



GRADUATE ENROLLMENT AND DEGREES

2013 to 2023

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Tranae Hardy



The CGS/ETS Survey of Graduate Enrollment and Degrees is jointly sponsored by the Council of Graduate Schools (CGS) and the Educational Testing Service (ETS). For more information about the survey or the survey reports, please contact:

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Lisa Lanier, Enyu Zhou, Alessandro Regio, Tranae Hardy
December 2024

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OVERVIEW

Master's and doctoral-level education equips individuals with advanced knowledge to address issues such as climate change, wars and civil conflict, public health crises, rising inflation rates, food insecurity, and the use of artificial intelligence technology in our daily lives. This year's Graduate Enrollment and Degrees report (GE&D) provides important data on the graduate student pipelines that shape the U.S. workforce of tomorrow. Specifically, the 2024 GE&D report provides analyses of trends in graduate applications, admissions decisions, and enrollments for higher education leaders. The overall outlook for the graduate education community remains positive, evident by increasing applications for admission to U.S. graduate schools. While graduate institutions continue to experience a slowing total enrollment, first-time enrollment is beginning to rebound. The GE&D report also comments on patterns of increasing enrollments for underrepresented groups between Fall 2022 and Fall 2023. Taken together, the Council of Graduate Schools hopes these findings will assist leaders and policymakers in improving and advancing graduate education.

Quick Takes

The CGS/ETS Survey of Graduate Enrollment and Degrees is a leading source of information on master's and doctoral program applications, enrollment, and degrees conferred in the United States. Below are key points from the Fall 2023 Survey.

Highlights by Selected Institutional Types

- ◆ **Applications for Admission.** Applications for admission to graduate school between Fall 2022 and Fall 2023 increased for the second year in a row, with an increase of 5.6%. There were again large increases in applications to Master's Colleges and Universities (15.8%) and Doctoral Universities with High Research Activities (R2) (17.4%). Applications to Doctoral Universities with Very High Research Activities (R1), and Doctoral or Professional Universities (D/PU) increased by 0.9% and 22.1%, respectively (Table C.1).
- ◆ **First-time Enrollment.** First-time enrollment increased by 3.1% overall between Fall 2022 and Fall 2023, with almost all institution types reporting an increase. There was a 1.8% increase in first-time enrollment at Doctoral Universities with Very High Research Activities (R1), a 3.7% increase in first-time enrollment at Doctoral Universities with High Research Activities (R2), and an 11.6% increase in first-time enrollment at Doctoral or Professional Universities (D/PU). Master's Colleges and Universities continued to report increases in first-time enrollment (2.9%) (Table C.4).

Highlights by Selected Degree Objectives

- ◆ **Graduate-level Certificates.** Between 2021-22 and 2022-23, the number of graduate-level certificates awarded increased overall by 5.5% (Table C.25). During 2022-23, the largest proportion of certificates were awarded in the fields of Education (29.5%), Health Sciences (15.3%), and Business (15.3%) (Table B.22). Over the past year some institutions saw mixed growth in graduate certificates awarded, with an increase of 9.3% for Doctoral Universities with Very High Research Activities (R1), but a 7.8% decrease for Doctoral Universities with High Research Activities (R2) (Table C.25). The number of graduate-level certificates awarded has grown over the last five to ten years. Between 2017-18 and 2022-23, the number of graduate-level certificates awarded increased 8.8%, and between 2012-2013 and 2022-23, the number of graduate-level certificates awarded increased 6.2% (Table C.25).
- ◆ **Master's Degrees.** Applications for admissions to master's degree or graduate-level certificate programs increased by 6.4% over the past year (Table C.3). The large majority (84.4%) of all first-time graduate students in Fall 2023 were enrolled in programs leading to a master's degree or a graduate certificate (Table B.6). The number of master's degrees awarded by institutions participating in the survey increased by 9.0% between 2021-22 and 2022-23 (Table C.29).



◆ **Doctoral Degrees.** Applications to graduate schools increased at the doctoral level (3.7%) between Fall 2022 and Fall 2023 (Table C.3). Moreover, there was a 3.6% increase of doctoral first-time enrollment during the same period (Table C.12). The number of doctoral degrees awarded increased by 9.8% between 2021-22 and 2022-23 (Table C.30).

Highlights by Selected Student Demographics

◆ **Underrepresented Minorities.** Only one category of underrepresented minority students experienced declines in first-time enrollment between Fall 2022 and Fall 2023; first-time graduate enrollment decreased by 1.6% among American Indian/Alaska Native students. Meanwhile, Black/African American students increased by 6.3% and Latinx students increased by 7.6%¹ (Table C.5). Between Fall 2022 and Fall 2023, total graduate enrollment increased by 1.5% among Latinx students, by 1.6% among Black/African American students, and by 3.8% among Native Hawaiian/Other Pacific Islander students. Meanwhile, American Indian/Alaska Native students decreased by 0.9%, Asian students by 0.4%, and White students decreased by 4.8% (Table C.20).

◆ **International Students.**² The survey observed an increase (2.1%) in international graduate first-time enrollment between Fall 2022 and Fall 2023. The increase in international first-time enrollment was across all but one field of study, Health Sciences, which decreased very slightly by 0.4%. Increases were largest in Other Fields (28.2%), Physical and Earth Sciences (16.7%), Biological and Agricultural Sciences (8.9%), and Social and Behavioral Sciences (6.4%) (Tables C.9).

◆ **Domestic Students.** Domestic first-time graduate enrollment increased by 2.9% between Fall 2022 and Fall 2023. Domestic enrollment increased in all fields of study except for one: Arts and Humanities, which decreased by 2.5%. The largest increases in domestic first-time graduate enrollment were in Mathematics and Computer Sciences (13.5%), Engineering (7.3%), and Business (6.3%) (Table C.9). Domestic first-time graduate enrollment increased more among men (2.9%) than women (1.8%) between Fall 2022 and Fall 2023 (Table C.6). Despite the moderate increase of domestic first-time enrollment, total domestic graduate enrollment decreased by 2.6% during the same period (Table C.15).

◆ **Graduate Degrees Awarded and Projected Job Openings.** Following last year's report, CGS has analyzed that graduate schools need to produce an additional 21,000 educational, guidance, and career counselors, along with education administrators to keep up with the growing demand for professionals in these fields respective of U.S. Bureau of Labor Statistics data for the top ten graduate degree occupations projected to have the most openings in the future (Figure 10).³

◆ **Part-time Students.** First-time enrollment of part-time graduates saw an increase between Fall 2022 and Fall 2023 of 2.2%, while first-time enrollment of full-time graduates saw an increase of 3.5%. The largest increases in first-time, part-time graduate enrollment were observed in Mathematics and Computer Sciences (14.0%), Business (8.5%), and Engineering (8.1%) (Table C.8).

◆ **Gender.** In Fall 2023, more than half of first-time graduate students at the master's degree and certificate level (58.2%) and at the doctoral level (56.5%) were women (Table B.7). Women constituted majorities of first-time graduate enrollment in Health Sciences

¹ The term Hispanic/Latino is used as one of the citizenship and racial/ethnicity categories in the survey instrument (Appendix E). The term Latinx is used in the body of the report when referring to Hispanic/Latino population.

² The term Temporary Residents is used as one of the citizenship and racial/ethnicity categories in the survey instrument (Appendix E). The term International Student is used in the body of the report when referring to the Temporary Resident population.

³ Elka Torpey, "Education level and projected openings, 2023–33," Career Outlook, U.S. Bureau of Labor Statistics, August 2024.

(80.1%), Public Administration and Services (79.6%), Education (77.2%), Social and Behavioral Sciences (67.4%), Biological and Agricultural Sciences (63.3%), Other Fields (61.7%), and Arts and Humanities (59.2%) (Table B.4). Women earned the majority of graduate certificates (64.7%), master's degrees (59.3%), and doctoral degrees (57.2%) awarded by U.S. institutions in 2022-23 (Tables B.23, B.24, and B.25).

Highlights by Selected Broad Fields of Study

- ◆ **Physical and Earth Sciences.** Physical and Earth Sciences had a large increase in first-time enrollment (8.2%) between Fall 2022 and Fall 2023. Over the previous five-year (1.4%) and ten-year (1.1%) periods growth in Physical and Earth Sciences was far more moderate (Table C.7). Physical and Earth Sciences have one of the largest increase of first-time enrollment for full-time students (8.1%) and international students (16.7%), and second largest increase for female students (6.6%) between Fall 2022 and Fall 2023 (Tables C.8, C.9 and C.11).
- ◆ **Engineering.** First-time enrollments in Engineering increased by 4.3% between Fall 2022 and Fall 2023 (Table C.7). Overall, first-time, full-time enrollment in Engineering increased by 3.5% (Table C.8). First-time domestic enrollment in Engineering increased by 7.3% over the past year, while first-time international enrollment in Engineering increased by 0.8% (Table C.9).
- ◆ **Mathematics and Computer Sciences.** Doctoral applications for Mathematics and Computer Sciences increased by 8.3% between 2022 and 2023, continuing healthy trends over the 5-year (5.8%) and 10-year (7.2%) time periods (Table C.3). There was a significant increase in master's degrees awarded in this field (56.4%) compared to 14.9% for the previous 5-year period and 21.1% for the previous 10-year period (Table C.29).



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INTRODUCTION

The CGS/ETS Survey of Graduate Enrollment and Degrees is jointly sponsored by the Council of Graduate Schools (CGS) and the Educational Testing Service (ETS). Conducted annually since 1986, the survey is designed to provide information about applications for admission to graduate school, graduate student enrollment, and graduate degrees and certificates conferred.

