

## Technical Notes

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Data presented in *Doctorate Recipients from U.S. Universities: 2018* were collected by the Survey of Earned Doctorates (SED). The survey is sponsored by the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF) and by three other federal agencies: the National Institutes of Health (NIH), Department of Education (ED), and National Endowment for the Humanities (NEH). This report presents the summary of these survey data.

### Survey Overview (2018 survey cycle)

*Purpose.* 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 31 May 2020.

*Survey contractor.* RTI International.

*Survey sponsors.* The SED is sponsored by NCSES within NSF and by NIH, ED, and NEH.

### Key Survey Information

*Frequency.* Annual.

*Initial survey year.* Academic year 1957–58.

*Reference period.* Academic year 2017–18 (1 July 2017 to 30 June 2018).

*Response unit.* Individuals.

*Sample or census.* Census.

*Population size.* 55,195.

*Sample size.* Not applicable.

### Survey Design

*Target population.* The population for the 2018 SED consists of all individuals receiving a research doctorate from a U.S. academic institution in the 12-month period beginning 1 July 2017 and ending 30 June 2018. 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 SED recognized 18 distinct types of research doctorates in 2018 (**table A-1**). Recipients of professional doctoral degrees, such as MD, DDS, DVM, JD, DPharm, DMin, and PsyD, are not included in the SED.

The doctor of philosophy (PhD) constitutes the vast majority of research doctoral degrees. Of the 55,195 new research doctorates granted in 2018, 98.3% were PhDs (**table A-2**). The next most frequently occurring type of research doctorate was the doctor of education (EdD), which accounted for 1.0% of the total in 2018. No other type of doctoral degree accounted for more than 0.2% of the new research doctorates in 2018.

*Sampling frame.* The population eligible for the 2018 survey consisted of all individuals who received a research doctorate from a U.S. academic institution in the 12-month period ending 30 June 2018. Of the 444 institutions granting research doctorates, 13 institutions were refusals or reported zero graduates. Thus, the total universe consisted of 55,195 persons in 431 institutions that conferred research doctorates in 2018.

*Sample design.* The SED is a census.

## Data Collection and Processing Methods

*Data collection.* Three modes of data collection are used in the SED: self-administered Web survey, self-administered paper questionnaire, and computer-assisted telephone interviewing (CATI).

The self-administered Web survey is the primary mode of SED completion. When students apply for graduation, institutional coordinators at the universities give students the link to the survey registration website (institutional coordinators at a small number of universities hand out both a paper questionnaire and the link to the survey registration website). Students who sign up at the survey registration website receive PIN and password information via e-mail, as well as the URL of the SED Web survey. The proportion of SED completions using the Web has increased each year since it was introduced in 2001, and it reached 95.5% in 2018.

Paper questionnaires are mailed to institutional coordinators at the universities. For most institutions, paper questionnaires are used as reference copies. For a small number of institutions, the institutional coordinator distributes the paper questionnaires to students receiving research doctorates. The institutional coordinators then collect the completed questionnaires and return them to the survey contractor for editing and data entry.

Both the Web survey and paper questionnaire are used in follow-up contacts via e-mail and mail to nonrespondents. If the series of follow-up emails and mailings is unsuccessful, the survey contractor attempts to reach nonrespondents to complete an abbreviated survey by CATI. Approximately 2% of SED completions each year are from CATI. At the end of data collection phase, institutional coordinators are contacted to obtain information on a small number of critical SED data items for nonrespondents from their institution.

A small but growing number of research doctoral degrees are awarded as a part of joint doctoral programs (i.e., a research doctorate recipient studied at more than one institution in pursuit of the doctoral degree). In these instances, the survey contractor relies on information provided by the institutions to appropriately attribute the doctorate to one of the doctorate-granting institutions.

The survey collects a complete college education history. To code U.S. postsecondary degree-granting institutions, survey staff use the Integrated Postsecondary Education Data System (IPEDS) institution codes. To code the degree-granting institutions of respondents from foreign countries, survey staff use the coding manual *Mapping the World of Education: The Comparative Database System*, augmented with approximately 6,000 additional institutions from the *Europa World of Learning* and the International Association of Universities' *International Handbook of Universities and World Higher Education Database*.

<sup>1</sup> About one-third of 2018 U.S. research doctorate recipients received undergraduate degrees from foreign institutions.

*Mode.* As noted earlier, three modes of data collection are used in the SED: Web survey, paper questionnaire, and CATI. In 2018, 95.5% of survey responses were obtained via the Web survey, 2.3% via the paper questionnaire, and 2.2% via CATI.

*Response rate.* Of the 55,195 individuals who received a research doctorate in 2018, 92.1% completed the SED. Additional information on response rate can be found below, under "Nonresponse error."

*Data editing.* Approved automated edits are applied to the SED, a number of which pertain to the education history section. In addition, completed paper questionnaires undergo review and editing prior to data entry.

*Imputation.* No imputation was used in producing the 2018 SED Doctorate Records File (DRF) except for the following variables:

- *Age at doctorate.* Months (of birth and doctorate award) were included in the calculation of median age whenever available. If birth month was missing, the month value was randomly imputed.

- *Time to degree from bachelor's completion.* Months (of bachelor's completion and doctorate award) were included in the calculation of total time to degree. If months were missing, month values were logically imputed to the modal value for doctorate recipients who provided month of bachelor's completion and converted to the number of days corresponding to that month.
- *Time to degree from graduate school entry.* Months (of graduate school entry and doctorate award) were included in the calculation of graduate school time to degree. If months were missing, month values were logically imputed to the modal value for doctorate recipients who provided month of graduate entry.
- *Time to degree from doctoral program entry.* Doctoral program entry is based on master's degree program entry if the master's degree was at the doctoral institution in the same fine field of study or if it was a prerequisite to the doctorate; otherwise, it is based on doctoral program entry. Months are included in the calculation of doctoral program time to degree. If the month of entry used in the calculation (master's degree program entry or doctoral program entry) was not reported, the entry month was logically imputed to the modal value for all cases that did report the entry month in the academic year the case was added to the doctoral records file (typically the academic year matching the graduation date of the case).

*Weighting.* Survey data were not weighted.

*Variance estimation.* The SED is a census of all research doctorates with no weights calculated, so no variance estimation techniques were used.

*Disclosure protection.* Two strategies are used in data table production to protect against the disclosure of confidential information provided by SED respondents. In the first, used since 2004, data cell values based on counts of respondents that fall below a predetermined threshold are deemed to be sensitive to potential disclosure and are suppressed. The symbol "D" replaces the cell value. If a suppressed cell does not provide sufficient disclosure protection in tables that include marginal totals, additional (complementary) suppressions of above-threshold data cells are necessary, and the suppression symbol "D" is used to replace those cell values as well.

The second disclosure protection strategy is field aggregation. Field aggregation was applied to data table 16 and table 22 in the current report, which present counts of doctorate recipients classified by fine fields of study and by either sex or race and ethnicity. Because some fine fields of study award relatively few doctorates in a single year, the degree counts by race, ethnicity, or sex within these fields can be quite small, leading to extensive cell suppression. The field aggregation technique combines data from small fields of study with the data from related fields, so that the degree counts in the aggregated fields are sufficiently large to protect the confidentiality of respondent information.

Data by race, ethnicity, and sex in the fine fields shown in table 16 and table 22 are reported for fields in which at least 25 U.S. citizen or permanent resident individuals earn a doctoral degree in a given year, regardless of how small the count may be in a particular cell. Counts of doctorate recipients in fields having fewer than 25 U.S. citizen or permanent resident doctorates awarded are aggregated with those of one or more related fields until the total number of doctorates in the aggregated field reaches at least 25 U.S. citizens and permanent residents. The related fields chosen for aggregation to protect below-threshold fields may or may not also be below-threshold. The degree count in each racial, ethnic, or sex category of these aggregated fields is reported in the tables, but the constituent fine fields of the aggregated fields are not displayed.

In 2018, fewer than 25 doctorates were awarded to U.S. citizens or permanent residents in 81 of the 334 fine fields of study collected in the SED. These below-threshold fine fields were combined with 66 related fields of study to produce 45 aggregated fields in 2018. Table 16 and table 22 report data on the 45 aggregated fields and the remaining 187 unaggregated fine fields. **Table A-5** lists the aggregated fields and their constituent fine fields.

The 81 below-threshold fine fields do not include "other" fine fields (i.e., fine fields that have the word "other" in their label). Data reported for "other" fine fields are not considered confidential. However, a total of 23 "other" fine fields, including 8 that fall under the threshold, are used as aggregation partner fields.

