

STATS IN BRIEF

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Trends in Subbaccalaureate Occupational Awards: 2003 to 2015

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Statistics in Brief publications present descriptive data in tabular formats to provide useful information to a broad audience, including members of the general public. They address simple and topical issues and questions. They do not investigate more complex hypotheses, account for inter-relationships among variables, or support causal inferences. We encourage readers who are interested in more complex questions and in-depth analysis to explore other NCES resources, including publications, online data tools, and public- and restricted-use datasets. See nces.ed.gov and references noted in the body of this document for more information.

Postsecondary education is often equated with earning a bachelor's degree, but a large and growing part of postsecondary education involves earning subbaccalaureate credentials (associate's degrees and certificates) (Horn and Li 2009). For example, from 2004–05 to 2014–15, the number of certificates awarded increased 35 percent and the number of associate's degrees increased 46 percent, while the number of bachelor's degrees increased 32 percent (McFarland et al. 2017). In 2011–12, fully 52 percent of undergraduates who were seeking a credential were seeking either a certificate or an associate's degree (see <https://nces.ed.gov/surveys/ctes/tables/p125.asp>).

Similarly, while some economists have focused on the role of bachelor's degree programs in meeting the demand for skills in the labor market (e.g., Levy and Murnane 2004), others have noted that subbaccalaureate credentials help meet the demand for middle skills—that is, for skills that require additional training beyond high school, but less than a bachelor's degree (Kress 2012). Economists have also noted that although students who earn subbaccalaureate credentials do not earn as much as bachelor's degree completers, these credentials do have larger economic returns, on average,

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compared to high school completion: Adults who earn a postsecondary certificate earn 20 percent more than those with no more than a high school education, and adults who earn an associate's degree earn 44 percent more than those with no more than a high school education (Carnevale, Rose, and Hanson 2012).

This report focuses on the sector of the education system that trains the middle-skill workforce—that is, on subbaccalaureate occupational education.¹ The federal government helps support these programs through the Carl D. Perkins Career and Technical Education Improvement Act of 2006 (P.L. 109-270), and therefore it has an interest in monitoring the size and nature of this educational enterprise. This report describes the output of subbaccalaureate occupational education as of 2015, based on the number and type of credentials (associate's degrees and certificates) awarded by this educational sector, and describes trends in output in the 12 years from 2003 to 2015, often comparing this subbaccalaureate sector to the baccalaureate sector.²

¹ Occupational education is defined here as subbaccalaureate education in the following 13 broad subject areas: agriculture and natural resources; business management; business support; communications and design; computer and information sciences; consumer services; education; engineering, architecture, and science technologies; health sciences; manufacturing, construction, repair, and transportation; marketing; protective services; and public, legal, and social services. See https://nces.ed.gov/surveys/ctes/tables/postsec_tax.asp for more detail on these classifications.

² A separate National Center for Education Statistics (NCES) publication (Hudson 2017) looks at the related topic of changes in the number of postsecondary institutions over time, focusing on changes in institutions that offer subbaccalaureate occupational education.

The report also divides the postsecondary institutions that provide occupational education into three groups: public institutions, private nonprofit institutions, and private for-profit institutions. Trends in the credentials awarded by for-profit institutions are of particular interest, given the relatively rapid growth of the for-profit sector in recent years and continuing concerns about the debt that students at these institutions incur and their labor market outcomes (e.g., Tierney 2012; Denice 2015; Gilpin, Saunders, and Stoddard 2015; Cellini and Turner 2016; Deming et al. 2016).

DATA, MEASURES, AND METHODS

The data for this Statistics in Brief come from the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS). IPEDS is a mandatory collection of data from postsecondary institutions in the United States and other U.S. jurisdictions (e.g., Puerto Rico, the Marshall Islands) that participate in Title IV student financial aid programs, such as Pell Grants and Stafford Loans. These institutions are required by law as part of their Title IV participation agreements to complete portions of IPEDS each year.

IPEDS has a number of survey components, which focus on enrollments, faculty, staff, graduation rates, institutional finances, completions, student financial aid, admissions, and other institutional features. Data for this report come

from IPEDS Institutional Characteristics and Completions Survey components. The Institutional Characteristics component collects information that describes institutions based on their financial control (public, private nonprofit, and private for-profit) and on the highest credential level for which they make an award (e.g., less-than-2-year, 2-year, and 4-year levels). The Completions component collects data on program awards by the level of the credential awarded (certificate, associate's degree, bachelor's degree, master's degree, doctoral degree, and doctor's degree-professional practice). Completions data are reported by the field of study of the completed program as well as by the recipient's gender and race/ethnicity. For this Brief, Institutional Characteristics and Completions data were combined to provide information on the credentials awarded by different types of institutions. The data were combined based on calendar year—for example, spring 2014–15 Completions data were merged with fall 2015–16 Institutional Characteristics data to produce data reported for 2015.³

