



National Center for Science and
Engineering Statistics

Survey

Survey of Earned Doctorates (SED) | 2023

The SED is an annual census of research doctorate recipients from U.S. academic institutions that collects information on educational history, demographic characteristics, graduate funding sources and educational debts, and postgraduation plans.

Survey Description

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Survey Overview (2023 Survey Cycle)

Purpose

The Survey of Earned Doctorates (SED) collects data on the number and characteristics of individuals receiving research doctoral degrees from U.S. academic institutions.

Data collection authority

The information collected by the SED 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 3145-0019, expiration date 20 April 2024. The disclosure review number is NCSSES-DRN24-046.

Survey contractor

RTI International.

Major changes to recent survey cycle

None.

Key Survey Information

Frequency	Annual.
Initial survey year	Academic year 1958.
Reference period	Academic year 2023 (1 July 2022 to 30 June 2023).
Response unit	Individuals.
Sample or census	Census.
Population size	57,862.
Sample size	Not applicable.
Key variables	<p>Key variables of interest are listed below.</p> <ul style="list-style-type: none">● Academic institution of doctorate● Baccalaureate-origin institution (U.S. and foreign)● Birth year● Citizenship status at graduation● Country of birth and citizenship● Disability status

- Educational attainment of parents
- Educational history in college
- Field of each degree earned
- Graduate and undergraduate educational debt
- Marital status, as well as the number and age of dependents
- Postgraduation plans (e.g., work, postdoc, other study or training)
 - Primary and secondary work activities
 - Source and type of financial support for postdoctoral study or research
 - Type and location of employer
 - Basic annual salary
- Race and ethnicity
- Sex
- Sources of financial support during graduate school
- Type of academic institution (e.g., historically Black colleges and universities, Carnegie codes, public or private) awarding the doctorate

Survey Design

Target population

The population for the 2023 SED consists of all individuals receiving a research doctorate from a U.S. academic institution in the 12-month period beginning 1 July 2022 and ending 30 June 2023. A research doctorate is a doctoral degree that (1) requires completion of an original intellectual contribution in the form of a dissertation or an equivalent culminating project (e.g., musical composition) and (2) is not primarily intended as a degree for the practice of a profession. The most common research doctoral degree is the PhD. Recipients of professional doctoral degrees, such as MD, DDS, DVM, JD, DPharm, DMin, and PsyD, are not included in the SED.

Sampling frame

The sampling frame of doctorate recipients is created by first identifying all institutions that confer research doctorates and then identifying all individuals receiving a research doctorate from those institutions in the 12-month period ending 30 June 2023. The list of institutions is based principally on the institutions in the prior survey cycle augmented by any new institutions on the Integrated Postsecondary Education Data System (IPEDS) and other higher education resource databases. The list of doctorate recipients is created from administrative sources such as commencement lists from the institutions and commercial databases of doctorate dissertations. The sampling frame of the 2023 SED included 57,862 persons from 459 institutions that conferred research doctorates.

Sample design

The SED is a census survey of all recipients of U.S. research doctoral degrees in the sampling frame.

Data Collection and Processing

Data collection

Two modes of data collection are used in the SED: self-administered Web survey and computer-assisted telephone interview (CATI). The self-administered Web survey is the primary mode of SED completion. The proportion of SED completions using the Web has increased steadily since it was introduced in 2001, and it reached 98.7% in 2023.

Nonrespondents are contacted by e-mail, mail, and text messages to complete the Web survey. If the series of follow-up e-mails, mailings, and text messages is unsuccessful, the survey contractor attempts to reach nonrespondents to complete an abbreviated survey by CATI. Approximately 1.3% of SED completions were from CATI in 2023. At the end of the data collection phase, institutional coordinators were contacted to obtain information on a small number of critical SED data items for nonrespondents from their institution.

Data processing

The data collected in the SED are subject to editing and coding procedures. Imputation is not performed for missing survey data items except for the month value used in the calculation of the age at doctorate and time to degree variables.