## 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 and the institutions' high levels of participation in the survey, coverage error of institutions is minimal. Because the graduate schools collect the survey data from degree recipients at the time of doctorate completion, coverage error for the universe of doctorate recipients is also minimal. Comparisons of the institutions and the number of research doctorate recipients covered by the SED with the total number of doctorate recipients (including nonresearch doctorate degree recipients) reported by institutions to the **National Center for Education Statistics** confirm that there is minimal coverage error of doctorate recipients. Institutions that begin to confer research doctorates are invited to join the SED. If a university that confers research doctorates does not wish to participate in the SED, slight undercounts may result. In 2018, 11 doctorate-granting universities declined to fully enumerate their doctorate recipients for AY 2018. Information on the graduates for six of these institutions were found from other sources, such as ProQuest, but no information could be found for five institutions. These five institutions are estimated to have had approximately 37 graduates, resulting in a small percentage (less than 0.1%) of under-coverage in the universe.

*Nonresponse error.*

- *Unit nonresponse.* Of the 55,195 individuals who received a research doctorate in 2018, 92.1% completed the survey (**table A-3**). This percentage is referred to as the self-report rate. Skeletal records for nonrespondents appear on the data file and contain 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) that are constructed for nonrespondents from administrative records of the university, such as commencement programs, graduation lists, and other public records. These nonresponding cases are included in the reported total of 55,195 doctorate recipients for 2018.

Nonresponse was concentrated in certain institutions: 6 of the 431 doctorate-granting institutions accounted for 25% of the total nonrespondents, and 43 of these institutions accounted for 70% of the total nonrespondents.

Counts for previous years were corrected by the addition of data from surveys received after the close of data collection for a given year.

- *Item nonresponse.* Among the 55,195 individuals who received a research doctorate in 2018, item nonresponse rates for the five key SED demographic variables—sex, citizenship, country of citizenship, race and ethnicity, and location after graduation—range from 0.1% for sex to 7.0% for location after graduation. **Table A-4** shows item response rates for 2008–18 for all variables, by variable name (see clarifying notes in the table).

*Measurement error.* Measurement error in the SED is attributable to several sources including errors in respondent reporting and errors that occur during data processing. Data reported by respondents about their educational history, including degree institutions and field of study that are not coded within the survey instrument are reviewed and coded by trained coders. Average coding error rates were 0.12% for institution coding, 0.10% for fields of study coding, and 0.06% for “Other—specify” back coding.

## Data Comparability

*Changes in survey coverage and population.* For the 2018 cycle, four institutions were added to the SED universe and two institutions were deemed ineligible and removed.

*Changes in questionnaire.* The following changes were made to the questionnaire in 2018:

*New questions.*

- *Postgraduation plans—seeking or negotiating.* If respondents indicated they were seeking employment or negotiating an offer of employment, they were asked a series of follow up questions:
  - *Type of position(s) negotiating or seeking.* Respondents were asked to specify whether the position is a postdoc or other training position, employment other than a postdoc, or other.
  - *Type of employer(s) negotiating with or seeking to work for (or train with).* Respondents were asked to specify whether the work is with an educational institution, the government, a business or industry, a nonprofit organization, or other.
  - *Top choice employer.* Respondents who indicated more than one response for type of employer were asked to rank their top choice.
  - *Current employment status.* Respondents were asked to indicate whether they are currently employed in a position related to their field of study, in a position not related to their field of study, or not employed.
  - *Same employer during or before the start of the doctoral program.* Respondents who are currently employed were asked to indicate whether the position is with the same employer as the one during or before the start of their doctoral studies.
- *Postgraduation plans—definite plans for non-postdoc employment.* If respondents indicated definite postgraduation employment plans other than a postdoc or training position, they were asked further follow-up questions:
  - *Employment in faculty position.* Respondents who specified definite employment plans in the postsecondary education sector were asked if they would be holding a tenure-track faculty position, a non-tenure-track faculty position, or no faculty position.
  - *Same position with same employer during doctoral program.* Respondents were asked to indicate whether the postgraduate position is the same position with the same employer as the one during their doctoral studies.
  - *Postgraduation plan to seek new employment.* Respondents were asked to indicate whether they plan to seek new employment or continue in their current position after they received their doctoral degree.

*Questions dropped.*

- *Title of dissertation.* Removed question that asked respondent to provide the title of their dissertation.
- *Years of doctoral coursework.* Removed question that asked how many years the respondent took courses or prepared for doctoral degree exams.
- *Years preparing doctoral dissertation.* Removed question that asked how many years the respondent worked on their dissertation after coursework and exams.
- *Years not working on doctoral degree.* Removed question that asked how many years a respondent spent not taking courses or working on dissertation. Previously had been asked only if a respondent indicated that they spent any time from the start of the doctoral program to the awarding of the degree not working on the degree.

*Question response options changed.*

- *Parent educational attainment.* The Web survey asked the sex and highest education level of up to two parents or guardians, including of the same sex, rather than specifically “mother” and “father.”
- *Field of study (FOS) list.* Three new fields were added, one field was dropped, two fields had their labels modified, and one field was changed to appear under two broad fields.

*Changes in reporting procedures or classification.*

- **Citizenship.** The citizenship status variable is used to identify the appropriate citizenship category of respondents, including the citizenship category of respondents who did not respond to the citizenship status survey item on the SED. The code framework for the citizenship status variable is outlined below.

Code	Citizenship category
0	U.S. native born
1	U.S. naturalized citizen
2	Non-U.S. immigrant (permanent resident)
3	Non-U.S. non-immigrant (temporary U.S. visa)
4	Non-U.S., visa status unknown
U	U.S. citizen, unspecified
Blank	Missing or citizenship unknown

Respondents who indicated a U.S. birthplace, regardless of what they reported for citizenship status, were assigned code 0.

In 1999, code 4 (non-U.S., visa status unknown) was introduced and data were back-coded through 1997. Respondents who designated a non-U.S. country for the country of citizenship item but did not respond to the citizenship status item were assigned code 4 for citizenship status. From 1997 to 2003, non-U.S.-born respondents who did not indicate their country of citizenship or citizenship status were assigned to code 4 if three out of four geographic variables—place of birth, place of high school, place of college entry, and postgraduation location—were non-U.S. locations. Beginning with the 2004 SED, the variable “place of baccalaureate institution” replaced “place of college entry” in the assignment of a citizenship code for respondents who did not indicate citizenship status.

For tabulations in this report, code 4 was combined with code 3—that is, counts of doctorate recipients in the temporary visa holder category include non-U.S. citizens with unknown visa status. This is consistent with coding procedures in previous data collections. However, the existence of code 4 allows the microdata user to exclude cases for which visa status is unknown. Prospective data users should note, however, that the number of cases in the code 4 group is not sufficient to warrant analysis as a separate citizenship category.

Non-U.S. citizens who did not report a country of citizenship but reported the same non-U.S. country for three out of four geographic variables—place of birth, place of high school, place of baccalaureate institution, and postgraduation location—were assigned that reported country as their country of citizenship.

- **Debt.** Since 2001, respondents have been asked to indicate the amount of education-related debt they owe, with separate response categories for graduate and undergraduate education. To estimate overall debt, the midpoint of the chosen range for undergraduate and for graduate debt was selected and summed to yield a total debt amount. Where mean debt levels are presented in this report (i.e., table 38 and table 40), the individual values for debt are assigned as the midpoint of the chosen range for graduate and undergraduate debt. Doctorate recipients who chose the lowest debt category (no debt) were assigned a value of \$0 for the computation of mean debt levels. Doctorate recipients who chose the uppermost category (\$90,001 or more) were assigned a value of \$95,000 for the computation of mean debt levels. All valid responses, including “no debt,” were included in the computation of all average debt figures in this report. See item A18 on the survey questionnaire for a complete listing of the debt ranges on which the midpoint figures were based.