The analysis in this Brief is restricted to Title IV institutions in the 50 states and the District of Columbia that offer undergraduate credentials (subbaccalaureate certificates, associate's degrees, and bachelor's degrees). These institutions make

³ The data reported here may differ from other published data that are based on files merged by academic year (e.g., spring 2014–15 Completions and fall 2014–15 Institutional Characteristics). The Completions and Institutional Characteristics components were required portions of IPEDS for all years examined in this report.

up about 95 percent of all IPEDS institutions in the Completions component. The analysis draws from a set of tables that are available on the NCES CTE Statistics website at <http://nces.ed.gov/surveys/ctes/tables/index.asp?LEVEL=COLLEGE>. The **Technical Notes** at the end of this Brief provide more detailed information about the IPEDS collections.

No statistical tests are performed in this Brief, because IPEDS is a census, not a sample survey.

POSTSECONDARY INSTITUTIONS AND CREDENTIALS

As mentioned above, this Brief divides postsecondary institutions into public institutions, private nonprofit institutions, and private for-profit institutions. For the sake of brevity, private for-profit institutions are referred to here as for-profit institutions. Consistent with prior NCES analyses of career and technical (i.e., occupational) education,

subbaccalaureate credentials are divided into occupational and academic fields of study, which include the following:⁴

- *Occupational* fields of study: Credentials awarded in the 13 broad subject fields of agriculture and natural resources; business management; business support; communications and design; computer and information sciences; consumer services; education; engineering, architecture, and science technologies; health sciences; manufacturing, construction, repair, and transportation (referred to here as the trades); marketing; protective services; and public, legal, and social services.
- *Academic* fields of study: Credentials awarded in the seven broad subject fields of fine and performing arts; humanities (foreign languages, liberal/general studies, and religion); interdisciplinary studies; letters/English; mathematics; science; and social and behavioral sciences.

Combined with the level of the credential award, these breakouts result in the following three credential categories examined in this Brief: subbaccalaureate occupational credentials, subbaccalaureate academic credentials, and bachelor's degrees. Subbaccalaureate occupational credentials are further divided into occupational certificates and occupational associate's degrees.

IPEDS collects data on credentials' field of study using the NCES Classification of Instructional Programs (CIP). IPEDS data prior to 2003 are based on the 1990 version of CIP and are not used in this Brief. IPEDS data from 2003 forward are based on the 2000 and 2010 versions of CIP and provide the data used in this Brief.

⁴See http://nces.ed.gov/surveys/ctes/tables/postsec_tax.asp for more detail on these categories, including their linkage to the Classification of Instructional Programs (CIP) used by NCES to code postsecondary programs.

STUDY QUESTIONS

1 What is the scope of subbaccalaureate occupational education, and how has it changed over time?

2 What types of institutions award subbaccalaureate occupational credentials, and how have these providers changed over time?

3 In what subject fields are subbaccalaureate occupational credentials awarded, and how have fields of study changed over time?

KEY FINDINGS

- A total of 1,458,010 subbaccalaureate occupational credentials were awarded in 2015. These credentials account for 38 percent of all the undergraduate credentials awarded in 2015 (figure 1).
- The number of subbaccalaureate occupational credential awards increased from 2003 to 2011, then decreased from 2011 to 2015 (figure 2). In contrast, the number of subbaccalaureate academic credential awards and the number of baccalaureate awards increased relatively steadily over this period (figures 2 and 3). As a result of these trends, from 2003 to 2015, the percentage of all undergraduate credential awards that were in subbaccalaureate occupational education increased from 39 to 42, but then decreased to 38 (figure 4).
- In 2015, public institutions awarded almost two-thirds of all subbaccalaureate occupational credentials, whereas for-profit institutions awarded about one-third (figure 5).
- Between 2003 and 2015, public institutions remained the predominant provider of subbaccalaureate occupational credentials. However, the share of such credentials awarded by public institutions decreased from 2003 to 2011 while for-profit institutions' share increased. The trend reversed after 2011, as public institutions gained in their share and for-profit institutions lost in their share (figure 9).
- In 2015, health sciences was the predominant field in which subbaccalaureate occupational credentials were awarded (figure 11).
- Overall, 75 percent of these credentials were awarded in the four subject fields of health sciences, the trades, consumer services, and business management (figure 11).
- From 2003 to 2015, the number of subbaccalaureate credentials awarded increased in 10 of the 13 occupational fields of study, but the number decreased in marketing, business support, and computer and information sciences (figure 15).

1

What is the scope of subbaccalaureate occupational education, and how has it changed over time?

Current scope. In 2015, a total of 1,458,010 subbaccalaureate occupational credentials were awarded by Title IV postsecondary institutions in the United States (data not shown; see <https://nces.ed.gov/surveys/ctes/tables/P163.asp>). These credentials accounted for 38 percent of all undergraduate credentials and 74 percent of all subbaccalaureate credentials.