The CGS/ETS Survey of Graduate Enrollment and Degrees is the only national survey that collects data on first-time and total graduate enrollment across all fields of master's and research doctorate programs in the United States. It is also the only source of data on first-time and total graduate enrollment by degree level (master's/certificates versus research doctorate) and the only national survey that collects data on applications to graduate school by broad field of study.

The 2023 CGS/ETS Survey of Graduate Enrollment and Degrees was launched in November 2023 and sent to the U.S.-based institutions that were members of the Council of Graduate Schools or one of the four regional graduate school associations—the Conference of Southern Graduate Schools (CSGS), the Midwestern Association of Graduate Schools (MAGS), the Northeastern Association of Graduate Schools (NAGS), and the Western Association of Graduate Schools (WAGS). This year's survey was sent to a total of 762 colleges and universities, and useable responses were received from 558 institutions, for an overall response rate of 73%.

This report begins by highlighting the findings with respect to the numbers of applications received from prospective graduate students for Fall 2023, first-time and total enrollment for Fall 2023, and the number of master's and doctoral degrees and other postbaccalaureate certificates conferred during the 2022-23 academic year. Then, the report describes some of the one-year comparisons and five- and ten-year average annual changes along with some trend lines. Full data tables appear at the end of the report in Appendix B (Data Tables for Graduate Applications, First-Time Enrollment, and Total Enrollment, Fall 2023, and Degrees Conferred, 2022-23) and Appendix C (Data Tables for Trends in Graduate Applications, First-Time Enrollment, Total Enrollment, and Degrees Conferred, 2013 to 2023). Other appendices include, Appendix A (Definitions), Appendix D (Taxonomy of Fields of Study), and Appendix E (Survey Instrument).

Acknowledgments

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Special thanks to CGS President Suzanne Ortega for her insights and guidance for the project. Also, thanks to CGS colleagues Julia Kent, Kelley Karnes, and Sarah Breyfogle for their roles in supporting this project. Moreover, we are grateful to the members of the CGS Committee on Research and Information Services, for their ongoing interest in and support of the survey.

Most importantly, special thanks to the graduate deans, institutional researchers, and staff at the colleges and universities who completed the CGS/ETS Survey of Graduate Enrollment and Degrees this year.

GRADUATE APPLICATIONS, ENROLLMENT, AND DEGREES: FALL 2023

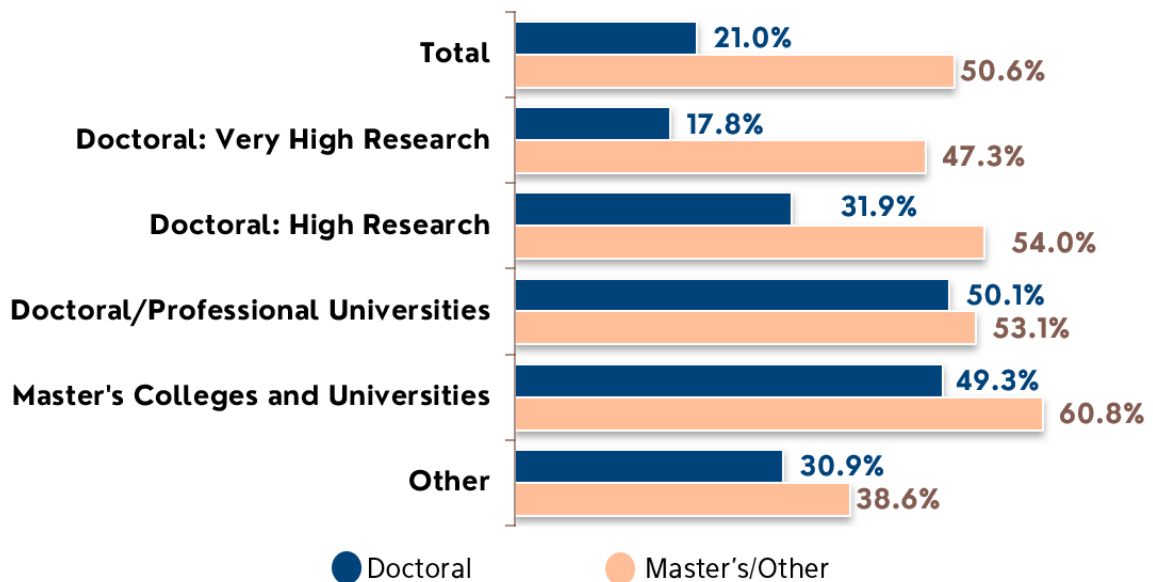
This section highlights the state of graduate applications for admission for Fall 2023 by broad field and degree level. It also displays first-time and total enrollment in Fall 2023, with data presented by broad field, degree level, institution type, Carnegie Classification, attendance status, gender, race/ethnicity, and citizenship. Additionally, the numbers of graduate degrees and certificates conferred in the 2022-23 academic year are presented by broad field, degree level, and gender.

Graduate Applications

Interest in pursuing graduate education remains high three years removed from the COVID-19 pandemic. Institutions responding to the 2023 CGS/ETS Survey of Graduate Enrollment and Degrees received more than 2.7 million applications for admission to graduate programs beginning in Fall 2023. This figure includes more than 1.6 million applications for Fall 2023 received by public institutions and just over one million graduate applications for admission to private, not-for-profit institutions. Just over 1.9 million of the applications received by institutions responding to the survey were for master's/other programs, while a little over 817,000 applications were for doctoral programs (Table B.1). All of these figures slightly increased from last year's totals.

Overall, 21.0% of doctoral applicants and 50.6% of master's/other applicants were accepted for admission. Private, not-for-profit institutions generally have lower acceptance rates than public institutions. Doctoral programs at private, not-for-profit R1 institutions were the most selective, accepting 12.0% of applications received. Master's/other programs at these universities were also more selective with an overall acceptance rate of 42.6% (Table B.1 and Figure 1).

Figure 1. Graduate Application Acceptance Rates by Carnegie Classification and Degree Level, Fall 2023



Source: 2023 CGS/ETS Survey of Graduate Enrollment and Degrees, Table B.1

Mathematics and Computer Sciences (487,127), Engineering (312,954), Business (297,290), and Health Sciences (247,047) were the broad fields of study with the largest numbers of graduate applications, accounting for 56.7% of all graduate applications for which the intended field of study was known (Table B.2). Compared to last year's proportion of accepted applications, Health Sciences and Mathematics and Computer Sciences experienced an increase, while Business remained the same and Engineering experienced a decrease.

At the doctoral level, the largest number of total applications for Fall 2023 were in the Social and Behavioral Sciences (124,273), Biological and Agricultural Sciences (111,835), and Engineering (109,268). These three broad fields accounted for 48.7% of all doctoral applications for which the intended field of study was known in Fall 2023. Social and Behavioral Sciences had the lowest aggregated doctoral application acceptance rate (12.4%) of all broad fields, followed by Biological and Agricultural Sciences with an acceptance rate of 15.6% (Table B.2).

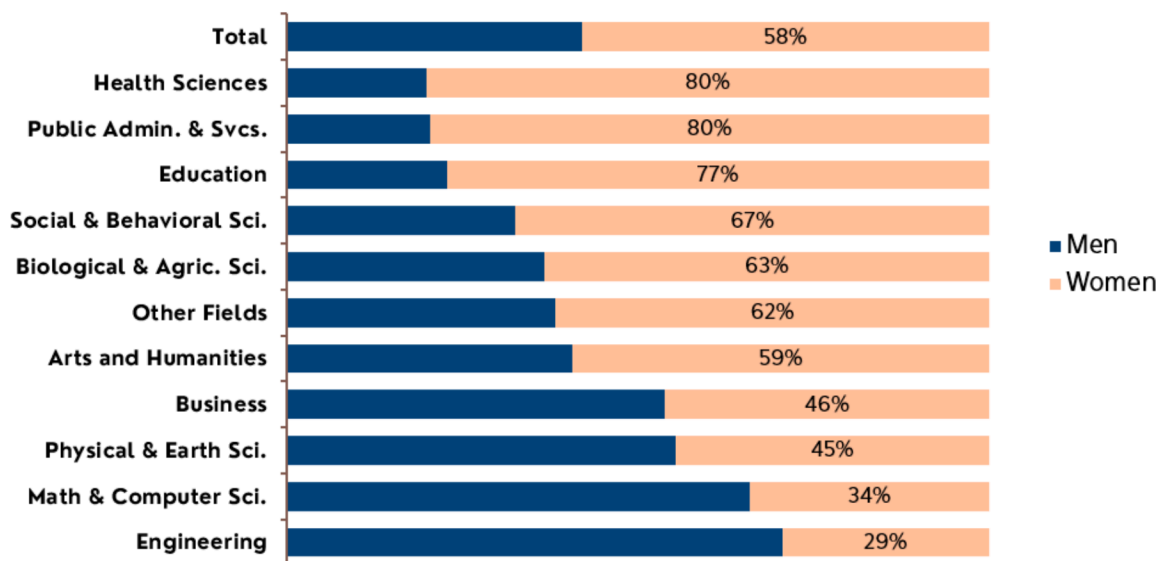
For master's/other applications, the broad field of Mathematics and Computer Sciences received the largest number of applications (409,358), followed by Business (275,817). In terms of master's acceptance rates, Arts and Humanities (40.6%) reported the lowest aggregated application acceptance rate, followed by Mathematics and Computer Sciences (41.0%), Physical and Earth Sciences (43.9%), and Health Sciences (46.3%) (Table B.2).