- *Field of study.* Beginning in 2015, the broad field of study of “physical sciences” was broken out into two separate broad fields: “physical sciences and earth sciences” and “mathematics and computer sciences.” Also beginning in 2015, the major fields of “mathematics and statistics” and “computer and information sciences” are listed under the new broad field of “mathematics and computer science.” Prior to 2015, these major fields were listed under physical sciences.
- *Functional limitations (previously, disability).* Beginning in 2012, item C12 (the functional limitations item) assesses both the presence and severity of functional limitations in each of several domains, which do not precisely overlap with the domains in prior surveys.
- *Median computation.* Since 1994, medians have been computed as outlined below. When months are included, they are converted to the number of days corresponding to the first day of the month. In 2017, the method for accounting for leap days changed to reflect the actual number leap days during the time period specified, rather than the prior method of adding 0.25 days to each year.
  - *Median age.* Months (of birth and doctorate award) are included in the calculation of median age whenever available. Beginning in 2015, if birth month is missing, the month value is randomly imputed. Prior to 2015, the missing month value was assigned to the month the doctorate was received.
  - *Time to degree from bachelor’s completion.* Months are included in the calculation of total time to degree. If months are missing, month values are assigned to the modal value for doctorate recipients who provide month of bachelor’s completion and converted to the number of days corresponding to that month.
  - *Time to degree from graduate school entry.* Months are included in the calculation of graduate school time to degree. If months are missing in the calculation of graduate school time to degree, month values are assigned to the modal value for doctorate recipients who provided month of graduate entry. Reports published before 2004 reported a different time-to-degree measure: registered time to degree. Comparisons of graduate school time-to-degree data with pre-2004 registered time-to-degree data should be interpreted cautiously. For an explanation of registered time to degree, see the technical notes of any *Doctorate Recipients from United States Universities: Summary Report* published before 2004.
  - *Time to degree from doctoral program entry.* This variable was first included in 2015. Doctoral program entry is based on master’s degree program entry if the master’s degree was at the doctoral institution in the same fine field of study or if it was a prerequisite to the doctorate; otherwise, it is based on doctoral program entry. Months are included in the calculation of doctoral program time to degree. If the month of entry used in the calculation (master’s degree program entry or doctoral program entry) was not reported, the entry month is assigned to the modal value for all cases that did report the entry month in the academic year the case was added to the doctoral records file (typically the academic year matching the graduation date of the case).
- *Salary.* Median salary is calculated from exact salary values when provided by the respondent. Salary imputation was dropped as of 2015 due to the increase in exact salary response rate. From 2011–14, if a respondent selected a salary range instead of providing an exact salary value, exact salary values were imputed for median salary calculation purposes by applying hot-deck imputation based on salary range and other relevant respondent characteristics. Prior to 2011, median salary was calculated directly from the salary range values via interpolation methods, and exact salary values were not used in the calculation of median salary. Only salary data from doctorate recipients reporting definite commitments for employment or for a postdoc position in the United States are included in median salary calculations.
- *Postdoctoral plans to stay in the United States.* In 1997, the planned postdoctoral location of doctorate recipients began being coded in a new variable using Federal Information Processing Standards codes both for the United States and its territories and for countries.

Also in 1997, a dichotomous variable was created to index whether the planned postdoctoral location reported by the respondent was in the United States or in a foreign location, even if the respondent did not indicate a specific state or country.

- *Race and Hispanic ethnicity.* Since 2001, respondents have been asked to first indicate whether they are Hispanic or Latino and then to check one or more racial group categories (i.e., American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, black or African American, or white).

In data tables, doctorate recipients who report Hispanic or Latino ethnicity, regardless of race, are counted as Hispanic or Latino, and as of 2013, those who did not answer the Hispanic or Latino question are counted as “ethnicity not reported.” Respondents who indicate that they are not Hispanic or Latino and indicate a single race are reported in their respective racial groups, except for those indicating Native Hawaiian or Other Pacific Islander, who are included in “other race or race not reported.” Beginning in 2007, doctorate recipients who indicate they are not Hispanic or Latino and indicate more than one race are reported in the group “two or more races.”

- *Research doctoral degree.* As doctoral degree programs change to meet the needs of students, the orientation of the degrees they award may change from research to professional, and vice versa. Survey staff review degree programs to ensure that the designation of research doctorate remains appropriate. As a result of degree reviews in past data collections, survey staff identified several research doctoral degrees that shifted to a professional orientation. The doctor of music (DM) and the doctor of industrial technology (DIT) were both dropped from the SED in 2008, and the graduates (approximately 40 to 60 per year) who earn these doctoral degrees are no longer included in the SED.

After a multiyear review of doctoral programs offering the EdD degree, most were determined to have a professional orientation and were dropped from the SED in 2010 and 2011, and graduates earning EdD degrees from those programs are no longer included in the SED. As a result, the proportion of EdD degrees among the total number of research doctorate recipients fell from 5.5% in 2009 to 1.0% in 2018. **Table A-1** lists the doctoral degrees that were eligible for inclusion in the SED in 2018.

## Definitions

- *Basic annual salary.* Annual salary expected to be earned from the doctorate recipient's principal job in the next year after receiving the doctorate, not including bonuses or additional compensation for summertime teaching or research.
- *Carnegie classification (institution categories).* In this report, four types of doctorate-granting institutions identified in the figures and tabulations are defined according to the Carnegie classification scheme as updated in 2015: doctoral highest research, doctoral higher research, doctoral moderate research, and other universities (comprised of all other classifications). Institutions are classified according to their aggregate and per-capita levels of research activity, using indicators of research and development expenditures, staffing (including postdoctoral appointees and other nonfaculty research staff with doctorates), and doctoral conferrals in science and engineering and other fields.
- *Definite plans to stay in the United States.* A respondent is coded as having definite plans to stay in the United States if the reported postgraduation location was in the United States and the reported postgraduation plans for employment or postdoc were coded “definite.”
- *Definite postgraduation plans.* The status of postgraduation plans is coded using the values from item B2 of the survey questionnaire, which indicate whether the doctorate recipient's postgraduation plans for employment or a postdoc position were definite at the time the survey was completed.



- *Field of study.* The SED has 334 fine fields of doctoral study, which are grouped into 35 major fields of study. The major field groupings are further aggregated into eight broad fields: life sciences, psychology and social sciences, physical sciences and earth sciences, mathematics and computer sciences, engineering, education, humanities and arts, and other fields. The levels of this variable were derived by grouping related fine fields of study from the field of study taxonomy used in the SED (**table A-6**). See the survey questionnaire for a full listing of the fine fields of study in 2018.

Doctorate recipients indicate their fields of specialty. Their choices may differ from departmental names. Field groupings may differ from those in other reports published by federal sponsors of the SED. The “general” field categories (e.g., “chemistry, general”) include individuals who either received the doctorate in the general subject area or who did not indicate a particular specialty field. The “other” field categories (e.g., “chemistry, other”) include individuals whose specified doctoral discipline was not among the specialty fields listed.

- *Median age at doctorate.* One-half of the respondents received the doctorate at or before this age. A recipient's age is obtained by subtracting the month and year of birth from the month and year of doctorate.
- *Percentage with master's.* This variable is the percentage of doctorate recipients in a field who received a master's degree in any field before earning the doctorate.
- *Research doctorate.* A research doctoral degree is oriented toward preparing students to make original intellectual contributions in a field of study and is not primarily intended for the practice of a profession. Research doctorates require the completion of a dissertation or equivalent project.
- *Time to doctorate.* The time it takes to complete a doctoral degree is measured in three ways: (1) the time elapsed from completion of the baccalaureate to completion of the doctorate (total time to degree), (2) the time elapsed from the start of any graduate school program to completion of the doctorate (graduate school time to degree), and (3) the time elapsed from the start of the doctoral program. Time-to-doctorate measures herein are reported as medians. In 2017, the method for accounting for leap days changed to reflect the actual number leap days during the time period specified, rather than the prior method of adding 0.25 days to each year.
  - *Total time to degree.* This variable is the total elapsed time between the baccalaureate and the doctorate, including time not enrolled in school. It can be computed only for individuals whose baccalaureate year is known. Baccalaureate year is often obtained from commencement programs or doctorate institutions when not reported by the recipient.
  - *Graduate school time to degree.* This variable is the elapsed time from the initiation of graduate study, in any program or capacity at any university, and the award of the doctorate. This variable can be computed only for individuals who provided the year they started graduate school. If an individual did not respond to question A13, which asks for the month and year of first entry into any graduate school, then values for graduate school month and year of entry are imputed from the month and year of entry into the most recent master's degree program (A14c) or, if that is missing, the month and year of entry into the doctoral degree program (A1). Months are included in the computation.
  - *Doctoral program time to degree.* This variable is either (1) the elapsed time from the master's degree program entry, if the master's degree was awarded at the doctoral institution and was in the same fine field as the doctorate or if the master's degree was a prerequisite to the doctoral program until doctorate completion; otherwise, it is (2) the elapsed time from the doctoral program entry until doctorate completion. This variable is only computed for academic year 2015 and later doctorates.
- *U.S. regions of employment.* This variable is used to classify the location of U.S. employment after award of the doctorate.

New England

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Middle Atlantic

New Jersey, New York, Pennsylvania

East North Central	Illinois, Indiana, Michigan, Ohio, Wisconsin
West North Central	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
South Atlantic	Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
East South Central	Alabama, Kentucky, Mississippi, Tennessee
West South Central	Arkansas, Louisiana, Oklahoma, Texas
Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
Pacific and Insular	Alaska, California, Hawaii, Oregon, Washington, American Samoa, Guam, Puerto Rico, Trust Territories, Virgin Islands

## Notes

1 U.S. Department of Education. 1996. *Mapping the World of Education: The Comparative Database System (CDS)*. Vols. 1, 2, and 3. Alexandria, VA: National Science Foundation. Available at <https://www.nsf.gov/statistics/mapping/>. Routledge-Taylor & Francis Group. 2015. *Europa World of Learning*. London. Serial and online database available at <http://www.worldoflearning.com/>. 2015. *International Handbook of Universities 2016*. London: Palgrave Macmillan UK. International Association of Universities. World Higher Education Database. <http://www.whed.net/home.php>.

