National Center for Science and Engineering Statistics

Survey

Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS) | 2023

The GSS is an annual census of all academic institutions in the United States and its territories granting research-based master's degrees or doctorates in science, engineering, and selected health fields as of the fall of the survey year.

Survey Description

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Survey Overview (2023 Survey Cycle)

Purpose

The Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS) is an annual census of all academic institutions in the United States and its territories (Guam and Puerto Rico) granting research-based master's degrees or doctorates in science, engineering, and selected health (SEH) fields as of the fall of the survey year. Sponsored by the National Center for Science and Engineering Statistics (NCSES) within the U.S. National Science Foundation and by the National Institutes of Health, the GSS collects counts of enrolled graduate students, postdoctoral researchers (postdocs), and doctorate-holding nonfaculty researchers (NFRs) at these institutions by field of study, demographic characteristics, and other characteristics, such as source and mechanism of financial support. Results are used to assess shifts in graduate enrollment, shifts in postdoc and NFR appointments, and trends in financial support.

Data collection authority

The information collected by the GSS 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 3145-0062 and expires on 30 September 2026. The disclosure review number is NCSES-DRN24-043.

Major changes to recent survey cycle

None.

Key Survey Information

Frequency	Annual.
Initial survey year	1966.
Reference period	Fall 2023.
Response unit	Organizational units (e.g., academic departments, degree-granting programs, university-affiliated research centers, and health care facilities) in academic institutions.
Sample or census	Census.
Population size	A total of 22,802 organizational units at 687 academic institutions.
Sample size	Not applicable.
Key variables	Key variables of interest are listed below. • Full-time master's and doctoral graduate students by demographic and financial support characteristics • Part-time master's and doctoral graduate students by demographic characteristics

- Postdocs by demographic and financial support characteristics and by type and origin of doctoral degree
- Doctorate-holding NFRs by sex and type of doctoral degree
- Institutions by name, location, highest degree granted, and other institutional characteristics (e.g., historically Black college or university, Carnegie Classification, and public or private control)
- Schools by name, Integrated Postsecondary Education Data System (IPEDS) unique identifier, type (e.g., graduate school and medical school), and other characteristics (e.g., Carnegie Classification)
- Organizational units by name, field of study, and highest degree granted

Survey Design

Target population

The survey target population is all academic institutions in the United States and its territories (Guam and Puerto Rico) that grant research-based master's or doctoral degrees in SEH fields. A research-based graduate degree program requires the training in, and conducting of, independent research as part of the curriculum. SEH fields are defined using IPEDS Classification of Instructional Programs (CIP) codes. This population includes branch campuses, affiliated research centers and health facilities, and separately organized components, such as medical or dental schools, schools of nursing, and schools of public health.

Sampling frame

The total universe in 2023 included 22,802 units at 687 academic institutions in the United States that granted research-based master's degrees or doctorates in SEH fields. Eligible academic institutions are identified primarily through IPEDS.

Sample design

The GSS is a census.

Data Collection and Processing

Data collection

The survey data are collected through coordinators at eligible institutions. Coordinators are assigned by their institution and are responsible for identifying all GSS-eligible units, collecting the requested data, and submitting the data to the survey contractor.

Coordinators are provided access to the GSS Web survey to report aggregate counts on enrolled master's and doctoral students, postdocs, and NFRs in each eligible unit, as of the fall term of academic year 2023. Reporting is done by the coordinator uploading a file with requested data to the GSS website, which automatically aggregates the data and populates the cells of the Web survey instrument for each eligible unit. Alternatively, coordinators may manually enter data into the Web survey. PDF versions of survey worksheets and GSS-eligible CIP code lists for reporting field of study are available for reference. The Web survey is the primary mode of data submission.

Based on the review of respondent data and explanatory comments provided by the respondents, follow-up telephone calls are made, or e-mails are sent to clarify responses, if needed.