First-Time Graduate Enrollment

A total of 543,570 graduate students enrolled for the first time in graduate certificate, education specialist, master's, or research doctoral programs in Fall 2023 at the institutions responding to the CGS/ETS Survey of Graduate Enrollment and Degrees (Table B.3). While additional details regarding first-time graduate enrollment for Fall 2023 can be found in Tables B.3 through B.11, a few highlights are worth noting here.

Consistent with previous surveys, Business (75,116), Health Sciences (65,860), and Education (63,782) were the three largest broad fields for first-time graduate enrollment in Fall 2023. These three broad fields collectively represented 44.3% of first-time graduate enrollments (Table B.4).

Figure 1.1. First-Time Graduate Enrollment by Broad Field and Gender, Fall 2023

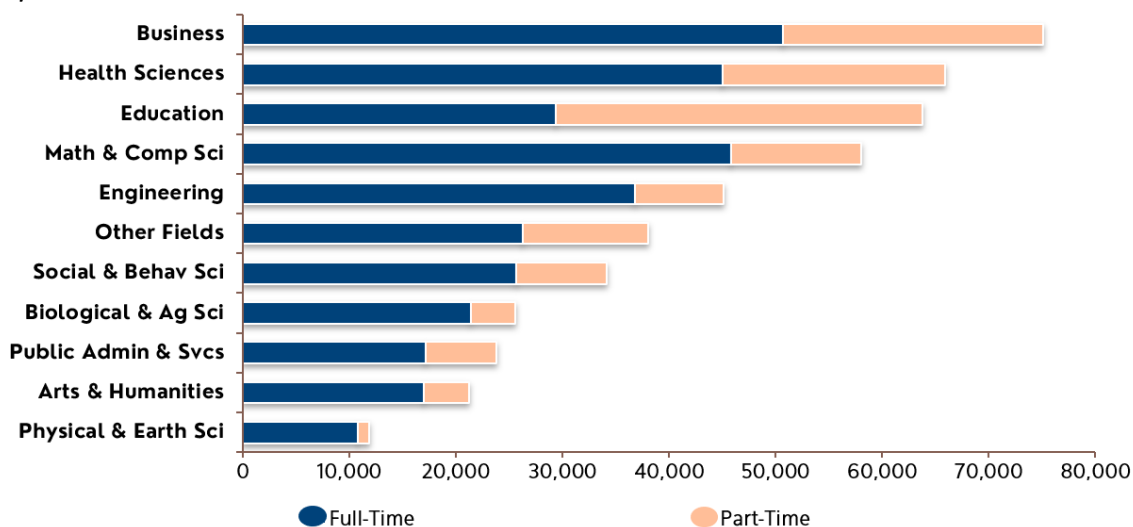


Source: 2023 CGS/ETS Survey of Graduate Enrollment and Degrees, Table B.4

At those institutions responding to the survey, 58.0% of first-time graduate students were women, though the proportion of women varies by field of study (Table B.4). The gender split for first-time enrollment in Fall 2023 across broad fields of study varied greatly. Importantly, 79.6% of first-time enrollees in Public Administration and Services and in Health Sciences were women, compared to only 34.1% and 29.4% for Mathematics and Computer Sciences and Engineering, respectively (Figure 1.1.). While women constitute more than three-quarters of first-time graduate enrollment in fields of Health Sciences (80.1%), Public Administration and Services (79.6%), and Education (77.2%), they comprised much smaller portions of first-time enrollment in Engineering (29.4%), Mathematics and Computer Sciences (34.1%), and Physical and Earth Sciences (44.6%) (Table B.4).

In Fall 2023, 29.9% of first-time graduate students were part-time students (Table B.4). Among the three largest broad fields for first-time graduate enrollment, 53.9% of Education, 32.5% of Business, and 31.6% of Health Sciences first-time enrollment were part-time students (Table B.4 and Figure 2). Overall, among first-time enrollees in Fall 2023, men were more likely to be enrolled full-time than women (73.8% and 67.4% respectively). This relationship holds for all but three broad fields: Engineering, Mathematics and Computer Sciences, and Public Administration and Services where women were more likely to be enrolled full-time than men (Table B.5). Figure 2 below shows the number of first-time enrollees along broad fields of study.

Figure 2. First-time Graduate Enrollment by Broad Field of Study and Attendance Status, Fall 2023



Source: 2023 CGS/ETS Survey of Graduate Enrollment and Degrees, Table B.4

The large majority (84.4%) of first-time graduate students in Fall 2023 were enrolled in programs leading to a master’s degree or a graduate certificate. In the broad fields of Business (97.5%), Public Administration and Services (96.4%), “Other Fields” (93.6%),⁴ Mathematics and Computer Sciences (90.2%), and Education (87.2%), the shares of master’s/other enrollees were very high. By contrast, the majority (62.0%) of first-time graduate enrollment in Physical and Earth Sciences were in doctoral programs (Table B.6).

One-third (33%) of all first-time master’s/other students were enrolled in Business (73,241) and Education (55,723). At the doctoral level, the broad fields of Health Sciences (13,762) and Engineering (10,529) were the largest, accounting for about one-third (33.6%) of all first-time doctoral students (Table B.6).

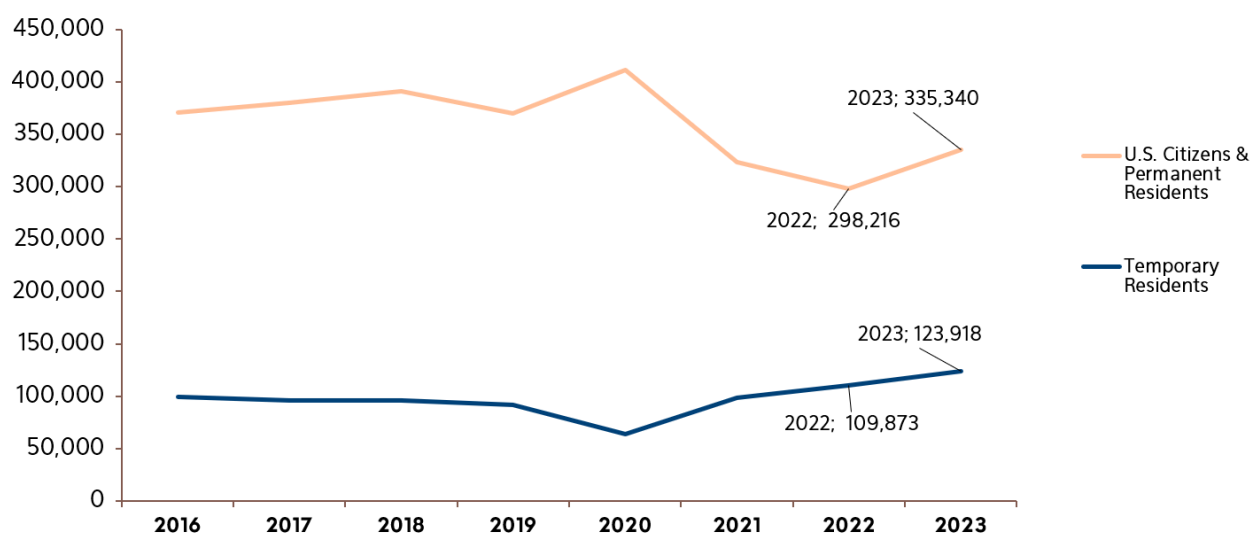
⁴ The “Other Fields” category includes Architecture and Environmental Design, Communications and Journalism, Family and Consumer Sciences, Library and Archival Sciences, and Religion and Theology (see Appendix D).

In Fall 2023, women comprised a larger share of first-time enrollees than men at both the master's and graduate certificate level (58.2%) and at the doctoral level (56.5%). Although women comprise the majority of first-time graduate students overall, they were underrepresented at the master's and certificate level in Engineering (28.6%), Mathematics and Computer Sciences (34.6%), and Business (46.0%). Moreover, men comprised a majority of doctoral first-time enrollees in Engineering (67.8%), Mathematics and Computer Sciences (71.1%), and Physical and Earth Sciences (58.0%) (Table B.7).

Among first-time graduate enrollees in Fall 2023 for whom citizenship was known, 73.3% were U.S. citizens or permanent residents. The share of first-time domestic enrollment has increased slightly, up from the 72.7% mark last year. Overall, there has been a slight upward trend in first-time domestic enrollment from institutions that responded to the survey, as there were more than 335,000 first-time domestic enrollments in Fall 2023 compared to the less than 300,000 in Fall 2022. First-time international enrollments increased over that same period, up from just over 100,000 in Fall 2022 to just over 120,000 in Fall 2023 (Figure 2.1). Domestic students comprised the largest share of first-time graduate students in Public Administration and Services (94.7%), followed closely by Education (94.6%), and Health Sciences (93.0%) (Table B.9).

The share of international students among first-time graduate enrollment (26.7%) decreased substantially this year, compared to the previous year, Fall 2022 (30.4%).⁵ The share of international students among first-time graduate students was higher at private, not-for-profit universities (33.3%) than at public universities (24.1%).