Among the 38 percent of subbaccalaureate occupational credentials awarded in 2015, a majority (61 percent) were certificates rather

than associate's degrees (23/[23+15] from figure 1). Specifically, 23 percent of all undergraduate credentials awarded in 2015 were occupational certificates, and 15 percent were occupational associate's degrees (figure 1).

Trends in scope. From 2003 to 2015, all three types of credentials—subbaccalaureate occupational credentials, subbaccalaureate academic credentials, and bachelor's degrees—increased in number (figure 2). Overall, the number of undergraduate credential awards

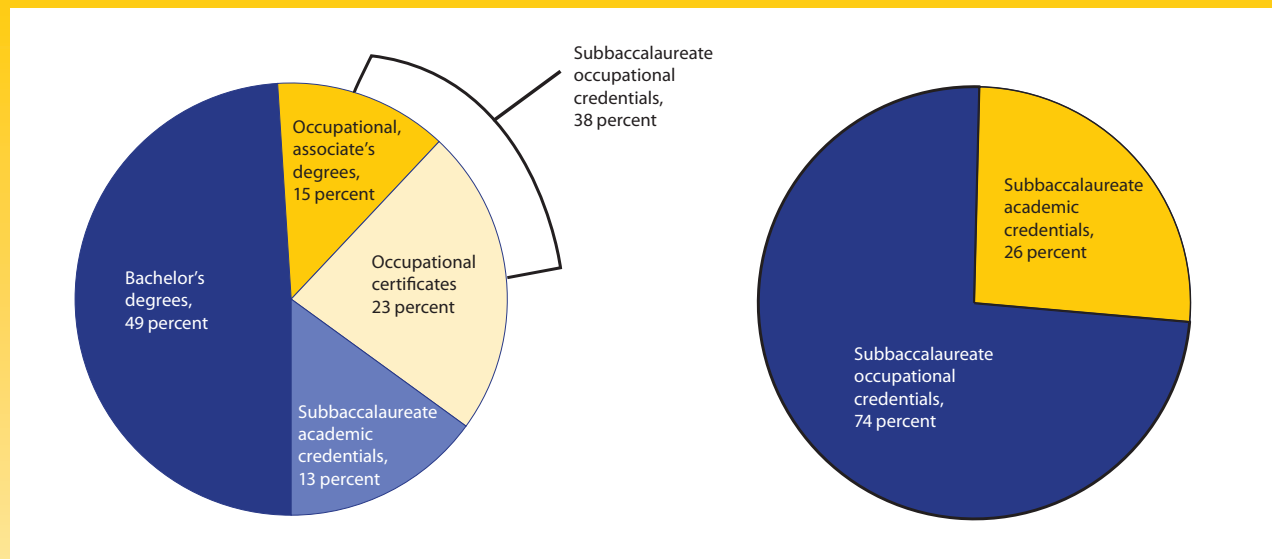
increased 47 percent, from about 2.63 million to about 3.87 million (not in figures). The number of subbaccalaureate occupational credentials increased 44 percent, from about 1.01 million to about 1.46 million (figure 2). However, the increase among subbaccalaureate occupational credentials followed a pattern different from that for the two other types of undergraduate credentials (bachelor's degrees and subbaccalaureate academic credentials). As figure 2 shows, subbaccalaureate occupational credentials experienced a relatively steep rise in number from 2009

FIGURE 1.

DISTRIBUTION OF CREDENTIALS

Percentage distribution of undergraduate credentials, by credential level and broad curriculum area: 2015

Percentage distribution of subbaccalaureate credentials, by broad curriculum area: 2015



NOTE: Percentages derived from data in table P160 at <https://nces.ed.gov/surveys/ctes/tables/P160.asp> (bachelor's degrees and all undergraduate credentials), table P161 at <https://nces.ed.gov/surveys/ctes/tables/P161.asp> (subbaccalaureate occupational credentials), and table P166 at <https://nces.ed.gov/surveys/ctes/tables/P166.asp> (subbaccalaureate occupational credentials).

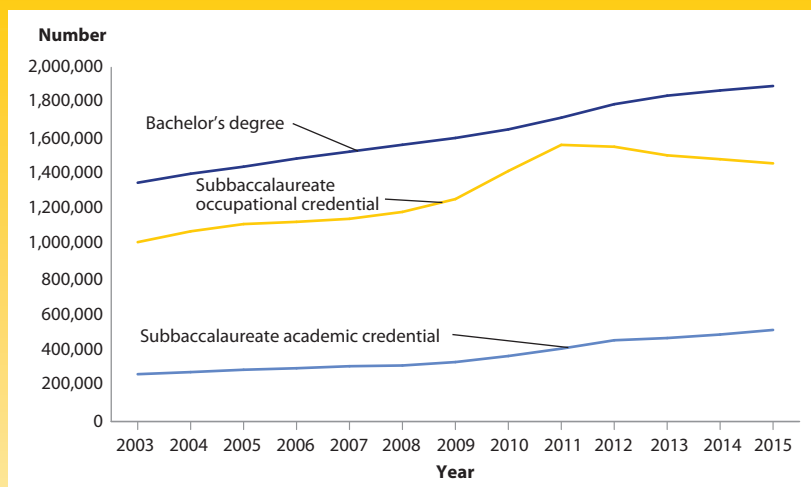
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2015–16 Institutional Characteristics component and 2014–15 Completions component.