Data processing

All data submitted by institution coordinators are reviewed to ensure that data fields are complete and that data are internally consistent. Data that are substantially different from previously reported data are flagged for review by the survey contractor. If additional information or corrections are needed, institution coordinators are contacted by telephone or e-mail and are asked to correct and resubmit the survey data.

Estimation techniques

The survey is a census of eligible units; therefore, weighting for sampling is not applicable. Imputation rather than weighting is used to adjust for unit nonresponse; imputation is also used for item nonresponse.

Survey Quality Measures

Sampling error

Not applicable because the GSS is a census.

Coverage error

Due to the availability of comprehensive lists of the master's- and doctorate-granting institutions in the United States and the high level of participation in the survey of eligible institutions, coverage error is minimal. The universe of higher education institutions is regularly reviewed to identify new potentially eligible institutions.

Nonresponse error

The GSS typically has high response rates. In 2023, 97.8% of units provided complete or partial data and the overall institutional response rate was 95.5%.

Measurement error

Potential sources of measurement errors include double counting by units that offer joint programs, reporting of graduate students working toward practitioner degrees (particularly in health fields), difficulty in reporting of financial support data, difficulty in distinguishing NFRs from postdocs and other types of researchers employed in the units, and coordinators not including in their upload files all eligible CIP codes that are offered at their institution. Measurement error is minimized by reviewing data to identify inconsistent or implausible values and contacting coordinators to correct data as needed.

Data Availability and Comparability

Data availability

NCSES has collected graduate enrollment and postdoc data for SEH fields since 1966. Not all data items were collected from all institutions in all survey years, and eligibility criteria for institutions and fields have undergone periodic revision. Starting in 2017, most respondents began uploading separate master's and doctoral data using CIP codes. For these reasons, separate enrollment data for master's and doctoral programs are available only for 2017 and later years. Notes are available in the latest trend data tables to explain changes the GSS has undergone over the years to support trend analysis.

Data comparability

The 2023 data are comparable to the 2022 data. In 2020, the list of GSS-eligible CIP codes was updated to align with the revised 2020 CIP list and NCSES Taxonomy of Disciplines. Most of the new CIP codes represented fields already reported to the GSS. For more information on these changes, see table A-17, table A-18a, and table A-18b in the 2020 Technical Tables.

The GSS made additional edits to the taxonomy based on data reporting patterns that emerged due to the 2017 redesign. These changes did not have a major impact on field of study or research because these changes did not impact the eligibility of fields for the survey. For comparisons to data prior to 2017, see the 2017 Technical Notes. A set of bridge estimates was created to permit comparisons to previous years and for trend analyses. These estimates are labeled *2017old* and are available at the broad field level for all combined graduate student variables as well as postdoc variables. Due to a large increase in counts attributable to prior underreporting, 2017old estimates are not available for NFR data. The data reported as *2017new* use the updated GSS taxonomy and are comparable to data since 2018 but are not comparable to data from prior years. Please note that in tables that compare data from 2017 to the present, the 2017new data are reported as 2017.

NCSES encourages analysts intending to do trend analyses to contact the GSS Survey Manager for additional information. For details on the historical changes, see the "Technical Notes" that accompany the GSS data tables.

Data Products

Publications

NCSES releases the data from this survey annually through analysis and data tables found at the GSS homepage. The information from this survey is also included in ***Science and Engineering Indicators*** and ***Women, Minorities, and Persons with Disabilities in STEM***.

NCSES includes selected data items from this survey for individual doctorate-granting institutions in the ***Academic Institution Profiles*** series.

Electronic access

Data for the years 1972–2023 are available as public use files. The file organization makes each year's institution, school, and organizational unit data available in a single record.

Tabular data for recent years are available in NCSES's interactive data tool; historical data will be added on a continuous basis until the full 1972–2023 series is complete. Users can create custom tables of the number of graduate students, number of postdocs, or number of NFRs.