadvertently skipping data fields, skipping data fields under the false assumption that blank fields are equivalent to zero, and skipping data fields when data are unavailable.

### Measurement error

Some measurement problems are known to exist in the Federal Funds Survey data. Some agencies cannot report the full costs of R&D, the final performer of the R&D, or the R&D plant data.

For example, the Department of Defense (DOD) does not include headquarters costs of planning and administering R&D programs, which are estimated at a fraction of 1% of its total cost. DOD has stated that identification of amounts at this level is impracticable.

The National Institutes of Health (NIH) in the Department of Health and Human Services currently has many of its awards in its financial system without any field of science code. Therefore, NIH uses an alternate source to estimate its research dollars by field of science. NIH uses scientific class codes (based upon history of grant, content of the title, and the name of the awarding institute or center) as an approximation for field of science codes.

The National Aeronautics and Space Administration (NASA) does not include any field of science codes in its financial database. Consequently, NASA must estimate what percentage of the agency's research dollars are allocated into the fields of science.

The FY 2014 data reported by the Department of State were excluded due to their poor quality.

Also, agencies are required to report the ultimate performer of R&D. However, through past workshops, NCSES has learned that some agencies do not always track their R&D dollars to the ultimate performer of R&D. This leads to some degree of misclassification of performers of R&D, but NCSES has not determined the extent of the errors in performer misclassification by the reporting agencies.

Eleven agencies are required to report R&D obligations by state and performer (the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security, the Interior, and Transportation; the Environmental Protection Agency; NASA; and NSF). Obligations of these 11 agencies represent the vast majority of total federal R&D obligations (98% for FYs 2008–20). However, there is some underreporting by state, which may affect states unevenly. In addition, geographic distribution of DOD development funding to industry reflects the location of prime contractors and not the numerous subcontractors who perform much of the R&D. DOD development funding to industry represented 39.0% of total federal obligations for development in FY 2020 (\$32.1 billion out of \$82.1 billion).

R&D plant data are underreported to some extent because of the difficulty some agencies, particularly DOD and NASA, encounter in identifying and reporting these data. DOD's respondents report obligations for R&D plant funded under the agency's appropriation for construction, but they are able to identify only a small portion of the R&D plant support that is within R&D contracts funded from DOD's appropriation for RDT&E. Similarly, NASA respondents cannot separately identify the portions of industrial R&D contracts that apply to R&D plant, since these data are subsumed in the R&D data covering industrial performance. NASA R&D plant data for other performing sectors are reported separately.

## Data Availability and Comparability

### Data availability

Annual data are available for FYs 1951–2021.

### Data comparability

The information included in this survey has been stable since FY 1973, when federal obligations for research to universities and colleges by agency and detailed science and engineering field were added to the survey. Many of the other variables are available from the early 1950s on. However, analysts studying trends are encouraged to obtain up-to-date data from the NCSES Web site because agencies reclassify their responses for prior years as additional budget data become available.

## Data Products

### Publications

NCSES publishes data from this survey annually in the detailed tabular data series *Federal Funds for Research and Development* (<https://www.nsf.gov/statistics/fedfunds/>) and the *Science and Engineering State Profiles* (<https://www.nsf.gov/statistics/states/>) series.

## Electronic access

Access to the data for major data elements are available in NCSES's new easy-to-use interactive data tool at <https://ncesdata.nsf.gov/home>.