through 2011, the 2 years after the end of the Great Recession,⁵ followed by a decline in number from the peak in 2011 through 2015. Figure 3, which breaks out the bachelor's degrees in figure 2 into occupational and academic fields, shows that this more uneven pattern of change was unique to subbaccalaureate occupational education, as bachelor's degrees in occupational fields follow a more linear pattern. As will be seen in the section on "Trends in providers" under Question 2, this pattern of a steep rise followed by decline coincides with changes among for-profit institutions.

Reflecting the trends in subbaccalaureate occupational credential numbers, the *percentage* of all undergraduate credentials that were subbaccalaureate occupational credentials was relatively constant over most of this period (38 or 39 percent), but peaked at 42 percent in 2011 (figure 4).

FIGURE 2.

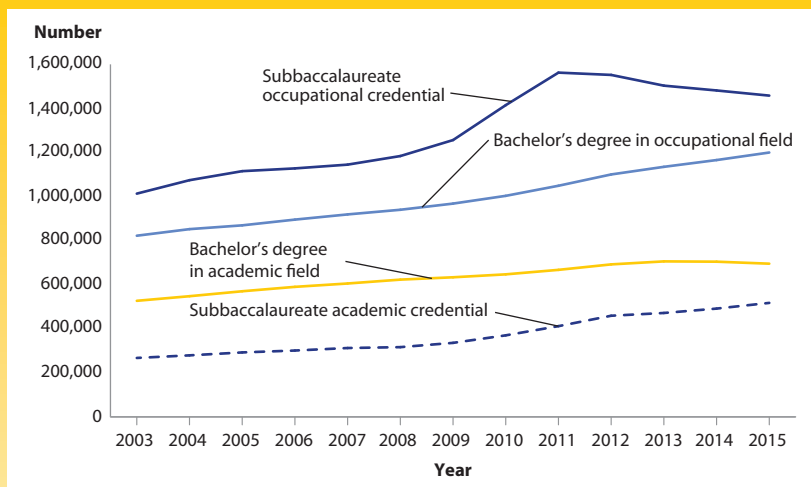
TREND IN CREDENTIAL AWARDS
Number of undergraduate credentials awarded, by credential level and broad curriculum area: 2003 to 2015



NOTE: Bachelor's degree counts are from table P160 at <https://nces.ed.gov/surveys/ctes/tables/P160.asp>; subbaccalaureate counts are from table P161 at <https://nces.ed.gov/surveys/ctes/tables/P161.asp>.
 SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Institutional Characteristics and Completions components, various years.

FIGURE 3.

TREND IN OCCUPATIONAL AND ACADEMIC CREDENTIALS
Number of occupational and academic credentials awarded, by credential level: 2003 to 2015



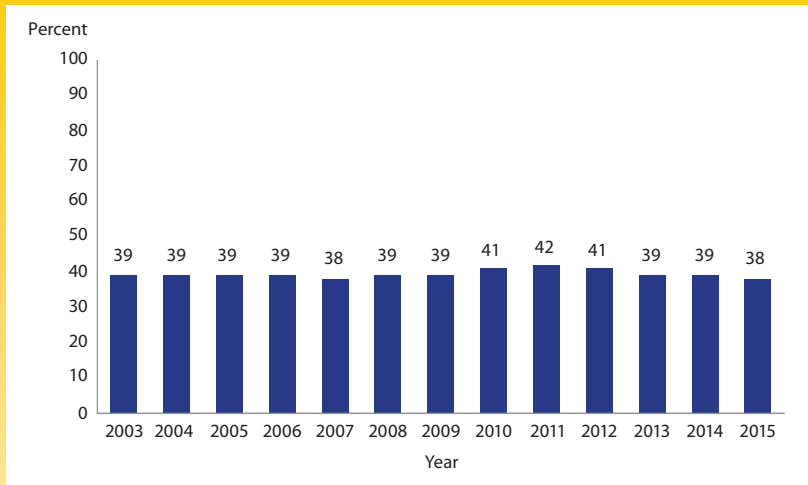
NOTE: Bachelor's degree counts are from table P171 at <https://nces.ed.gov/surveys/ctes/tables/P171.asp>; subbaccalaureate counts are from table P161 at <https://nces.ed.gov/surveys/ctes/tables/P161.asp>.
 SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Institutional Characteristics and Completions components, various years.

⁵The Great Recession began December 2007 and ended June 2009 (<https://www.federalreservehistory.org/essays/great-recession-of-200709>).