Figure 2.1. Trends in First-time Enrollment by US Citizenship or Temporary Residents Status, Fall 2016 to Fall 2023

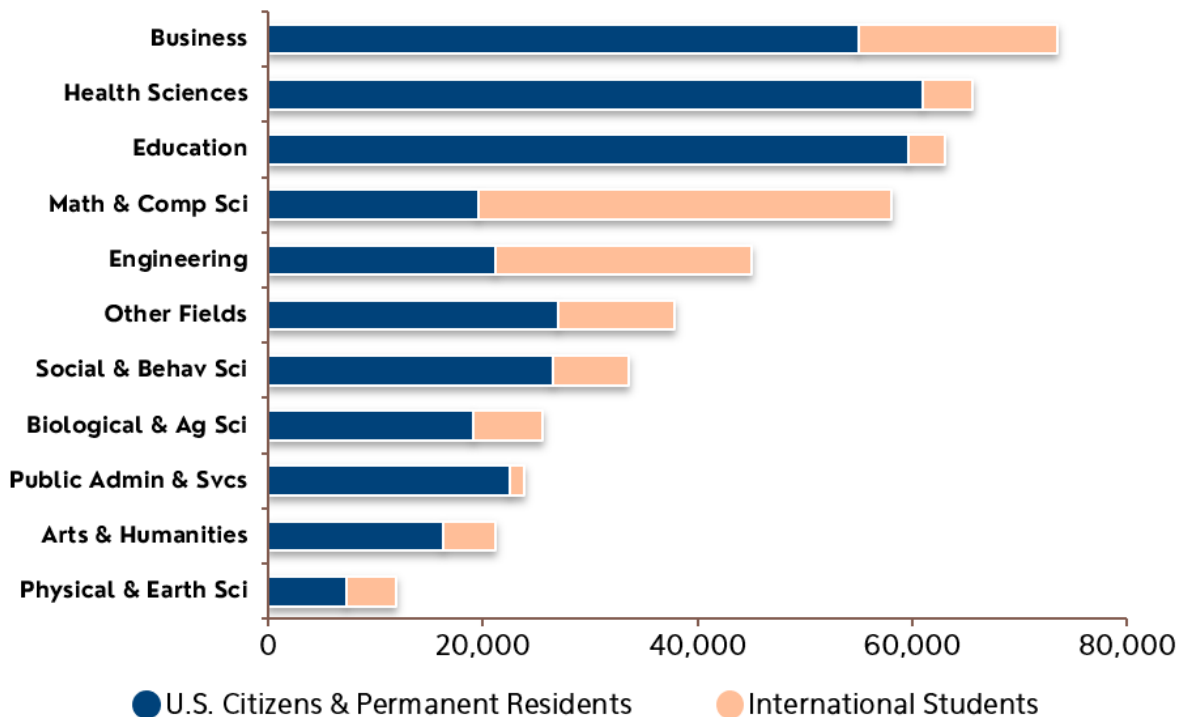


*Note: Trends were developed based upon institutions that provided data for all years 2013 to 2023; therefore, the numbers of total degrees awarded do not match data in the tables.
Source: CGS/ETS Survey of Graduate Enrollment and Degrees*

⁵ Data for the share of first-time international enrollment in Fall 2021 and Fall 2022 can be found in previous editions of the Graduate Enrollment and Degrees report, which are available on the Council of Graduate Schools' website.

The share of international students among first-time graduate students was the largest at R1 institutions (33.7%) (Table B.8). International students comprised the largest share of first-time graduate students in Mathematics and Computer Sciences (66.3%), followed by Engineering (52.9%) (Table B.9 and Figure 3). Women were underrepresented among international students compared to domestic students. While 63.3% of first-time graduate enrollees who were U.S. citizens and permanent residents were women, only 43.0% of first-time graduate enrollees who were international students were women (Table B.10).

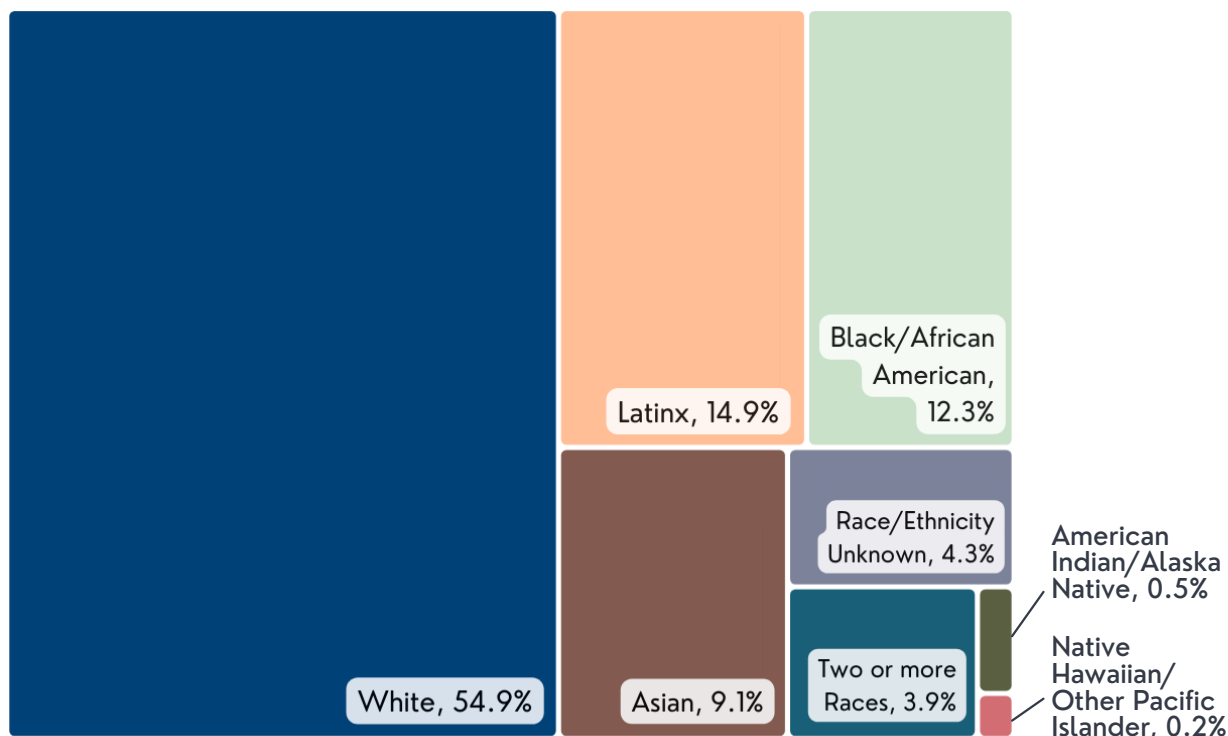
Figure 3. First-time Graduate Enrollment by Broad Field of Study and Citizenship Status, Fall 2023



Source: 2023 CGS/ETS Survey of Graduate Enrollment and Degrees, Table B.9

In Fall 2023, 27.9% of all first-time U.S. citizens and permanent resident enrollees were racially/ethnically underrepresented minority (URM) students, including those who were American Indian/Alaska Native (0.5%), Black/African American (12.3%), Native Hawaiian/Other Pacific Islander (0.2%), and Latinx (14.9%). The majority of first-time U.S. citizens and permanent resident enrollees are White (54.8%) while smaller proportions are either Asian (9.1%), race/ethnicity unknown (4.3%), or two or more races (3.9%) (Table B.11 and Figure 4).

Figure 4. U.S. Citizen and Permanent Resident First-time Graduate Enrollment by Race/Ethnicity, Fall 2023



Source: 2023 CGS/ETS Survey of Graduate Enrollment & Degrees, Table B.11

Underrepresented minority students remain more likely than their majority peers to enroll in fields such as Business, Education, and Health Sciences. In Other Fields, however, the representation of traditionally underserved students of color remained relatively low. American Indian/Alaska Native, Black/African American, Latinx, and Native Hawaiian/Other Pacific Islander first-time graduate students continue to be particularly underrepresented in science, engineering, technology, and mathematics (STEM) fields. For example, only 4.3% of all U.S. citizens and permanent resident students enrolled for the first time in Physical and Earth Sciences, and 6.2% of all U.S. citizens and permanent resident students enrolled for the first time in Engineering, were Black/African American students. While only 3.9% of first-time students in Education were Asian, they constituted a relatively large share of U.S. citizens and permanent residents enrolled for the first time in Mathematics and Computer Sciences (24.6%) and Engineering (17.8%) (Table B.11).

Total Graduate Enrollment

Institutions responding to the GE&D Survey enrolled more than 1.8 million graduate students in Fall 2023. While complete details of total enrollment findings by institution type, gender, attendance status, broad field, degree level, citizenship, and race/ethnicity appear in Tables B.12 to B.20 a few highlights are worth noting in this section.