## Technical Tables

Table	Title
A-1	Types of research doctoral degrees recognized by the Survey of Earned Doctorates: 2018
A-2	Research degrees included in the Survey of Earned Doctorates: 2014–18
A-3	Survey response rates: 1979–2018
A-4	Item response rates: 2009–18
A-5	SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018
A-6	Aggregations used to determine major fields of study: 2018

TABLE A-1

## Types of research doctoral degrees recognized by the Survey of Earned Doctorates: 2018

(Type)

Abbreviation	Degree title
PhD	Doctor of Philosophy
DA	Doctor of Arts
DBA	Doctor of Business Administration
DDes	Doctor of Design
DEng, DESc, DES	Doctor of Engineering or Engineering Science
DFA	Doctor of Fine Arts
DHL	Doctor of Hebrew Letters
DMA	Doctor of Musical Arts
DME	Doctor of Music Education
DML	Doctor of Modern Languages
DNSc	Doctor of Nursing Science
DPH	Doctor of Public Health
DSc, ScD	Doctor of Science
EdD	Doctor of Education
JCD	Doctor of Canon Law
JSD, SJD	Doctor of Juridical Science
STD	Doctor of Sacred Theology
ThD	Doctor of Theology

## Source(s)

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

TABLE A-2

## Research degrees included in the Survey of Earned Doctorates: 2014–18

(Number and percent)

Research degree	Degree title	2014		2015		2016		2017		2018	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All research doctorates		53,988	100.0	54,889	100.0	54,798	100.0	54,559	100.0	55,195	100.0
PhD	Doctor of Philosophy	52,943	98.1	53,804	98.0	53,768	98.1	53,479	98.0	54,246	98.3
EdD	Doctor of Education	587	1.1	616	1.1	615	1.1	589	1.1	571	1.0
DSc, ScD	Doctor of Science	106	0.2	105	0.2	103	0.2	108	0.2	92	0.2
DEng, DESc, DES	Doctor of Engineering or Engineering Science	32	0.1	36	0.1	33	0.1	28	0.1	21	*
DA	Doctor of Arts	6	*	4	*	7	*	4	*	5	*
DBA	Doctor of Business Administration	31	0.1	35	0.1	32	0.1	32	0.1	24	*
DMA	Doctor of Musical Arts	168	0.3	178	0.3	141	0.3	139	0.3	116	0.2
DDes	Doctor of Design	7	*	1	*	5	*	7	*	9	*
DPH	Doctor of Public Health	21	*	27	*	20	*	53	0.1	41	0.1
DHL	Doctor of Hebrew Letters	3	*	0	0.0	1	*	0	0.0	0	0.0
DME	Doctor of Music Education	0	0.0	2	*	0	0.0	3	*	0	0.0
DML	Doctor of Modern Languages	7	*	3	*	5	*	6	*	4	*
DNSc	Doctor of Nursing Science	5	*	2	*	2	*	10	*	0	0.0
ThD	Doctor of Theology	8	*	16	*	14	*	23	*	11	*
DFA	Doctor of Fine Arts	1	*	0	0.0	2	*	4	*	3	*

TABLE A-2

## Research degrees included in the Survey of Earned Doctorates: 2014–18

(Number and percent)

Research degree	Degree title	2014		2015		2016		2017		2018	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
JSD, SJD	Doctor of Juridical Science	61	0.1	54	0.1	45	0.1	67	0.1	50	0.1
STD	Doctor of Sacred Theology	1	*	5	*	2	*	1	*	0	0.0
JCD	Doctor of Canon Law	1	*	1	*	2	*	6	*	2	*
All other research doctorates <sup>a</sup>		0	0.0	0	0.0	1	*	0	0.0	0	0.0

\* = value &lt; 0.05%.

<sup>a</sup> Includes doctorates awarded that were determined to be ineligible for Survey of Earned Doctorates after the doctoral program was begun but before doctorate was granted.

**Note(s)**

Due to rounding, percentages may not sum to 100.

**Source(s)**

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

TABLE A-3

## Survey response rates: 1979–2018

(Percent)

Year	Self-report rate
1979	96.4
1980	96.2
1981	95.7
1982	95.3
1983	95.5
1984	95.1
1985	94.8
1986	93.5
1987	93.1
1988	92.9
1989	92.3
1990	93.6
1991	94.6
1992	95.1
1993	94.7
1994	94.6
1995	94.2
1996	93.0
1997	91.6
1998	91.9
1999	91.9
2000	92.4
2001	92.7
2002	91.3
2003	91.6
2004	91.3

TABLE A-3

## Survey response rates: 1979–2018

(Percent)

Year	Self-report rate
2005	92.1
2006	93.1
2007	91.7
2008	92.3
2009	92.6
2010	93.0
2011	92.9
2012	92.5
2013	92.0
2014	90.6
2015	90.3
2016	92.0
2017	91.4
2018	92.1

**Note(s)**

Rates for 1979–2017 include late responses. Rate for 2018 may increase slightly in the next year if additional questionnaires are received after survey closure.

**Source(s)**

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

TABLE A-4

## Item response rates: 2009–18

(Percent)

Variable name	Variable description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AAEMONTH <sup>a</sup>	First associate's degree start month	na	na	na	na	na	na	na	na	96.9	99.2
AAEYEAR <sup>a</sup>	First associate's degree start year	na	na	na	na	na	na	na	na	97.6	99.3
AAFIELD <sup>a</sup>	First associate's degree field	na	na	na	na	na	na	na	na	85.0	97.4
AAINST <sup>a</sup>	First associate's degree institution	na	na	na	na	na	na	na	na	93.4	94.9
AAMONTH <sup>a</sup>	First associate's degree month	na	na	na	na	na	na	na	na	97.6	99.7
AANID <sup>a</sup>	First associate's degree institution (NCSES institution identification)	na	na	na	na	na	na	na	na	93.0	94.9
AAYEAR <sup>a</sup>	First associate's degree year	na	na	na	na	na	na	na	na	98.3	100.0
AADEGRN <sup>a</sup>	Number of associate's degrees received	na	na	na	na	na	na	na	na	90.3	93.4
AGEDOC <sup>b</sup>	Age at doctorate	na	na	na	na	na	na	92.1	94.1	94.6	95.0
AMERIND	American Indian or Alaska Native race indicator	91.9	91.6	91.6	91.5	91.9	90.2	91.0	93.0	92.8	93.1
ASIAN	Asian race indicator	91.9	91.6	91.6	91.5	91.9	90.2	91.0	93.0	92.8	93.1
AUDIDIS <sup>c</sup>	Deaf or hearing disability indicator	90.8	89.7	89.8	na	na	na	na	na	na	na
BA2EMONTH <sup>a</sup>	Most recent baccalaureate start month	na	na	na	na	na	na	na	na	89.9	92.3
BA2EYEAR <sup>a</sup>	Most recent baccalaureate start year	na	na	na	na	na	na	na	na	90.2	92.4
BA2FIELD <sup>a</sup>	Most recent baccalaureate degree field	na	na	na	na	na	na	na	na	89.7	91.7
BA2INST <sup>a</sup>	Most recent baccalaureate institution	na	na	na	na	na	na	na	na	88.4	90.6
BA2MONTH <sup>a</sup>	Most recent baccalaureate month	na	na	na	na	na	na	na	na	90.0	92.4
BA2NID <sup>a</sup>	Most recent baccalaureate institution (NCSES institution identification)	na	na	na	na	na	na	na	na	88.4	90.6
BA2YEAR <sup>a</sup>	Most recent baccalaureate year	na	na	na	na	na	na	na	na	90.4	92.6

TABLE A-4

## Item response rates: 2009–18

(Percent)