FIGURE 4.

TREND IN OCCUPATIONAL CREDENTIALS

Percentage of all undergraduate credentials that were subbaccalaureate occupational credentials: 2003 to 2015



NOTE: Percentages derived from data in table P160 at <https://nces.ed.gov/surveys/ctes/tables/P160.asp> (all undergraduate credentials) and table P161 at <https://nces.ed.gov/surveys/ctes/tables/P161.asp> (subbaccalaureate occupational credentials).

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Institutional Characteristics and Completions components, various years.

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What types of institutions award subbaccalaureate occupational credentials, and how have these providers changed over time?

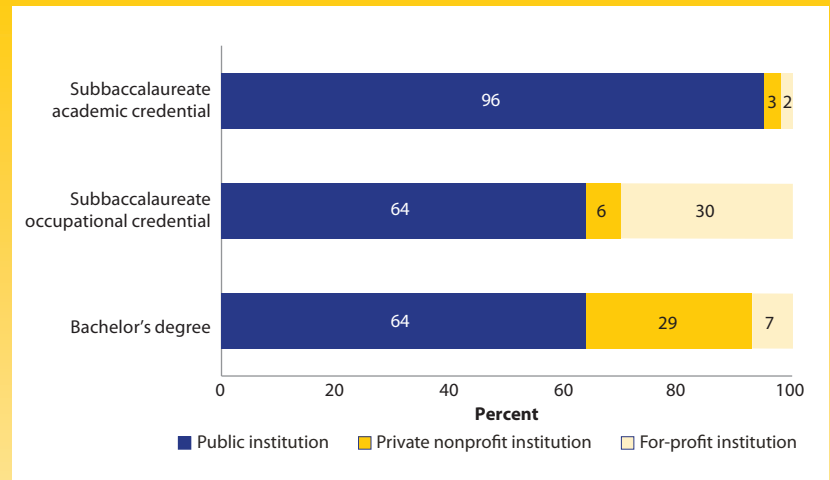
Current providers. Public institutions were the predominant providers of subbaccalaureate occupational credentials in 2015, accounting for 64 percent of these awards (figure 5). For-profit institutions awarded almost one-third (30 percent) of such credentials, whereas private nonprofit institutions awarded 6 percent. Public institutions also awarded 64 percent of bachelor's degrees; however, private nonprofit institutions awarded a larger share of bachelor's degrees than of subbaccalaureate occupational credentials, while the opposite was true for for-profit institutions. Overall, subbaccalaureate academic credentials were almost exclusively awarded by public institutions (providing 96 percent of these credentials), with private nonprofit and for-profit institutions providing only 3 and 2 percent of these credentials, respectively.⁶

In 2015, public institutions awarded the majority of both occupational certificates and occupational associate's degrees (61 and 69 percent, respectively; figure 6). Private nonprofit institutions awarded relatively few occupational credentials at both levels (5 and 8 percent).

⁶Note that the National Postsecondary Education Cooperative found that some public institutions award and report to IPEDS "liberal arts" certificates for students who have met the academic requirements to transfer from a 2-year to a 4-year program (Miller et al. 2016). This practice could account, in part, for the relatively high proportion of subbaccalaureate academic credentials awarded by public institutions.

FIGURE 5.

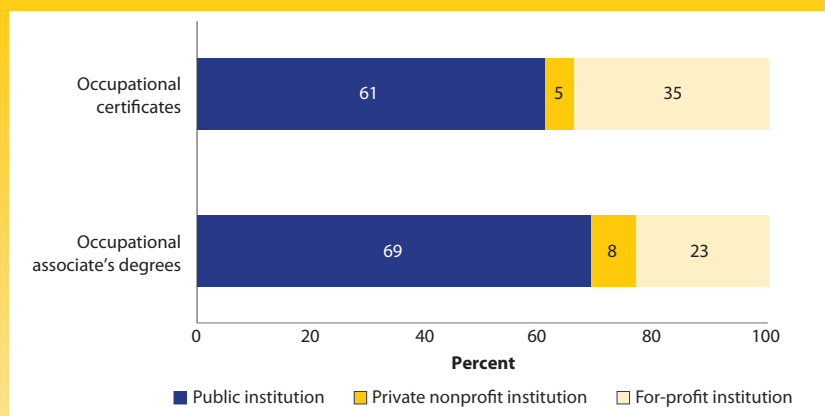
CREDENTIALS BY TYPE OF INSTITUTION
Percentage distribution of each type of undergraduate credential, by control of institution: 2015



NOTE: Percentages derived from data in table P162 at <https://nces.ed.gov/surveys/ctes/tables/P162.asp> (bachelor's degrees and all undergraduate credentials) and table P163 at <https://nces.ed.gov/surveys/ctes/tables/P163.asp> (subbaccalaureate occupational credentials). Detail may not sum to totals because of rounding. SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2015–16 Institutional Characteristics component and 2014–15 Completions component.