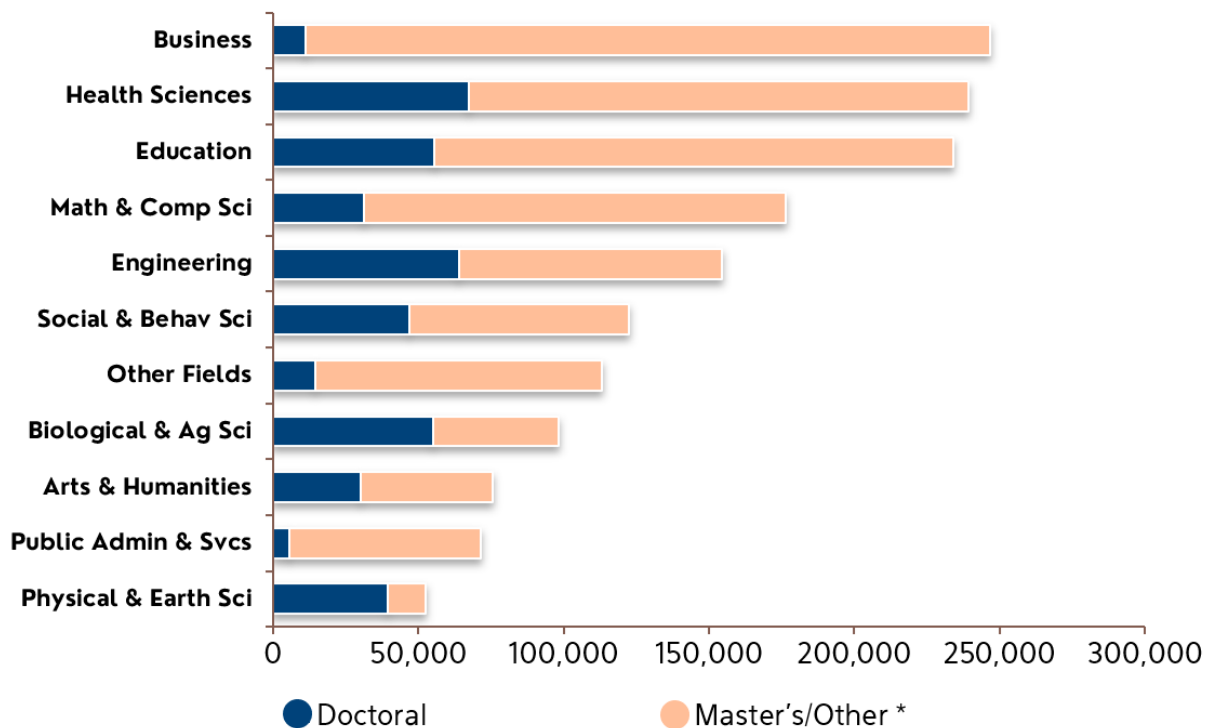
Across all institutions that participated in this survey, 60.1% of all graduate students were enrolled full-time while 39.9% of graduate students were enrolled part-time in Fall 2023, figures that were very similar to last year. Also, like last year, the share of part-time students among all graduate students was the greatest at public Doctoral or Professional Universities (D/PU) with 58.3% of graduate students enrolled part-time. Similarly, 55.2% of graduate students at public Master's Colleges and Universities were enrolled part-time in Fall 2023 (Table B.12).

The three largest broad fields of study, Business (246,714), Health Sciences (239,463), and Education (233,964), had some of the largest proportions of part-time graduate students. More than six out of ten (61.6%) graduate students in Education, nearly one-half (45.7%) of graduate students in Business, and four out of ten (41.2%) graduate students in Health Sciences were enrolled part-time. “Other fields” had a large number of part-time students as well (43.9%). By contrast, Physical and Earth Sciences (16.4%), Biological and Agricultural Sciences (23.0%), Engineering (27.8%), and Social and Behavioral Sciences (34.4%) had smaller proportions of graduate students enrolled part-time in their programs (Table B.13).

More than one-half (58.7%) of total enrollment in Fall 2023 were women, a small increase from last year, compared to 41.3% who were men (Table B.12). Among graduate students in Fall 2023, men were more likely to be enrolled full time than women (63.4% and 58% respectively) (Table B.14).

Nearly three-quarters (72.9%) of the total graduate enrollment at participating institutions was in master’s programs, while 27.1% was in doctoral programs. Graduate enrollment in Business (95.4%) and Public Administration and Services (92.0%) was heavily concentrated in master’s/other programs. Across STEM fields, too, graduate enrollment was predominantly at the master’s level. However, the majority of graduate enrollment in Physical and Earth Sciences (75.2%) and Biological and Agricultural Sciences (56.1%) was at the doctoral level (Table B.15 and Figure 5).

Figure 5. Total Graduate Enrollment by Broad Field of Study and Degree Level, Fall 2023



Source: 2023 CGS/ETS Survey of Graduate Enrollment and Degrees, Table B.15

International graduate students constituted 23.5% of total enrollment in Fall 2023, compared with U.S. citizens and permanent residents, who constituted 76.5%. This is an increase of almost 2% in the proportion of international students, mirroring last year's pattern. At Doctoral Universities with Very High Research Activities (R1), the share of international students rose slightly to 31.3% (Table B.17). The percentage of international students was particularly high in Mathematics and Computer Sciences (61.3%), Engineering (50.7%), and Physical and Earth Sciences (37.1%) (Table B.18). This trend mirrored the preferred fields of study of international students last year.

Among U.S. citizens and permanent residents, Black/African American students continue to be particularly underrepresented in several fields. While they constituted 12.7% of U.S. citizens and permanent resident graduate students overall, they accounted for only 4.0% of Physical and Earth Sciences enrollees. Similarly, they were underrepresented in Engineering (6.1%), Biological and Agricultural Sciences (7.0%), and Arts and Humanities (7.4%) (Table B.20).

Graduate Certificates and Degrees

Institutions responding to the GE&D Survey awarded nearly 750,000 graduate certificates and degrees in the academic year 2022-23 (July 1, 2022 through June 30, 2023), including 89,090 doctoral degrees, 605,961 master's degrees, and 54,801 graduate certificates (Table B.21). A few highlights are described below, and full details can be found in Tables B.21 to B.25.

The large majority (80.8%) of degrees awarded in 2022-23 were master's degrees, followed by doctoral degrees (11.9%) and graduate certificates (7.3%) (Table B.21). By field of study, Health Sciences accounted for the largest number of doctoral degrees awarded in 2022-23, with 24.7% of the total, followed by Engineering (14.1%), Education (13.3%), and Biological and Agricultural Sciences (11.8%) (Table B.22).

At the master's degree level, Business and Education programs awarded the largest numbers of degrees, accounting for 20.1% and 15.9%, respectively. Of the broad fields in this report, Education (29.5%), Business (15.3%), and Health Sciences (15.3%) had large shares of certificates awarded by institutions participating in this survey during 2022-23 (Table B.22).

Notably, women earned the majority of graduate degrees and certificates awarded by participating institutions in 2022-23. Women earned 64.7% of graduate certificates awarded in 2022-23, 59.3% of master's degrees, and 57.2% of doctorates. The majority of graduate degrees and certificates awarded to women were in Education, Health Sciences, Public Administration and Services, and Social and Behavioral Sciences. However, in many STEM fields, men still earned the majority of graduate degrees and certificates. Men earned about three-fourths of master's degrees (70.8%) and doctoral degrees (73.3%) in Engineering. Similarly, 64.9% of master's degrees and 72.9% of doctoral degrees in Mathematics and Computer Sciences were earned by men (Tables B.23, B.24, and B.25).

TRENDS IN GRADUATE APPLICATIONS, ENROLLMENT, AND DEGREES: 2013 TO 2023

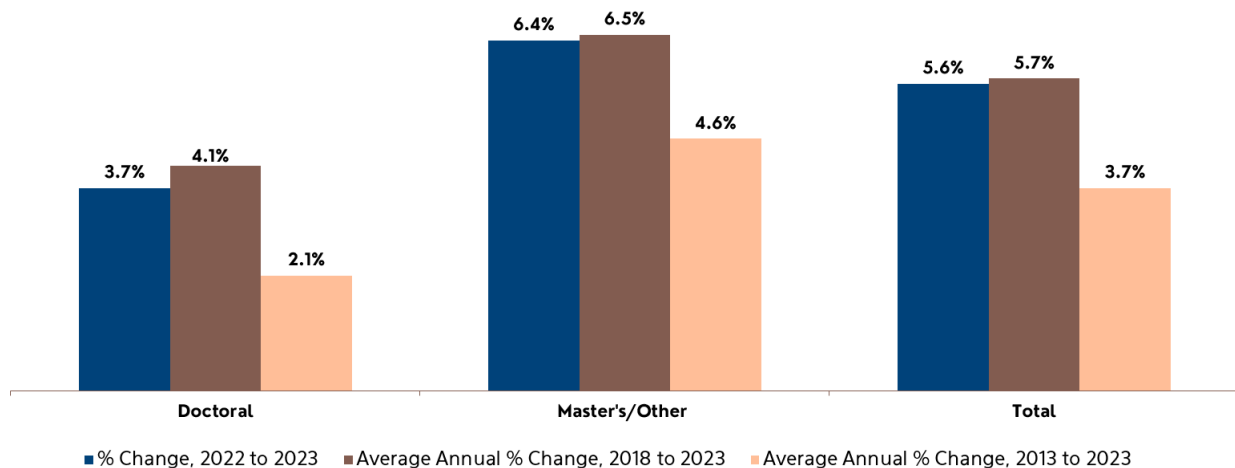
This section presents one-year comparisons; five- and ten-year average annual changes; and selected trends in graduate applications, first-time and total enrollment, and degrees conferred from universities that reported at all periods. The findings, detailed in Tables C.1 through C.30, are presented by broad field, degree level, institution type, Carnegie Classification, attendance status, gender, race/ethnicity, and citizenship status.

Trends in Graduate Applications

Between Fall 2022 and Fall 2023, applications for admission to U.S. graduate schools increased by 5.6% at the institutions that responded to the GE&D Survey in both 2022 and 2023. Tables C.1 to C.3 offer detailed information about trends in graduate applications. Public institution application counts increased 5.7%, and private, not-for-profit application counts increased by 5.4%. Compared to the last ten years, these figures have increased. In the decade between Fall 2013 and Fall 2023, graduate applications grew at an average annual rate of 3.7% (Table C.1).

There were some differences by Carnegie Classification. The number of applications for admission to graduate school again increased significantly at Master’s Colleges and Universities (15.8%) and Doctoral/Professional Universities (D/PU) (22.1%) between Fall 2022 and Fall 2023. Very High Research Doctoral Universities (R1) and High Research Doctoral Universities (R2) increased at 0.9% and 17.4% respectively (Table C.1).