Variable name	Variable description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
BADEGRN <sup>a</sup>	Number of bachelor's degrees received	na	na	na	na	na	na	na	na	91.1	98.3
BADBLFIELD <sup>a</sup>	First baccalaureate double major field	na	na	na	na	na	na	na	na	96.4	98.4
BADBLMAJ <sup>a</sup>	First baccalaureate double major indicator	na	na	na	na	na	na	na	na	89.5	90.9
BAEMONTH <sup>d</sup>	First baccalaureate start month	na	na	na	na	na	86.9	87.0	89.0	89.6	90.6
BAEYEAR <sup>e</sup>	First baccalaureate start year	86.3	86.9	87.6	88.2	88.8	87.3	87.3	89.4	89.7	90.6
BAFIELD	First baccalaureate field	88.8	89.3	89.8	89.3	90.4	89.3	89.2	91.0	91.3	91.2
BAINST	First baccalaureate institution	92.9	92.5	93.4	92.3	93.2	91.6	92.3	94.2	94.5	95.0
BAMONTH	First baccalaureate month	88.0	88.5	89.1	89.7	90.2	89.0	88.9	90.7	90.6	91.3
BANID	First baccalaureate institution (NCSES institution identification)	92.1	91.6	92.5	91.5	92.2	90.2	91.0	92.9	93.6	94.3
BANONE <sup>f</sup>	No bachelor's and/or master's degree indicator	13.6	14.6	16.4	18.2	20.4	21.4	21.7	22.4	22.0	91.6
BAPLACE	First baccalaureate institution location	92.9	92.5	93.4	92.3	93.2	91.6	92.3	94.2	94.5	95.0
BAYEAR	First baccalaureate year	93.1	92.6	93.2	92.8	93.2	91.7	92.2	94.4	95.3	95.5
BIRTHMO	Month of birth	93.4	92.3	92.2	92.1	92.5	90.7	91.6	93.2	93.9	94.6
BIRTHPL	Place of birth	93.7	93.4	94.3	94.2	93.5	91.9	92.1	94.5	95.0	95.9
BIRTHYR	Year of birth	94.3	93.0	93.0	92.8	93.1	91.3	92.1	94.1	94.5	95.0
BLACK	Black race indicator	91.9	91.6	91.6	91.5	91.9	90.2	91.0	93.0	92.8	93.1
CITIZ	Type of citizenship	95.0	94.2	94.0	93.8	94.2	92.3	93.3	95.2	95.4	96.0
CNTRYCIT <sup>g</sup>	Country of citizenship	94.7	93.8	93.7	93.6	93.8	92.1	93.1	94.8	95.0	95.0
COGNDIS <sup>c</sup>	Learning or cognitive disability indicator	90.8	89.7	89.8	na	na	na	na	na	na	na
DDSDEG <sup>h</sup>	Earned a professional dental degree	na	87.7	88.6	88.9	88.8	87.6	87.9	88.3	88.0	89.6
DDSSTUDY <sup>h</sup>	Earning a professional dental degree	na	87.7	88.6	88.9	88.8	87.6	87.9	88.3	88.0	89.6
DEPEND18	Number of dependents-ages 6–18	88.2	88.3	89.2	89.9	89.5	88.4	88.3	89.7	90.1	90.7
DEPEND19	Number of dependents-ages 19 and older	88.2	88.3	89.2	89.9	89.5	88.4	88.3	89.7	90.1	90.7
DEPEND5	Number of dependents-ages 5 or younger	88.2	88.3	89.2	89.9	89.5	88.4	88.3	89.7	90.1	90.7
DIFAGE <sup>i</sup>	Earliest age experienced difficulties	na	na	na	90.4	90.8	89.4	89.4	90.9	89.9	90.3
DIFCOGN <sup>i</sup>	Degree of difficulty concentrating, remembering, or making decisions	na	na	na	91.1	91.0	89.6	89.6	91.1	90.1	90.5
DIFHEAR <sup>i</sup>	Degree of difficulty hearing	na	na	na	91.1	91.0	89.6	89.6	91.1	90.1	90.5
DIFLIFT <sup>i</sup>	Degree of difficulty lifting	na	na	na	90.5	91.0	89.6	89.6	91.1	90.1	90.5
DIFSEE <sup>i</sup>	Degree of difficulty seeing	na	na	na	91.1	91.0	89.6	89.6	91.1	90.1	90.5
DIFWALK <sup>i</sup>	Degree of difficulty walking	na	na	na	90.5	91.0	89.6	89.6	91.1	90.1	90.5
DISABILITY1 <sup>c</sup>	Disability status	90.8	89.7	89.8	na	na	na	na	na	na	na
DISABILITY2 <sup>i</sup>	Moderate or greater degree of difficulty in any domain	na	na	na	91.1	91.0	89.6	89.6	91.1	90.1	90.5
DOCCODE	Type of doctorate (since 2004)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EDFATHER	Father/male guardian's education	90.7	90.8	90.8	90.7	90.0	88.6	88.4	89.9	89.9	89.3
EDMOTHER	Mother/female guardian's education	90.9	90.9	90.9	90.8	90.1	88.6	88.5	89.9	90.0	89.7
GDEBTLVL	Graduate debt level	92.6	92.7	93.2	92.9	89.7	88.2	90.1	93.1	92.3	92.6
GEMONTH	Month of graduate program entry	89.7	87.4	88.0	88.4	88.5	90.1	89.7	90.7	90.3	91.9
GEYEAR	Year of graduate program entry	90.4	87.8	88.3	88.6	88.7	90.2	89.9	90.9	90.3	91.9
HAWAIIAN	Native Hawaiian or Other Pacific Islander race indicator	91.9	91.6	91.6	91.5	91.9	90.2	91.0	93.0	92.8	93.1
HISPANIC	Hispanic origin indicator	92.0	91.4	92.2	92.0	92.1	90.3	91.5	93.0	93.7	94.7
HSPLACE	Place of high school	91.1	90.8	91.8	91.7	91.2	89.7	89.5	91.6	90.1	90.4
JRCOLL	Junior college indicator	90.5	91.2	93.1	93.0	92.6	91.0	90.8	93.4	93.2	93.7
MA1CRED <sup>a</sup>	Credits from first master's degree counted toward doctoral degree	na	na	na	na	na	na	na	na	97.6	99.5
MA1EMONTH <sup>a</sup>	First master's degree start month	na	na	na	na	na	na	na	na	99.6	99.0

TABLE A-4

## Item response rates: 2009–18

(Percent)

Variable name	Variable description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
MA1YEAR <sup>a</sup>	First master's degree start year	na	na	na	na	na	na	na	na	99.7	99.1
MA1FIELD <sup>a</sup>	First master's degree field	na	na	na	na	na	na	na	na	99.4	99.0
MA1INST <sup>a</sup>	First master's degree institution	na	na	na	na	na	na	na	na	97.9	98.0
MA1MONTH <sup>a</sup>	First master's degree month	na	na	na	na	na	na	na	na	99.8	99.0
MA1NID <sup>a</sup>	First master's degree institution (NCSES institution identification)	na	na	na	na	na	na	na	na	97.9	98.0
MA1PART <sup>a</sup>	First master's degree was required for doctoral program	na	na	na	na	na	na	na	na	98.4	99.5
MA1YEAR <sup>a</sup>	First master's degree year	na	na	na	na	na	na	na	na	99.9	99.1
MACRED <sup>a</sup>	Credits from most recent master's degree counted toward doctoral degree	na	na	na	na	na	na	na	na	99.2	99.8
MADEGRN <sup>a</sup>	Number of master's degrees received	na	na	na	na	na	na	na	na	99.3	93.7
MAEMONTH <sup>d</sup>	Most recent master's degree start month	na	na	na	na	na	67.8	67.5	68.7	69.0	69.1
MAEYEAR <sup>d</sup>	Most recent master's degree start year	na	na	na	na	na	68.0	67.7	68.9	69.1	69.1
MAFIELD	Most recent master's degree field	84.1	84.9	86.5	88.1	89.8	89.2	89.2	90.9	90.5	91.1
MAINST	Most recent master's degree institution	85.2	85.5	87.1	88.4	89.7	89.1	89.0	90.8	90.7	90.7
MAMONTH	Most recent master's degree month	83.5	84.1	85.7	87.8	89.6	88.9	88.9	90.7	90.5	91.1
MANID	Most recent master's degree institution (NCSES institution identification)	72.2	71.6	71.5	70.8	70.0	68.5	68.0	69.2	69.3	68.8
MAPART <sup>a</sup>	Most recent master's degree was required for doctoral program	na	na	na	na	na	na	na	na	69.1	69.0
MARITAL	Marital status	90.9	91.0	91.0	91.0	90.4	88.9	88.9	90.5	90.3	90.8
MAYEAR	Most recent master's degree year	85.1	85.5	86.9	88.5	90.0	89.2	89.1	91.0	91.2	91.2
MDDEG <sup>h</sup>	Earned a professional medical degree	na	87.7	88.6	88.9	88.8	87.6	87.9	88.3	88.0	89.6
MDSTUDY <sup>h</sup>	Earning a professional medical degree	na	87.7	88.6	88.9	88.8	87.6	87.9	88.3	88.0	89.6
MEDDENT	Additional professional medical or dental degree	88.6	89.9	90.3	90.5	90.4	89.1	89.2	90.5	90.0	91.4
MSPREREQ	Prerequisite master's degree for doctoral program	90.5	91.5	91.5	91.1	90.7	89.2	89.1	90.8	91.0	91.7
ORTHDIS <sup>c</sup>	Physical or orthopedic disability indicator	90.8	89.7	89.8	na	na	na	na	na	na	na
OTHRDIS <sup>c</sup>	Other or unknown disability indicator	90.8	89.7	89.8	na	na	na	na	na	na	na
PDEMPLOY	Postgraduation employer type	98.0	97.8	98.6	98.5	99.0	99.5	99.3	98.1	99.7	98.8
PDFACULTY <sup>j</sup>	Employment in faculty position	na	na	na	na	na	na	na	na	na	99.4
PDFORGN <sup>f</sup>	Postgraduation affiliation with a non-U.S. college or university	3.7	3.8	3.7	3.5	3.7	3.4	3.1	3.2	3.8	90.4
PDLOC	Postgraduation location	92.6	93.0	92.9	92.5	91.6	89.9	90.0	92.1	92.4	93.0
PDOCCODE <sup>f</sup>	Postgraduation institution affiliation in the U.S. (IPEDS)	32.5	31.9	31.1	30.6	28.4	26.7	26.1	26.4	21.9	83.0
PDOCNID <sup>f</sup>	Postgraduation institution affiliation in the U.S. (NCSES institution identification)	32.5	31.9	31.1	30.6	28.4	26.7	26.1	26.4	21.9	83.0
PDOCPLAN	Postgraduation plans	97.7	97.6	95.0	93.9	92.5	91.7	91.5	95.2	97.6	99.8
PDOCSTAT	Postgraduation status	90.7	91.3	91.4	91.4	90.8	89.3	89.3	90.9	90.8	91.3
PDSAMEEMP <sup>a</sup>	Postgraduation employer was employer before or during doctoral studies	na	na	na	na	na	na	na	na	91.7	91.8
PDSAMEPOSEMP <sup>j</sup>	Employment in same position with same employer worked during doctoral studies	na	na	na	na	na	na	na	na	na	95.4
PDSEEKNEWEMP <sup>j</sup>	Postgraduation plan to seek new employment	na	na	na	na	na	na	na	na	na	99.5
PDSTDSUP	Postdoctoral study support	95.1	93.9	94.6	95.8	96.7	97.5	97.8	95.5	96.9	97.0
PDUSFOR	Postgraduation location: U.S. or foreign	92.6	93.0	92.9	92.5	91.6	89.9	90.0	92.1	92.4	93.0
PDWK1ED	Edited primary work activity	92.7	92.8	91.8	91.5	90.7	90.8	90.5	91.3	97.7	98.6
PDWK2ED <sup>f</sup>	Edited secondary work activity	52.6	50.6	50.1	50.8	50.2	49.8	49.4	50.6	48.9	47.5