FIGURE 6.

OCCUPATIONAL CREDENTIALS BY TYPE OF INSTITUTION
Percentage distribution of subbaccalaureate occupational certificates and associate's degrees, by control of institution: 2015



NOTE: Percentages derived from data in table P163 at <https://nces.ed.gov/surveys/ctes/tables/P163.asp>. Detail may not sum to totals because of rounding. SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2015–16 Institutional Characteristics component and 2014–15 Completions component.

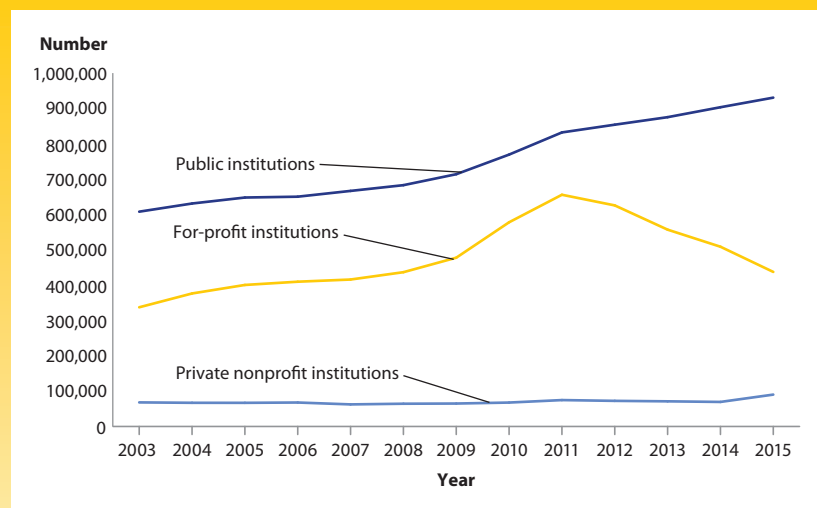
Both public and private nonprofit institutions awarded a higher share of occupational associate's degrees than of certificates; for-profit institutions, in contrast, awarded 35 percent of occupational certificates but only 23 percent of occupational associate's degrees.

Trends in providers. From 2003 to 2015, the number of subbaccalaureate occupational credential awards increased among public, private nonprofit, and for-profit institutions. However, public institutions had a 53 percent increase in credential awards over this period, while private nonprofit and for-profit institutions each had increases of about 30 percent (32 and 30 percent, respectively). As figure 7 shows, the pattern of change among for-profit institutions was notably different from that for public and private nonprofit institutions. While public institutions experienced constant and steady increases from 2003 to 2015, for-profit institutions experienced relatively rapid growth from 2008 to 2011, with a sharp decline after that. One factor that could contribute to this pattern is the trend in for-profit institution openings and closures, which resulted in a net loss of for-profit institutions beginning in 2011 (figure 8).

As a result of these changes in the number of credential awards, trends in the share of subbaccalaureate occupational credentials awarded by each type of institution shifted in 2011 (figure 9). From 2003 to 2011, the share of such credentials awarded by

FIGURE 7.

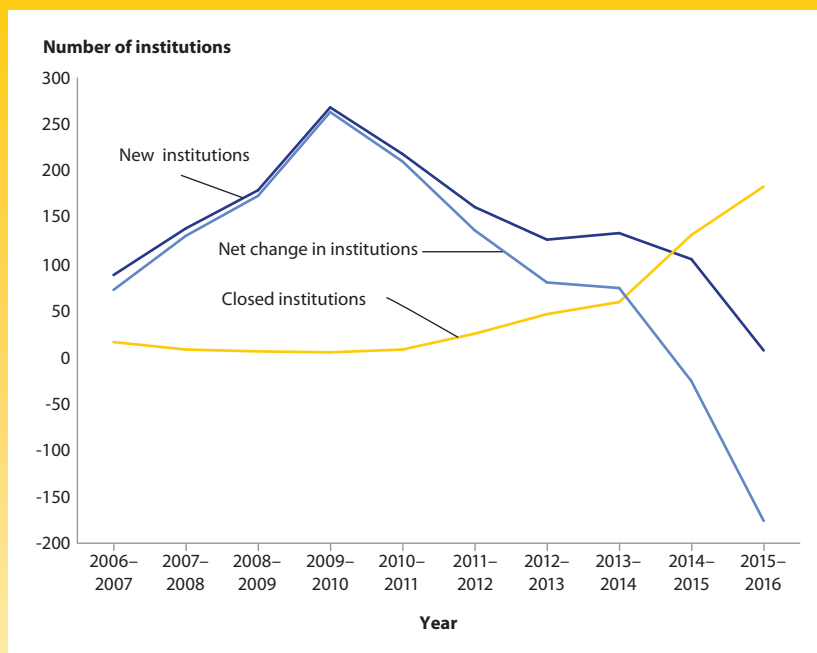
INSTITUTION TRENDS IN OCCUPATIONAL CREDENTIALS
Number of subbaccalaureate occupational credentials awarded, by type of institution: 2003 to 2015



NOTE: Counts are from table P163 at <https://nces.ed.gov/surveys/ctes/tables/P163.asp>.
 SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Institutional Characteristics and Completions components, various years.