Estimation techniques

The survey is a census, which does not require any sampling; weighting is not used to adjust for nonresponse.

Survey Quality Measures

Sampling error

Not applicable because the SED is a census.

Coverage error

Due to the availability of comprehensive lists of doctorate-granting institutions, coverage error of institutions is minimal. Because the graduate schools identify degree recipients at the time of doctorate completion, coverage error for individual doctorate recipients is also minimal. In 2023, 11 doctorate-granting institutions declined to fully enumerate their doctorate recipients for academic year 2023. Information on the graduates for all of these institutions was found from other sources, such as ProQuest. Comparisons of the institutions with research doctorate recipients covered by the SED that also report to the [IPEDS Completions Survey](#) confirm that there is minimal coverage error.

Nonresponse error

Unit nonresponse. Of the 57,862 individuals granted a research doctorate in 2023, 91.2% completed the survey. A limited number of SED critical data items (doctoral institution, year of doctorate, field of doctorate, type of doctorate, and, if available, baccalaureate institution, master's degree institution, and sex) are constructed for nonrespondents from commencement programs, graduation lists, and other similar public records. Nonresponse was concentrated in a small number of institutions, with 17 institutions accounting for 50% of the total unit nonresponse.

Item nonresponse. Among the 57,862 individuals who received a research doctorate in 2023, item nonresponse rates for the five key SED demographic variables—sex, citizenship, country of citizenship, race and ethnicity, and location after graduation—range from 0.0% for sex to 8.4% for location after graduation.

Measurement and data processing error

Measurement error in the SED is attributable to several sources, including errors in respondent reporting and errors that occur during data collection or processing. Errors in the 2023 web instrument led to increases in missing responses for a few variables. See the “[Technical Notes](#)” for more detailed information on measurement error.

Data Availability and Comparability

Data availability

Each year’s survey data are added to the Doctorate Records File (DRF), which includes cumulative SED data dating back to 1958; more limited information (sex, institution, field, and year of doctorate) is contained on the DRF for PhDs who graduated in 1920–56.

Data comparability

Because of procedural changes implemented during the 1990 survey cycle to improve the completeness of race, ethnicity, and citizenship data, the data from 1990 and later years are not directly comparable to data before 1990.

In 2021, the education history section was changed to a table format in which respondents can select all the postsecondary degrees received, up to nine degrees. Based on the degrees reported, follow-up questions asked about each type of degree, including any professional doctorate being earned.

Beginning in 2021, field of study and doctorate dissertation field data have been collected using a modified version of the 2020 Classification of Instructional Programs (CIP) codes. Therefore, the field of study data prior to the 2021 survey cycles may not be comparable to the data in subsequent years; see the working paper [Survey of Earned Doctorates Field of Study Taxonomy Changes in 2021 and Impact on Trend Data](#) for more information.

Data Products

Publications

The data from this survey are published annually with the report series [Doctorate Recipients from U.S. Universities](#). Other survey products are also available at <https://nces.nsf.gov/surveys/earned-doctorates>. Information from the survey is also included in [Science and Engineering Indicators](#) and in [Diversity and STEM: Women, Minorities, and Persons with Disabilities](#).

Electronic access

Access to tabular data on selected variables from 1958 onward is available in an NCSSES [interactive data tool](#). Users can create custom tables of the number of doctorate recipients by academic discipline and institutional characteristics of either the doctorate-granting institution or the baccalaureate-granting institution of doctorate recipients. A limited set of demographic characteristics is available to create custom tables by academic discipline. A more comprehensive set of analysis variables is available in the [SED Restricted Data Analysis System \(RDAS\)](#) for the data user to generate custom data tables in a secured platform.

Restricted access

Access to restricted data for researchers interested in analyzing microdata can be arranged through a licensing agreement. For more information, see the [NCSSES Licensing Page](#).