TABLE A-4

## Item response rates: 2009–18

(Percent)

Variable name	Variable description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
PDWKPRIM	Primary work activity	92.7	92.8	91.8	91.5	90.7	90.8	90.5	91.3	97.7	98.6
PDWKSEC <sup>f</sup>	Secondary work activity	52.6	50.6	50.1	50.8	50.2	49.8	49.4	50.6	48.9	47.5
PHDCY	Calendar year of doctorate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PHDDISS	Dissertation field	92.2	92.5	92.4	91.8	91.6	90.2	90.0	91.6	91.1	91.5
PHDDISS2 <sup>f</sup>	Secondary dissertation field	26.8	30.2	32.1	34.7	36.2	35.0	35.0	41.0	34.9	89.8
PHDEMONTH <sup>d</sup>	Doctoral program start month	na	na	na	na	na	89.6	89.6	91.2	91.3	91.6
PHDEYEAR <sup>k</sup>	Doctoral program start year	90.0	90.4	90.7	90.8	90.9	89.8	89.7	91.4	91.3	91.6
PHDFIELD	Doctorate field	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PHDFY	Fiscal year of doctorate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PHDINST	Doctoral institution	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PHDMONTH	Month of doctorate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PHDNID	Doctoral institution (NCSES institution identification)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
POSTDOC <sup>l</sup>	Intention to take postdoc position	90.9	91.5	91.5	91.6	91.1	89.6	89.6	91.5	na	na
PROFDEC <sup>f</sup>	Type of professional doctorate	0.9	0.9	1.0	0.8	0.8	0.9	1.0	1.0	96.0	100.0
PROFEARN <sup>a</sup>	Earned or earning a professional doctoral degree	na	na	na	na	na	na	na	na	90.7	91.4
PROFEMONTH <sup>a</sup>	Professional doctorate start month	na	na	na	na	na	na	na	na	99.7	99.3
PROFEYEAR <sup>a</sup>	Professional doctorate start year	na	na	na	na	na	na	na	na	99.8	99.1
PROFINST <sup>a</sup>	Professional doctorate institution	na	na	na	na	na	na	na	na	98.0	98.2
PROFMONTH <sup>a</sup>	Professional doctorate month	na	na	na	na	na	na	na	na	99.8	99.2
PROFNID <sup>a</sup>	Professional doctorate institution (NCSES institution identification)	na	na	na	na	na	na	na	na	94.7	98.2
PROFYEAR <sup>f</sup>	Professional doctorate year	1.0	0.9	0.9	0.7	0.8	0.9	0.9	1.0	99.7	99.2
QUESTMON <sup>b</sup>	Month questionnaire filled out	na	na	na	na	na	na	90.0	92.0	93.2	92.1
QUESTYR <sup>m</sup>	Year questionnaire filled out	na	92.2	92.8	92.4	92.0	90.6	90.3	92.0	93.4	92.1
RACE	Edited race or ethnicity code	94.3	93.4	93.2	93.0	93.2	91.4	92.4	94.3	94.6	95.5
RACE2 <sup>b</sup>	Edited ethnicity or race code (NSF-revised)	94.3	93.4	93.2	93.0	93.2	91.4	92.4	94.3	94.9	95.5
SALARYR <sup>n</sup>	Range of expected basic annual salary	91.9	91.0	89.7	89.0	87.6	88.7	88.7	89.3	97.3	96.3
SALARYV	Expected basic annual salary	52.2	51.5	46.6	41.2	36.8	76.9	83.9	85.5	94.2	93.2
SALMONTH	Number of months expected basic annual salary covers	90.0	90.9	90.1	89.5	88.7	89.0	88.9	89.1	95.2	96.5
SEEKPOSPDOC <sup>j</sup>	Seeking or negotiating a postdoc position	na	na	na	na	na	na	na	na	na	85.4
SEEKPOSEMP <sup>j</sup>	Seeking or negotiating an employment position other than a postdoc	na	na	na	na	na	na	na	na	na	85.4
SEEKPOSOTHR <sup>j</sup>	Seeking or negotiating other position	na	na	na	na	na	na	na	na	na	85.4
SEEKEMPEDU <sup>j</sup>	Seeking or negotiating position at an educational institution	na	na	na	na	na	na	na	na	na	85.3
SEEKEMPGOV <sup>j</sup>	Seeking or negotiating position in government	na	na	na	na	na	na	na	na	na	85.3
SEEKEMPBUS <sup>j</sup>	Seeking or negotiating position in business or industry	na	na	na	na	na	na	na	na	na	85.3
SEEKEMPNP <sup>j</sup>	Seeking or negotiating position in nonprofit organization	na	na	na	na	na	na	na	na	na	85.3
SEEKEMPOTHR <sup>j</sup>	Seeking or negotiating position in other sector	na	na	na	na	na	na	na	na	na	85.3
SEEKEMPCHOICE <sup>j</sup>	Top choice of employer seeking or negotiating	na	na	na	na	na	na	na	na	na	84.1
SEEKEMPSTAT <sup>j</sup>	Employment status while seeking or negotiating employment	na	na	na	na	na	na	na	na	na	85.2
SEX	Sex of doctorate recipient	99.9	100.0	100.0	99.9	100.0	99.7	100.0	100.0	100.0	99.9
SRCE1ED	Edited primary source of support	90.5	90.9	91.0	91.1	90.7	89.6	89.5	91.2	90.0	90.6



TABLE A-4

## Item response rates: 2009–18

(Percent)

Variable name	Variable description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SRCEPRIM	Primary source of support	90.5	90.9	91.0	91.1	90.7	89.6	89.5	91.2	90.0	90.6
SRCESEC	Secondary source of support	80.9	80.8	80.8	80.3	79.6	79.2	78.8	83.0	78.4	80.1
TICEPHD	Time in from college entry to doctorate	86.3	86.9	87.6	88.2	88.8	87.3	87.3	89.4	89.7	90.6
TOBAGE	Time out between baccalaureate to graduate school entry	88.0	85.8	86.4	86.9	87.2	87.2	87.2	88.5	87.4	88.4
TTDBAPHD	Total time elapsed from baccalaureate to doctorate	92.3	91.7	92.3	92.0	92.3	90.3	90.8	93.1	94.4	94.8
TTDDOC <sup>d</sup>	Total elapsed time in doctorate	na	na	na	na	na	89.9	89.8	91.5	91.3	91.5
TTDGEPHD	Total time elapsed from graduate entry to doctorate	90.4	87.9	88.3	88.6	88.7	90.2	89.9	90.9	90.3	91.9
TUITREMS	Tuition remission-full or partial	89.9	90.4	91.3	91.5	91.2	90.0	89.8	91.4	91.0	91.6
UDEBTLVL	Undergraduate debt level	92.5	92.7	93.4	93.3	86.1	84.7	90.9	93.7	92.6	93.0
VISUDIS <sup>c</sup>	Blind or visual disability indicator	90.8	89.7	89.8	na	na	na	na	na	na	na
VOCLDIS <sup>c</sup>	Vocal or speech disability indicator	90.8	89.7	89.8	na	na	na	na	na	na	na
WHITE	White race indicator	91.9	91.6	91.6	91.5	91.9	90.2	91.0	93.0	92.8	93.1
YRSCOURS <sup>o</sup>	Years of doctoral coursework	90.4	90.9	91.0	90.9	90.4	88.9	89.0	90.5	89.8	na
YRSDISST <sup>o</sup>	Years preparing doctorate dissertation	90.2	91.0	91.1	91.0	90.5	89.0	89.0	90.6	89.7	na
YRSNOTWRK <sup>o</sup>	Years not working on doctoral degree	90.6	91.0	91.2	91.0	90.8	89.2	89.2	90.8	90.9	na

na = not applicable; data either were not collected or derived, or were collected for the first time in that year (see "Notes").