FIGURE 8.

CHANGE IN NUMBER OF FOR-PROFIT INSTITUTIONS
Number of closed and new for-profit institutions, and net change in number of institutions: 2006–2007 to 2015–2016



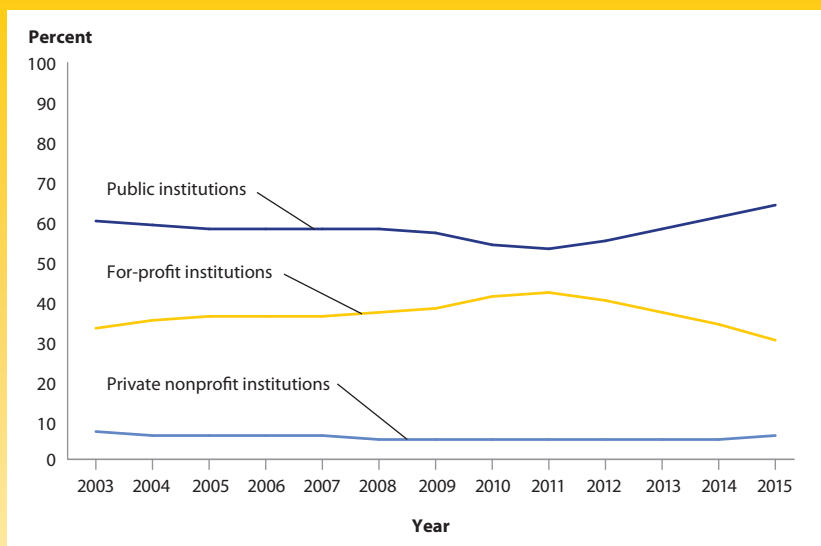
NOTE: Counts are from table P172 at <https://nces.ed.gov/surveys/ctes/tables/P172.asp>.
 SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Institutional Characteristics component, various years.

public institutions declined, while the share awarded by for-profit institutions increased. Since 2011, however, public institutions have gained in their share while for-profit institutions have lost share. The net result is that, from 2003 to 2015, public institutions increased their share of subbaccalaureate occupational credentials from 60 to 64 percent, while for-profit institutions' share decreased from 33 to 30 percent.

This overall trend in subbaccalaureate occupational credentials reflects mainly changes in certificate awards. As figure 10 shows, certificates follow the overall pattern, with public institutions awarding a larger share of all certificates in 2015 than in 2003 (61 versus 55 percent), while for-profit institutions awarded a smaller share (35 versus 40 percent). But at the associate's degree level, public institutions had only a 1 percentage-point increase in share from 2003 to 2015, while for-profit institutions had no change in share.

FIGURE 9.

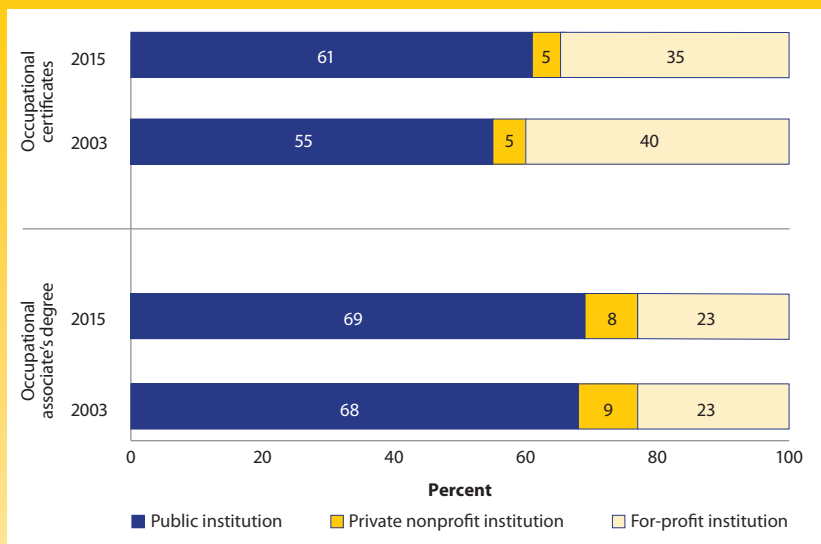
TRENDS IN INSTITUTIONS' SHARE OF OCCUPATIONAL CREDENTIALS
Percentage distribution of subbaccalaureate occupational credentials awarded by each type of institution: 2003 to 2015



NOTE: Percentages derived from data in table P163 at <https://nces.ed.gov/surveys/ctes/tables/P163.asp>. SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Institutional Characteristics and Completions components, various years.

FIGURE 10.