Figure 6. Changes in Graduate Applications by Degree Level, Fall 2013 to Fall 2023



Note: Master's/Other includes applications to graduate-level certificate and education specialist programs. Source: 2023 CGS/GRE Survey of Graduate Enrollment and Degrees, Table C.1

All broad fields of study saw one-year increases in graduate applications between Fall 2022 and Fall 2023. Applications for admission increased significantly for Biological and Agricultural Sciences (17.1%) and Other Fields (16.6%). Although graduate applications saw an overall increase (5.7%) over the last five years, between Fall 2018 and Fall 2023, the broad field of Public Administration and Services saw a decline of 1.8%. Compared to trends from a decade ago, institutions did better than their ten-year trends in applications for admissions in all broad fields except Mathematics and Computer Sciences (Table C.2).

Applications for admission increased for both doctoral programs (3.7%) and master's/other programs (6.4%) between Fall 2022 and Fall 2023. The five-year average annual rate of change was 4.1% at the doctoral level and 6.5% at the master's level between Fall 2018 and Fall 2023 (Figure 6). At the doctoral level, Biological and Agricultural Sciences (18.4%) had the largest one-year increase of all broad fields of study. This was a higher rate of increase when compared to its five-year average annual rate of change (10.1%). At the master's/other level, Physical and Earth Sciences (25.8%) reported the highest one-year increase, followed by Other Fields (19.8%) (Table C.3).

Trends in First-Time Graduate Enrollment

First-time graduate enrollment increased by 3.1% between Fall 2022 and Fall 2023 at institutions that responded to both surveys. Public institutions saw an increase in first-time enrollment (3.1%) between Fall 2022 and Fall 2023. Private, not-for-profit institutions saw an increase in first-time enrollment (2.6%) as well. By Carnegie Classification, first-time graduate enrollment grew by 1.8% at Doctoral Universities with Very High Research Activities (R1), 3.7% at Doctoral Universities with High Research Activities (R2), 11.6% at Doctoral or Professional Universities (D/PU), and 2.9% at Master's Colleges and Universities (Table C.4). The overall increase in first-time enrollment is a welcome change from two years of decrease in this metric, driven by a rebound of international first-time enrollment, even though institutions have still not recovered to Fall 2020 pre-pandemic levels of domestic first-time enrollment.

First-time international graduate student enrollment increased (2.1%) between Fall 2022 and Fall 2023. The ten-year average annual change rates for international students remained positive (6.1%), meaning that the participating institutions saw more first-time international graduate students than in Fall 2013 (Table C5).

First-time graduate enrollment increased by 3.1% among U.S. citizens and permanent residents between Fall 2022 and Fall 2023. Over the past ten years, the first-time enrollment of U.S. citizens and permanent resident graduate students rose on average by 2.5% annually. First-time enrollment among White students, which constitutes the largest proportion (60.1%) of all first-time graduate enrollment in Fall 2023 was relatively flat (0.5%) between Fall 2022 and Fall 2023. Over the past ten years, between Fall 2013 and Fall 2023, the trend for White students is relatively flat, at a negative 0.1% (Table C.5). White first-time enrollment decreased slightly in Arts and Humanities (3.8%), Education (0.7%), Health Sciences (0.4%), Public Administration and Services (0.3%), Social and Behavioral Sciences (2.0%), and Other Fields (0.9%) (Table C.10). The only race/ethnicity category with a decrease in total first-time graduate enrollment was among American Indian/Alaska Native students (1.6%).

Trends in First-time Enrollment Among Underrepresented Minority Students

Underrepresented minority students continue to drive much of the growth in first-time graduate enrollment among U.S. citizens and permanent residents over the past five-years. For example, between Fall 2018 and Fall 2023, first-time enrollment increased by 5.1% among Latinx, 2.7% among Black/African Americans, and a positive yet minimal 0.8% among American Indian/Alaska Native students. Between Fall 2022 and Fall 2023, first-time enrollment increased for two of the three groups. Among U.S. citizens and permanent resident graduate students, first-time enrollment grew by 7.6% among Latinx students and by 6.3% for Black/African American students. American Indian/Alaska Native students saw a 1.6% decrease between Fall 2022 and Fall 2023, the only decrease among underrepresented minority students in this year's report (Table C.5). Although the five and ten-year trends remained marginally positive, this year's decrease highlights the overall erosion in numbers for American Indian/Alaska Native students in first-time enrollment.

Among Latinx students, who constituted 15.7% of first-time domestic enrollment in Fall 2023, the 7.6% increase in first-time graduate enrollment between Fall 2022 and Fall 2023 was the result of increases across all broad fields of study (Tables B.11 and C.10). The largest increases were reported in Other Fields (12.3%), Business (11.7%), and Math and Computer Sciences (11.6%) (Table C.10).

The second largest category of underrepresented minority students, Black/African American students, who account for 13.1% of domestic first-time enrollment in Fall 2023 experienced an overall 6.3% increase in first-time graduate enrollment between Fall 2022 and Fall 2023 (Tables B.11 and C.10). This also includes increases in nine of 11 broad fields of study. First-time enrollment among Black/African American students increased in two of the three largest fields of study (14.1% in Business and 7.4% in Health Sciences) between Fall 2022 and Fall 2023, and in three of four STEM fields of study: Engineering (14.2%), Biological and Agricultural Sciences (13.5%), and Mathematics and Computer Science (28.1%). Decreases in first-time graduate enrollment among Black/African Americans occurred only in Arts and Humanities (1.8%) and Physical and Earth Sciences (1.8%) (Table C.10).

American Indian/Alaska Native students, who represent 0.5% of first-time graduate enrollment in Fall 2023, experienced an overall 1.6% decrease in first-time graduate enrollment between Fall 2022 and Fall 2023 (Tables B. 11 and C.10). Decreases were observed in all fields of study save for Arts and Humanities (24.6%), Business (23.3%), Math and Computer Sciences (61.3%), and Other Fields (17.5%). Large decreases in first-time graduate enrollment among American Indian/Alaska Native students were observed in Biological and Agricultural Sciences (23.7%), Education (23.0%), and Physical and Earth Sciences (22.7%). These changes should be interpreted cautiously, given the small number of American Indian/Alaska Native first-time enrollees (Table C.10). These increases of first-time enrollment among underrepresented minority students between 2022 and 2023, all trend more positively than the same metrics last year (Table C.5).

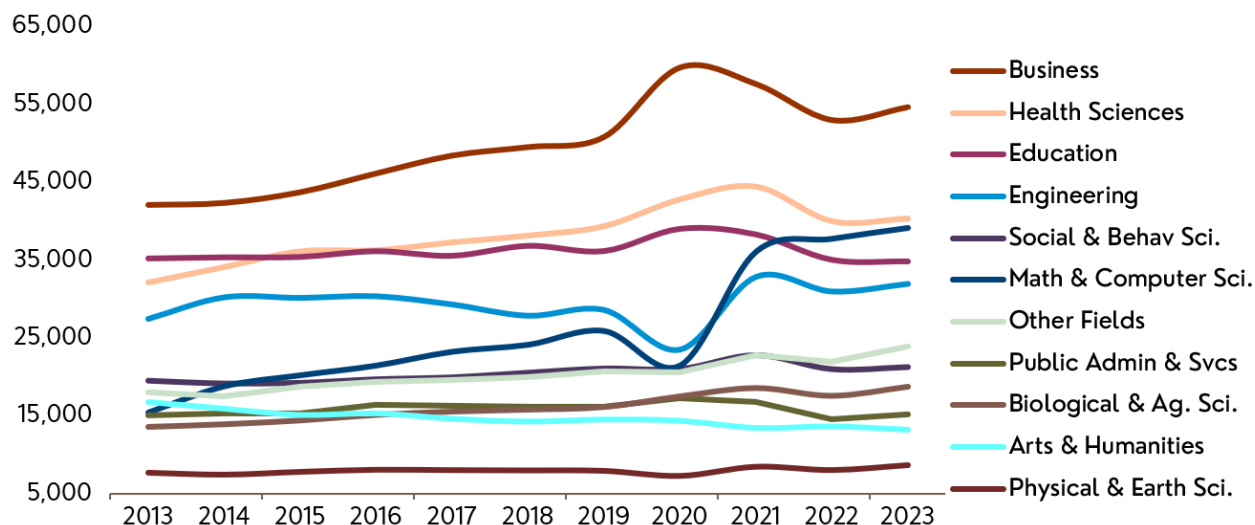
Trends in First-time Enrollment by Gender and Field of Study

Both women (2.0%) and men (2.7%) saw an increase in first-time graduate enrollment between Fall 2022 and Fall 2023. This change is driven by the small increases among U.S. citizens and permanent residents; there was a 1.8% increase in first-time enrollment among women between Fall 2022 and Fall 2023, and a 2.9% increase in first-time enrollment among men during the same time period (Table C.6). Among international students, first-time graduate enrollment increased by 1.3% for women and 1.8% for men and between Fall 2022 and Fall 2023.

In terms of domestic first-time enrollment patterns, increases in the first-time enrollment of women and men were observed across all groupings by race/ethnicity between Fall 2022 and Fall 2023, save for American Indian/Alaska Native students (women in that group decreased by 0.5%, men by 3.6%) and White students (women decreased by 0.7%). The increase in first-time enrollment among Asian/Pacific Islander women (1.3%) was smaller than that among men (6.5%) between Fall 2022 and Fall 2023. The pattern was similar for Black/African American students (women increased by 7.7% while men increased by 8.2%) and for Latinx students (women increased by 7.1% while men increased by 8.2%) (Table C.6).