IPEDS = Integrated Postsecondary Education Data System; NCSSES = National Center for Science and Engineering Statistics.

<sup>a</sup> Variable added to the Doctorate Records File in 2017.

<sup>b</sup> Variable added to the Doctorate Records File in 2015.

<sup>c</sup> In 2012, survey stopped collecting data for this item.

<sup>d</sup> Variable added to the Doctorate Records File in 2014.

<sup>e</sup> Methodology reports prior to 2014 reported BAEYEAR as CEYEAR.

<sup>f</sup> Variable has low response rate because although all respondents are considered eligible to provide data for item, not all eligible respondents were able to do so.

<sup>g</sup> Response rate counts respondents who reported being U.S. citizens or permanent residents or temporary visa holders and provided country of citizenship.

<sup>h</sup> Item appeared on survey form for the first time in 2010 (see "Notes").

<sup>i</sup> Item appeared on survey form for the first time in 2012 (see "Notes").

<sup>j</sup> Item appeared on survey form for the first time in 2018 (see "Notes").

<sup>k</sup> Methodology reports prior to 2014 reported PHDEYEAR as PHDENTRY.

<sup>l</sup> In 2017, survey stopped collecting data for this item.

<sup>m</sup> Item appeared on all survey forms except 2007–09.

<sup>n</sup> Methodology reports prior to 2011 reported SALARYR as SALARY.

<sup>o</sup> In 2018, survey stopped collecting data for this item.

**Note(s)**

Response rate is the percentage of cases providing data on an item divided by the universe of doctorate recipients eligible to answer that item. For most data items, all doctorate recipient respondents are in the universe of eligible respondents. However, for some of the new survey data items introduced for the first time, not all eligible respondents were able to provide data due to completing earlier versions of the survey but are reported in subsequent years, when the item became available to the entire respondent universe.

**Source(s)**

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

TABLE A-5

## SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018

(Field)

Aggregated field name and constituent fields
Life sciences
Agricultural sciences and natural resources
Agricultural sciences
Agricultural animal breeding
Agricultural economics
Agronomy, horticulture science, plant breeding, plant pathology, plant sciences-other <sup>†</sup>
Agricultural and horticultural plant breeding
Agronomy and crop science
Horticulture science <sup>*</sup>
Plant pathology and phytopathology, agricultural
Plant sciences, other <sup>*</sup>
Animal nutrition, poultry science <sup>†</sup>
Animal nutrition <sup>*</sup>
Animal science, poultry or avian <sup>*</sup>
Animal sciences, other
Food science, food technology-other <sup>†</sup>
Food science
Food science and technology, other <sup>*</sup>
Soil chemistry and microbiology, soil sciences-other <sup>†</sup>
Soil chemistry, microbiology <sup>*</sup>
Soil sciences, other <sup>*</sup>
Natural resources and conservation
Environmental science
Fishing and fisheries sciences and management
Forest biology, forest management, forestry sciences-other <sup>†</sup>
Forest management, forest resources management <sup>*</sup>
Forest sciences and biology <sup>*</sup>
Forestry, other
Natural resources policy and environmental economics <sup>†</sup>
Natural resource and environmental policy
Natural resources and environmental economics (agricultural sciences) <sup>*</sup>
Natural resources and conservation, wildlife and range management <sup>†</sup>
Natural resources and conservation
Wildlife, range management <sup>*</sup>
Agricultural sciences, aggregated <sup>†</sup>
Agricultural sciences and natural resources, general <sup>*</sup>
Agricultural sciences and natural resources, other <sup>*</sup>
Biological and biomedical sciences
Anatomy, developmental biology <sup>†</sup>
Anatomy <sup>*</sup>
Developmental biology and embryology
Bacteriology, parasitology, and virology <sup>†</sup>
Bacteriology <sup>*</sup>
Parasitology <sup>*</sup>
Virology
Biochemistry (biological sciences)
Bioinformatics

TABLE A-5

## SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018

(Field)

Aggregated field name and constituent fields
Biomedical sciences
Biometrics and biostatistics
Biophysics (biological sciences)
Botany, plant pathology, plant physiology <sup>†</sup>
Botany and plant biology
Plant pathology and phytopathology (biological sciences)*
Plant physiology*
Cancer biology
Cell, cellular biology, and histology
Computational biology
Ecology
Endocrinology, human/animal pathology <sup>†</sup>
Endocrinology*
Pathology, human and animal
Entomology
Environmental toxicology
Epidemiology
Evolutionary biology
Genetics and genomics, human and animal
Immunology
Microbiology
Molecular biology
Molecular medicine
Neurosciences, neurobiology
Nutrition sciences
Pharmacology, human and animal
Physiology, human and animal
Plant genetics
Structural biology
Toxicology
Wildlife biology
Zoology
Biological and biomedical sciences, general
Biotechnology, biology/biomedical sciences-other <sup>†</sup>
Biotechnology*
Biological and biomedical sciences, other
Health sciences
Environmental health
Health and behavior
Health services/systems administration <sup>†</sup>
Health systems administration*
Health services research
Kinesiology, exercise science
Medical physics, radiological science
Nursing science
Pharmaceutical sciences
Public health
Rehabilitation, therapeutic services
Speech-language pathology and audiology

TABLE A-5

## SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018

(Field)

Aggregated field name and constituent fields
Health sciences, aggregated <sup>†</sup>
Gerontology (health sciences)*
Oral biology, oral pathology*
Veterinary sciences
Health sciences, general
Health sciences, other
Physical sciences and earth sciences
Chemistry
Analytical chemistry
Chemical biology
Inorganic chemistry
Medicinal chemistry
Organic chemistry
Physical chemistry
Polymer chemistry
Theoretical chemistry
Chemistry, general
Chemistry, other
Geosciences, atmospheric, and ocean sciences
Atmospheric science and meteorology
Atmospheric physics, meteorology <sup>†</sup>
Atmospheric physics and dynamics
Meteorology*
Atmospheric chemistry, atmospheric sciences-general, atmospheric sciences-other <sup>†</sup>
Atmospheric chemistry and climatology
Atmospheric science and meteorology, general
Atmospheric science and meteorology, other*
Geological sciences
Geochemistry, mineralogy <sup>†</sup>
Geochemistry
Mineralogy and petrology*
Geology
Geomorphology, geological sciences-general, geological sciences-other <sup>†</sup>
Geomorphology, glacial geology*
Geological sciences, general
Geological sciences, other
Geophysics and seismology
Paleontology, stratigraphy <sup>†</sup>
Paleontology
Stratigraphy and sedimentation*
Ocean and marine sciences
Marine biology and biological oceanography
Oceanography, chemical and physical
Ocean/marine sciences, aggregated <sup>†</sup>
Hydrology and water resources
Marine sciences
Ocean and marine sciences, other*
Physics and astronomy

TABLE A-5

## SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018

(Field)

Aggregated field name and constituent fields
Astronomy and astrophysics
Astronomy
Astrophysics
Astronomy and astrophysics, other
Physics
Acoustics, optics/phonics <sup>†</sup>
Acoustics <sup>*</sup>
Optics, photonics
Applied physics
Atomic physics, polymer physics <sup>†</sup>
Atomic, molecular, chemical physics
Polymer physics <sup>*</sup>
Biophysics (physics)
Condensed matter, low-temperature physics
Elementary particle physics
Nuclear physics
Plasma, high-temperature physics
Physics, general
Physics, other
Mathematics and computer sciences
Computer and information sciences
Computer science
Information science, systems
Computer and information sciences, general
Computer and information sciences, other
Mathematics and statistics
Algebra
Analysis and functional analysis
Applied mathematics, computing theory <sup>†</sup>
Applied mathematics
Computing theory and practice <sup>*</sup>
Computational mathematics
Geometry, geometric analysis
Logic, topology/foundations <sup>†</sup>
Logic <sup>*</sup>
Topology and foundations
Number theory
Operations research, mathematics/statistics-general, mathematics/statistics-other <sup>†</sup>
Operations research (mathematics) <sup>*</sup>
Mathematics and statistics, general
Mathematics and statistics, other
Statistics (mathematics)
Psychology and social sciences
Psychology
Behavioral analysis
Clinical psychology
Cognitive neuroscience
Cognitive psychology and psycholinguistics
Community psychology

TABLE A-5

## SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018

(Field)

