National Center for Science and Engineering Statistics

Survey

Higher Education Research and Development (HERD) Survey | 2022

The HERD Survey is the primary source of information on research and development expenditures at U.S. colleges and universities.

Survey Description

Survey Description

Survey Overview (FY 2022 survey cycle)

Purpose

The Higher Education Research and Development (HERD) Survey is the primary source of information on separately accounted-for research and development (R&D) expenditures within higher education institutions in the United States and outlying areas.

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. The Office of Management and Budget control number is 3145–0100, with an expiration date of 31 July 2025. The survey is sponsored by the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF).

Major changes to recent survey cycle

None.

Key Survey Information

Frequency	Annual.
Initial survey year	In 2010, the HERD Survey replaced a previous annual collection, the NSF Survey of Research and Development Expenditures at Universities and Colleges (Academic R&D Expenditures Survey), which was conducted from FY 1972 through FY 2009.
Reference period	The academic fiscal year ending in 2022; for most institutions this was 1 July 2021 to 30 June 2022.
Response unit	Establishment; U.S. academic institutions reporting at least $150,000 in R&D expenditures in the previous fiscal year.
Sample or census	Census.
Population size	A total of 900 institutions.
Sample size	The survey was a census of all known eligible universities and colleges.
Key variables	Key variables of interest are listed below. • R&D expenditures by field and source of funds (i.e., federal government, state and local government, business, nonprofit, institutional, and other) • R&D expenditures funded from foreign sources • R&D expenditures within medical schools • Clinical trial R&D expenditures (Phases I–III)

- R&D expenditures by type of R&D (i.e., basic research, applied research, and experimental development)
- Total and federally funded R&D expenditures passed through to subrecipients or received as a subrecipient
- Federally funded R&D expenditures by field and federal agency
- R&D expenditures by cost categories (e.g., salaries, software, equipment, indirect costs)
- Total and federally funded R&D equipment expenditures by field
- Headcounts and full-time equivalents of R&D personnel functions (researchers, R&D technicians, and R&D support staff)
- Institutional characteristics (i.e., highest degree granted, historically Black college or university [HBCU], high Hispanic enrollment [HHE], public or private control)
- Geographic location within the United States

Survey Design

Target population

Public and private nonprofit postsecondary institutions in the United States, Guam, Puerto Rico, and the U.S. Virgin Islands that granted a bachelor's degree or higher in any field, expended at least $150,000 in separately accounted-for R&D in FY 2022, and were geographically separate campuses headed by a president, chancellor, or equivalent.

Sampling frame

The survey is a census of all eligible institutions as defined above. In the FY 2022 cycle, there were 900 academic institutions surveyed.

Sample design

Not applicable.

Data Collection and Processing

Data collection

The FY 2022 survey was conducted by ICF under contract to NCSES. Surveys were distributed to designated contacts at each institution. The data collection period was from November 2022 through July 2023. Respondents submitted their data using a Web-based questionnaire. Telephone and e-mail were used for follow-up contacts with respondents.

Data processing

Questionnaires were carefully examined by survey staff upon receipt. Reviews focused on unexplained missing data and explanations provided for changes in reporting patterns. If additional explanations or data revisions were needed, respondents were sent personalized e-mail messages asking them to provide any necessary revisions before the final processing and tabulation of data.

Estimation techniques

Missing values were imputed based on the previous year's data and the reported data of peer institutions in the current cycle.

Survey Quality Measures

Sampling error

Not applicable.

Coverage error

Coverage error of large research institutions is minimal because comprehensive lists exist. These institutions are easily identified using the NCSES Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions. However, institutions with smaller amounts of R&D expenditures have been more difficult to identify because they often do not receive federal funding for R&D.

NCSES annually screens all 4-year and above institutions reporting nonzero amounts of research expenses to the Department of Education Integrated Postsecondary Education Data System (IPEDS) to determine if new institutions qualify for inclusion in the survey.

Nonresponse error

The unit nonresponse was 4.0% in FY 2022. Nonresponse rates were less than 5.0% for all but three questions. Question 6, R&D expenditures by type of R&D (basic research, applied research, and experimental development); Question 15, R&D personnel headcount; and Question 16, R&D full-time equivalents (FTEs) had nonresponse rates of 6.3%, 11.8%, and 29.5%, respectively.

Measurement error

Potential sources of measurement errors include incomplete administrative data or differing categories used by the institutions to identify R&D.

Data Availability and Comparability

Data availability

Annual data are available for FYs 1972–2022.

Data comparability

When the review for consistency between each year's data and submissions in prior years reveals discrepancies, it is sometimes necessary to modify prior years' data. This is especially likely to affect trends for certain institutions that fail to report every year, because current-year data are used to impute prior-year data.

For accurate historical data, use only the most recently released data tables. Individuals wishing to analyze trends other than those in the most recent data tables are encouraged to contact the Survey Manager for more information about comparability of data over time.

Data Products

Publications

NCSES publishes data from this survey annually in detailed tables and analytic reports available at the **HERD Survey page**. Information from this survey is also included in ***Science and Engineering Indicators***.

Electronic access

Microdata beginning with the FY 2010 survey are available in NCSES's **interactive data tool**. Public use files beginning with the FY 1972 are available at **http://www.nsf.gov/statistics/herd/pub_data.cfm**.