First-time enrollment by broad fields saw across-the-board increases as well between Fall 2022 and Fall 2023, save for Arts and Humanities which decreased by 0.6%. All other fields increased, notably, Other Fields (8.6%), Physical and Earth Sciences (8.2%), and Mathematics and Computer Sciences (6.4%). Over the last decade, only Arts and Humanities and Education had negative growth between Fall 2013 and Fall 2023 at 1.7% and 0.4%, respectively (Table C.7).

Figure 7. Trends in First-time Graduate Enrollment by Broad Field of Study, Fall 2013 to Fall 2023



*Note: Trends were developed based upon institutions that provided data for all years 2013 to 2023; therefore, the numbers of first-time enrollments do not match data in the tables.
Source: CGS/ETS Survey of Graduate Enrollment and Degrees*

Most fields saw small to moderate increases in first-time enrollment (Figure 7). Business continued to grow first-time enrollment, up by 1,231 students from 2022 to 2023. However, it was not the largest-growth broad field. Other fields had a growth of more than 1,900 students from 2022 to 2023, while Math and Computer Sciences grew by more than 1,300 students.

For more detailed information about changes and trends in first-time graduate enrollment, see Tables C.4 through C.13.

Trends in First-time Enrollment by Attendance Status

Among first-time graduate students, full-time graduate enrollment increased by 3.5%, while part-time graduate enrollment increased by 2.2% between Fall 2022 and Fall 2023. The largest increases among first-time, full-time graduate students were Other Fields (10.9%), Physical and Earth Sciences (8.1%), and Biological and Agricultural Sciences (6.7%). Arts and Humanities was the only field to have a decrease among full-time graduate students, though a minimal one at 0.4%. First-time enrollment in Arts and Humanities also decreased among part-time students (1.4%) as well as Public Administration and Services (3.1%). Among part-time students, first-time enrollment increases were highest amongst Mathematics and Computer Sciences (14.0%), Business (8.5%), and Engineering (8.1%) (Table C.8).

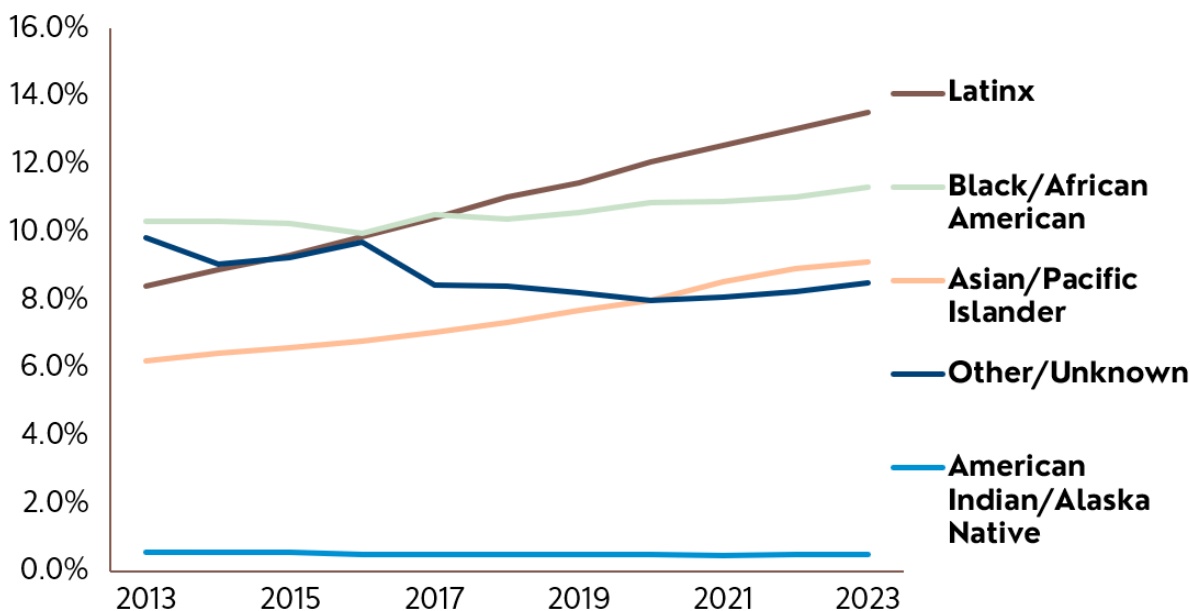
Trends in Total Graduate Enrollment

Total graduate enrollment fell slightly by 0.7% between Fall 2022 and Fall 2023 at the institutions responding to the CGS/ETS Survey of Graduate Enrollment and Degrees for both 2022 and 2023, the details of which can be seen in Tables C.14 through C.23.

Over the one-year period, between Fall 2022 and Fall 2023, total graduate enrollment did not change at public institutions (0% change) and decreased by 2.9% at private, not-for-profit institutions. Total graduate enrollment increased on average by 1.6% annually between Fall 2018 and Fall 2023 and increased on average 1.3% annually during the ten-year period between Fall 2013 and Fall 2023 (Table C.14).

Between Fall 2022 and Fall 2023, the total graduate enrollment of U.S. citizens and permanent residents decreased by 2.6%. This is a sharp drop from last year's positive but flat 0.6% increase. Total enrollment for international graduate students continued to increase (4.6%) (Table C.15). Total enrollment increased slightly both for men and women, by 1.0% and 1.4% respectively between Fall 2022 and Fall 2023 (Table C.16).

Figure 8. Percentage Shares in Total Graduate Enrollment of U.S. Citizens and Permanent Residents by Selected Race/Ethnicity, Fall 2013 to Fall 2023



Note: Trends were developed based upon institutions that provided data for all years 2013 to 2023; the numbers of first-time enrollments do not match data in the tables.

Source: CGS/ETS Survey of Graduate Enrollment and Degrees

By fields of study, total graduate enrollment experienced a mix of increases and decreases across most broad fields over the past year. Fields that increased were Mathematics and Computer Science (7.9%), Physical and Earth Sciences (4.4%), Biological and Agricultural Sciences (3.4%), and Other Fields (2.7%). Fields that decreased were Business (4.8%), Arts and Humanities (4.5%), Education (3.8%), Health Sciences (2.5%), Public Administration and Services (2.5%), and Social and Behavioral Sciences (1.5%) (Table C.17).

By attendance status, there was a 2.6% decrease in total part-time graduate enrollment between Fall 2022 and Fall 2023. This was driven by Arts and Humanities, which experienced a large 8.0% decrease over the one year. Total part-time graduate enrollment experienced the strongest gains in Mathematics and Computer Sciences (9.1%), Physical and Earth Sciences (11.3%), and Biological and Agricultural Sciences (1.0%). All other broad fields in the part-time category experienced decreases mainly between 3.0% and 6.0% (Table C.18). Looking particularly at Master's students, the majority of enrolled students at

Master's Colleges and Universities were part-time students (54.1%) (Table B.12). This distinction signals how important it is for universities to develop the academic and other supports necessary for these students to complete their degrees.

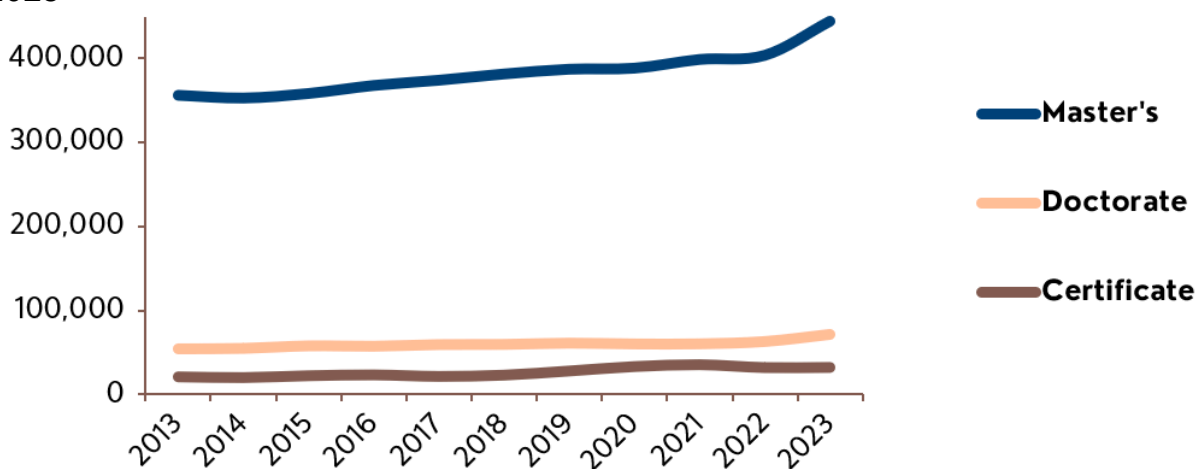
This year there was a mix of increases and decreases of total graduate enrollment among underrepresented minorities. Between Fall 2022 and Fall 2023, total enrollment fell by 0.4% among Asian students, 0.3% among Asian/Pacific Islander students, and 0.9% among American Indian/Alaskan Native students. However, Native Hawaiian/Other Pacific Islander students increased by 3.8%, Black/African American students increased by 1.6%, and Latinx students also increased by 1.5%. Total graduate enrollment among White students decreased by 4.8% between Fall 2022 and Fall 2023 (Table C.20).