Aggregated field name and constituent fields
Counseling
Developmental and child psychology
Educational psychology (psychology)
Experimental psychology
Family psychology, human development and family studies <sup>†</sup>
Family psychology*
Human development and family studies
Health, medical psychology
Industrial and organizational psychology
Marriage and family therapy, counseling
Neuropsychology, physiological psychology
School psychology (psychology)
Social psychology
Psychology, general
Psychology, aggregated <sup>†</sup>
Personality psychology*
Psychometrics and quantitative psychology
Psychology, other
Social sciences
Anthropology
Anthropology, cultural
Anthropology, general
Anthropology, physical and biological
Economics
Econometrics, economics <sup>†</sup>
Econometrics*
Other economics
Natural resources and environmental economics (social sciences)
Political science and government
Sociology
Other social sciences
American, U.S. studies
Applied linguistics
Archaeology (social sciences)
Area, ethnic, and cultural studies
Criminal justice and corrections
Criminology
Demography, gerontology, statistics, urban affairs, social sciences-general, social sciences-other <sup>†</sup>
Demography and population studies*
Gerontology (social sciences)*
Statistics (social sciences)*
Urban studies, affairs
Social sciences, general
Social sciences, other
Gender and women's studies
Geography
Health policy analysis
History, science and technology and society
International relations, international affairs

TABLE A-5

## SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018

(Field)

Aggregated field name and constituent fields
Linguistics
Public policy analysis
Urban, city, community and regional planning
Engineering
Aerospace, aeronautical, and astronautical engineering
Bioengineering and biomedical engineering
Chemical engineering
Civil engineering
Electrical, electronics, and communications engineering
Industrial and manufacturing engineering
Materials science engineering
Mechanical engineering
Other engineering
Computer engineering
Environmental, environmental health engineering
Nuclear engineering
Robotics
Structural engineering
Systems engineering
Other engineering, aggregated <sup>†</sup>
Agricultural engineering*
Communications engineering*
Engineering management, administration*
Engineering mechanics*
Engineering physics*
Engineering science
Geotechnical and geoenvironmental engineering*
Metallurgical engineering*
Ocean engineering*
Operations research (engineering)
Petroleum engineering*
Polymer, plastics engineering*
Transportation and highway engineering*
Engineering, general*
Engineering, other
Education
Education administration
Educational administration and supervision
Educational and human resource studies, development
Educational leadership
Urban education and leadership
Education research
Counseling education, counseling and guidance
Curriculum and instruction
Educational assessment, testing, measurement
Educational policy analysis
Educational psychology (education)
Educational statistics, research methods

TABLE A-5

## SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018

(Field)

Aggregated field name and constituent fields
Educational/instructional technology, media design <sup>†</sup>
Educational and instructional media design <sup>*</sup>
Educational and instructional technology
Higher education evaluation and research
International education
Learning sciences
School psychology (education)
Social and philosophical foundations of education
Special education
Teacher education <sup>†</sup>
Adult and continuing teacher education
Elementary teacher education <sup>*</sup>
Pre-elementary, early childhood teacher education
Secondary teacher education <sup>*</sup>
Teaching fields
Health education
Literacy and reading education
Mathematics education
Music education
Science education
Teaching fields, aggregated <sup>†</sup>
Agricultural education
Art education
Bilingual and multilingual education <sup>*</sup>
English as a second or foreign language <sup>*</sup>
English education
Family, consumer, and human sciences <sup>*</sup>
Foreign languages education <sup>*</sup>
Nursing education
Physical education and coaching <sup>*</sup>
Social science education <sup>*</sup>
Teacher education and professional development, other
Other education
Workforce education and development
Education, general
Education, other
Humanities and arts
Foreign languages and literature
French
Germanic language and literature
Spanish language and literature
Other languages, aggregated <sup>†</sup>
Arabic language and literature <sup>*</sup>
Chinese language and literature <sup>*</sup>
Italian <sup>*</sup>
Japanese language and literature <sup>*</sup>
Latin American languages and literature <sup>*</sup>
Russian language and literature <sup>*</sup>



TABLE A-5

## SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018

(Field)

Aggregated field name and constituent fields
Foreign languages and literatures, other
History
American history, United States and Canada
Asian history
European history
Latin American history
Middle, Near East history
History, general
History, aggregated <sup>†</sup>
African history
History, other
Letters
American literature, United States and Canada
Classics
Comparative literature
English language
English literature, British and Commonwealth
Rhetoric and composition
Speech and rhetorical studies
Letters, aggregated <sup>†</sup>
Creative writing
Letters, general <sup>*</sup>
Letters, other <sup>*</sup>
Other humanities and arts
African American studies, literature, and history
Archaeology (humanities)
Art history, criticism, and conservation
Dance, drama <sup>†</sup>
Dance <sup>*</sup>
Drama, theater arts
Film, cinema, video studies
Music
Musicology and ethnomusicology
Music performance
Music theory and composition
Philosophy, ethics <sup>†</sup>
Ethics
Philosophy
Religion/religious studies, Jewish/Judaic studies <sup>†</sup>
Jewish, Judaic studies <sup>*</sup>
Religion, religious studies
Theology, religious education
Other humanities, aggregated <sup>†</sup>
Bible, biblical studies
Music, other <sup>*</sup>
Humanities, general
Humanities, other
Other <sup>a</sup>
Business management and administration

TABLE A-5

**SED taxonomy of disciplines including aggregated fields and their constituent fine fields: 2018**

(Field)

<b>Aggregated field name and constituent fields</b>
Accounting
Business administration and management
Finance
Human resources, organizational behavior <sup>†</sup>
Human resources development <sup>*</sup>
Organizational behavior
Management information systems, business statistics
Marketing management and research
Other aggregated business fields <sup>†</sup>
Business, managerial economics <sup>*</sup>
Hospitality, food service, and tourism management <sup>*</sup>
International business, trade, commerce <sup>*</sup>
Operations research (business) <sup>*</sup>
Business management and administration, general
Business management and administration, other
Communication
Communication research
Mass communication, media studies
Communication, general
Communication, aggregated <sup>†</sup>
Communication theory <sup>*</sup>
Film, radio, TV and digital communication <sup>*</sup>
Communication, other
Non-S&E fields nec
Architecture and environmental design
Family, consumer sciences and human sciences
Parks, sports, recreation, leisure and fitness
Public administration
Social work
Fields nec, aggregated <sup>†</sup>
Law <sup>*</sup>
Library science
Other fields nec
Unknown field

<sup>†</sup> = aggregated field in 2018.

<sup>\*</sup> = fine field with fewer than 25 U.S. citizen or permanent resident doctorate recipients in 2018.

nec = not elsewhere classified; S&E = science and engineering.

<sup>a</sup> Includes other non-S&E fields not shown separately.

**Note(s)**

Aggregated fields appear in tables 16 and 22 only.

**Source(s)**

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

TABLE A-6

**Aggregations used to determine major fields of study: 2018**

(Field code)

<b>Field of study</b>	<b>Survey of Earned Doctorates field code</b>
Life sciences	000–299 (excluding 152, 217), 577, 685
Agricultural sciences and natural resources	000–099, 685
Biological and biomedical sciences	100–199 (excluding 152)
Health sciences	200–299 (excluding 217), 577
Physical sciences and earth sciences	500–599 (excluding 577), 152
Chemistry	520–539
Geosciences, atmospheric sciences, and ocean sciences	510–519, 540–559, 580–599, 152
Physics and astronomy	500–509, 560–579 (excluding 577)
Mathematics and computer sciences	400–499 (excluding 415)
Computer and information sciences	400–419 (excluding 415)
Mathematics and statistics	420–499
Psychology and social sciences	600–699, (excluding 685), 217, 770
Psychology	600–649
Anthropology	650, 655, 656
Economics	665, 667, 668
Political science and government	678
Sociology	686
Other social sciences	All fields 600–699 (excluding 685) not listed above, 217, 710, 770
Engineering	300–399, 415
Aerospace, aeronautical, and astronautical engineering	300
Bioengineering and biomedical engineering	306
Chemical engineering	312
Civil engineering	315
Electrical, electronics, and communications engineering	324
Industrial and manufacturing engineering	339
Materials science engineering	342
Mechanical engineering	345
Other engineering	All fields 300–399 not listed above, 415
Education	800–899
Education administration	804–807
Education research	800, 801, 808–845
Teacher education	850–858
Teaching fields	860–889
Other education	All fields 800–899 not listed above
Humanities and arts	700–799 (excluding 770), 984
Foreign languages and literature	740–769
History	700–719 (excluding 710)
Letters	720–739 (excluding 731)
Other humanities and arts	All fields 700–799 (excluding 770) not listed above, 984
Other <sup>a</sup>	900–999 (excluding 984)
Business management and administration	900–939
Communication	940–959
Non-S&E fields nec	960–989 (excluding 984)
Unknown field	999

nec = not elsewhere classified; S&amp;E = science and engineering.

<sup>a</sup> Includes other non-science and engineering fields not shown separately.**Note(s)**

Major fields appear in tables 7, 8, 12, 15, 18, 24, 48, 49, 51, 52, and 56–71.

**Source(s)**

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.