Over the last ten years, while the Latinx total graduate enrollment grew on average by 6.8% annually, between Fall 2013 and Fall 2023, the total enrollment of Black/African American students grew only by 1.2% each year on average during the same period (Figure 8). The total graduate enrollment of American Indian/Alaska Native students declined on average by 0.9% annually between Fall 2013 and Fall 2023. Despite growth in the past decade, the overall share of underrepresented minorities in total graduate enrollment among U.S. citizens and permanent residents remains disproportionately low (Table C.20).

Trends in Degrees and Graduate Certificates

The number of doctoral degrees awarded increased by 9.8% between 2021-22 and 2022-23 at institutions responding to the 2023 CGS/ETS Survey of Graduate Enrollment and Degrees. During the same period, the number of master's degrees awarded also increased greatly by 9.0% while the number of graduate certificates awarded also increased by 5.5%. Between 2017-18 and 2022-23, increases in master's degree production (3.2%) were lower than for doctoral degree production (3.7%). Over the ten-year period between 2012-13 and 2022-23, the average annual change in the number of graduate certificates awarded was 6.2% (Table C.25). Since more master's degrees are awarded than doctoral degrees and graduate certificates, the total number of master's degrees earned continues to far exceed the number of doctoral degrees and graduate-level certificates conferred (Figure 9). The large increase in degrees conferred is perhaps explained by students whose educational path was partially or completely disrupted by the COVID-19 pandemic and are now finishing their degrees; this disruption was not captured in this survey. Further details on changes and trends in graduate certificates and degrees awarded can be found in Tables C.24 through C.30.

Figure 9. Trends in Graduate Degrees Awarded by Degree Level, Fall 2013 to Fall 2023



*Note: Trends were developed based upon institutions that provided data for all years 2013 to 2023; therefore, the numbers of total degrees awarded do not match data in the tables.
Source: CGS/ETS Survey of Graduate Enrollment and Degrees*

Graduate-level Certificates Awarded

This year marked a return to the previous growth pattern in the number of graduate certificates awarded as they increased (5.5%) between 2021-22 and 2022-23. In the five-years spanning 2017-18 to 2022-23, the average annual change in the number of graduate certificates awarded was 8.8% (compared to last year's figure of 10.5%). This year's figures seem to be driven by two types of institutions, Doctoral: Very High Research (R1) institutions (9.3%) and doctoral or professional universities (25.5%). Institutions labeled "other" saw a decrease in the number of graduate level certificates awarded during this one year (11.8%), while Master's Colleges and Universities (9.8%) saw an increase (Table C.25). It should also be noted that there are fewer graduate certificates conferred than master's or doctoral degrees.

By field of study, the largest increases in graduate-level certificates awarded between 2021-22 and 2022-23 were in Public Administration and Services (24.3%), Mathematics and Computer Sciences (21.9%), Engineering (10.4%), and Business (10.2%). Declines were observed in Physical and Earth Sciences (21.4%), Arts and Humanities (14.4%), Biological and Agricultural Sciences (6.6%), and Health Sciences (4.8%). Over the past ten years, between 2012-13 and 2022-23, the largest on average increases in the number of graduate-level certificates were in Mathematics and Computer Sciences (16.6%), Business (13.1%), and Other Fields (8.6%) (Table C. 28).

Master's Degrees Awarded

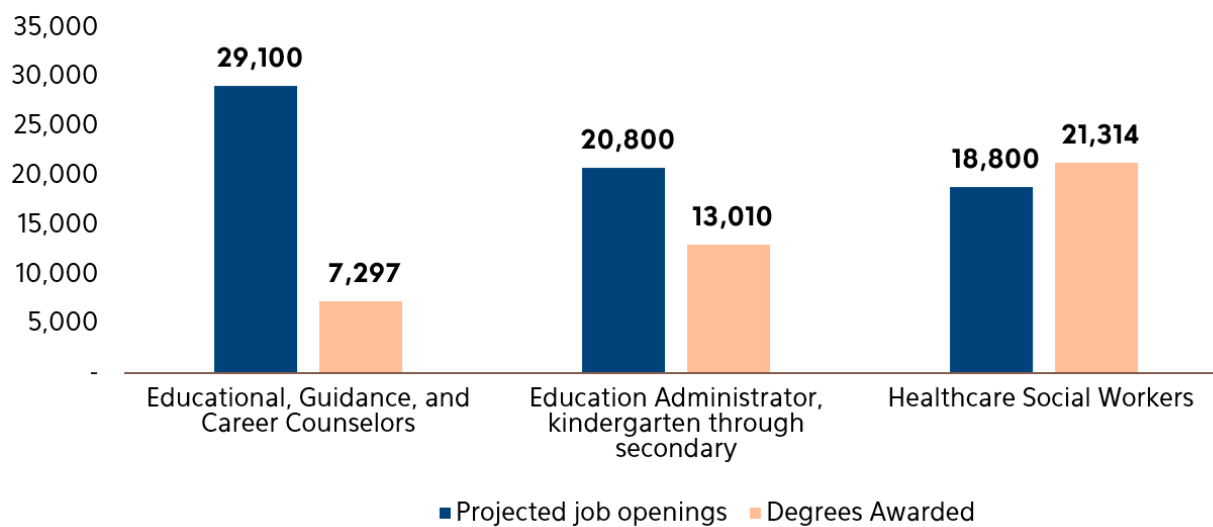
There was a 9.0% increase in master's degree production between 2021-22 and 2022-23, which was much higher than the 5-year (3.2%) and 10-year (2.4%) annual average increase. The average annual percent change for master's degree production increased both at public institutions and private, not-for-profit institutions (10.6% and 10.1%, respectively) (Table C.24). The 9.0% increase in degrees awarded at the master's level between 2021-22 and 2022-23 included increases in ten broad fields of study and decreases in one. The largest one-year increase in master's degree production was in Mathematics and Computer Sciences (56.4%), while Education reported the only decline in master's degree production (5.1%). The number of master's degrees earned by women increased in ten of 11 broad fields of study, including Mathematics and Computer Sciences (59.8%) and Engineering (32.0%). By comparison, the number of master's degrees earned by men increased in nine of 11 fields of study, including Mathematics and Computer Sciences (54.0%) and Engineering (31.1%), between 2021-22 and 2022-23 (Table C.29).

Doctoral Degrees Awarded

The number of doctoral degrees awarded increased over the past year (9.7%), and doctoral degree production grew on average 3.7% annually over the five-year period between 2017-18 and 2022-23 and on average by 3.0% annually over the ten-year period between 2012-13 and 2022-23. The larger five- and ten-year annual percentage changes of doctoral degree production were partly the result of lower base rates of doctoral degrees awarded. Over the one-year period between 2021-22 and 2022-23, doctoral degree production increased mildly at private, not-for-profit institutions and increased moderately at public institutions (1.1% and 4.2%, respectively). In the decade spanning 2012-13 to 2022-23, doctoral degree production increased by 2.0% at public institutions and 2.2% at private, not-for-profit institutions (Table C.24).

At the doctoral level, between 2021-22 and 2022-23, the number of degrees awarded increased in six broad fields, including Physical and Earth Sciences (3.2%), Mathematics and Computer Sciences (2.6%), and Biological and Agricultural Sciences (6.8%). The number of doctorates earned by women increased in only five of eleven fields, compared to eight last year, the largest being in Business (27.9%), Biological and Agricultural Sciences (11.0%), and Health Sciences (9.2%). The number of doctoral degrees awarded to men decreased in five of 11 fields (Table C.30).

Figure 10. Projected Job Openings and Number of Graduate Degrees Awarded by Selected Fields



Source: 2023 CGS/ETS Survey of Graduate Enrollment & Degrees. Elka Torpey, "Education level and projected openings, 2023–33," Career Outlook, U.S. Bureau of Labor Statistics, August 2024.

Degrees Awarded and Future Employment Trends

It is important to ask how trends in the number of applications, admissions, and graduate degrees awarded impact our everyday lives. One way to explore this topic is by considering how well CGS institutions and regional affiliates are meeting the needs of the U.S. workplace. To accomplish this task, we utilize data from the U.S. Bureau of Labor Statistics (BLS) in concert with GE&D data. In particular, we compare BLS estimates of the top ten occupations projected to have the most job openings each year with the actual number of graduate degrees awarded by institutions participating in the GE&D survey. Our analysis focuses on three fast-growing careers from the top ten (educational, guidance, and career counselors – ranked #3; education administrators – ranked #6; and healthcare social workers – ranked #8) that BLS identified as requiring master’s or doctoral degrees. Moreover, BLS categorization schemes for these fields closely match the taxonomies utilized for the GE&D instrument.

Strikingly, Figure 10 (above) shows that the combined degree production efforts of a majority of U.S. graduate schools fall short of minting around 21,000 much-needed educational, guidance, and career counselors each year. Similarly, our findings suggest that another 7,000 or so graduate degree-trained education administrators are needed to meet BLS demand projections. This is an opportunity for Chancellors, Provosts, and state legislators to provide resources to meet these growing workforce needs in the near future. Furthermore, given trends in graduate applications, enrollments, and degrees awarded, the data suggests a need for investments in education career pipeline programs and degree completion initiatives. On the other hand, our GE&D measure of graduate social work degrees awarded indicates that the number of career ready professionals coming out of graduate schools is in line with the large number of job openings in the field.⁶

⁶ Our GE&D measure of Social Work includes some social workers who work in youth services or other general fields.



The CGS Graduate Enrollment and Degrees Report, published annually since 1986, presents the findings of the CGS/ETS Survey of Graduate Enrollment and Degrees and is a joint project of the Council of Graduate Schools (CGS) and the Educational Testing Service (ETS).

This report is the most current version of the only national survey that collects data on first-time and total graduate enrollment across all fields of master's and research doctorate programs in the United States.