CHANGE IN DISTRIBUTION OF OCCUPATIONAL CREDENTIALS
Percentage distribution of occupational certificates and occupational associate's degrees, by control of institution: 2003 and 2015



NOTE: Percentages derived from data in table P163 at <https://nces.ed.gov/surveys/ctes/tables/P163.asp>. Detail may not sum to totals because of rounding. SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2003–04 and 2015–16 Institutional Characteristics component, and 2002–2003 and 2014–15 Completions component.

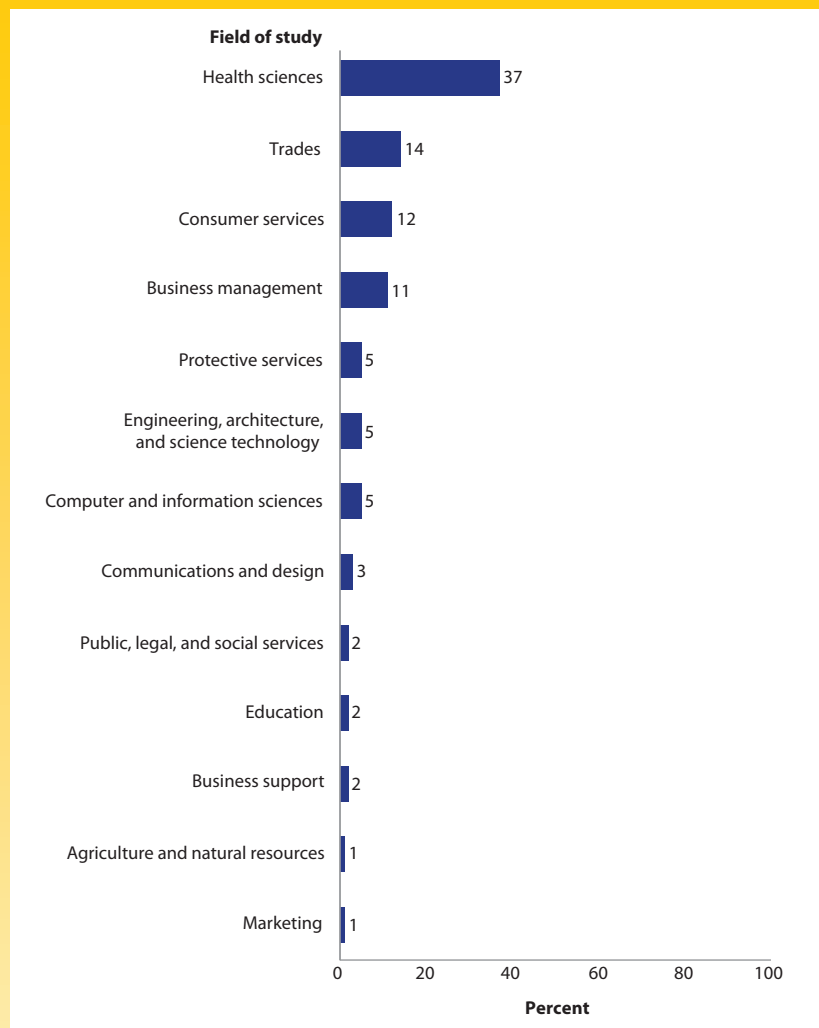
3 In what subject fields are subbaccalaureate occupational credentials awarded, and how have fields of study changed over time?

Current fields of study. Health sciences was the predominant field in which subbaccalaureate occupational credentials were awarded in 2015, accounting for over one-third (37 percent) of these credentials (figure 11). Overall, 75 percent of all subbaccalaureate occupational credentials were awarded in four subject fields: health sciences (37 percent), the trades (14 percent), consumer services (12 percent), and business management (11 percent).⁷ As figure 11 shows, the other 25 percent were awarded in nine other fields that each accounted for 1 to 5 percent of these credentials.

With a few notable exceptions discussed below, the overall distribution of subject fields is similar for occupational certificates and associate’s degrees (figure 12). In 2015, health sciences was the predominant field of study at both levels, while nine relatively small fields each accounted for fewer than 10 percent of credentials at both levels (protective services; engineering, architecture, and science technologies; computer and information sciences; communications and design; public, legal, and social services; education; business support; agriculture and natural resources; and marketing). Three fields with relatively large distributional differences stand

FIGURE 11.

OCCUPATIONAL CREDENTIALS BY FIELD OF STUDY
Percentage distribution of subbaccalaureate occupational credential awards, by broad field of study: 2015



NOTE: Percentages derived from data in table P166 at <https://nces.ed.gov/surveys/ctes/tables/P166.asp>. SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2015–16 Institutional Characteristics component and 2014–15 Completions component.

out: Credentials in the trades and in consumer services were awarded more than twice as often at the certificate

level than at the associate’s degree level; in addition, credentials in business management were awarded

⁷The 75 percent differs from the sum of the component percentages in figure 11 because the figure percentages are rounded.

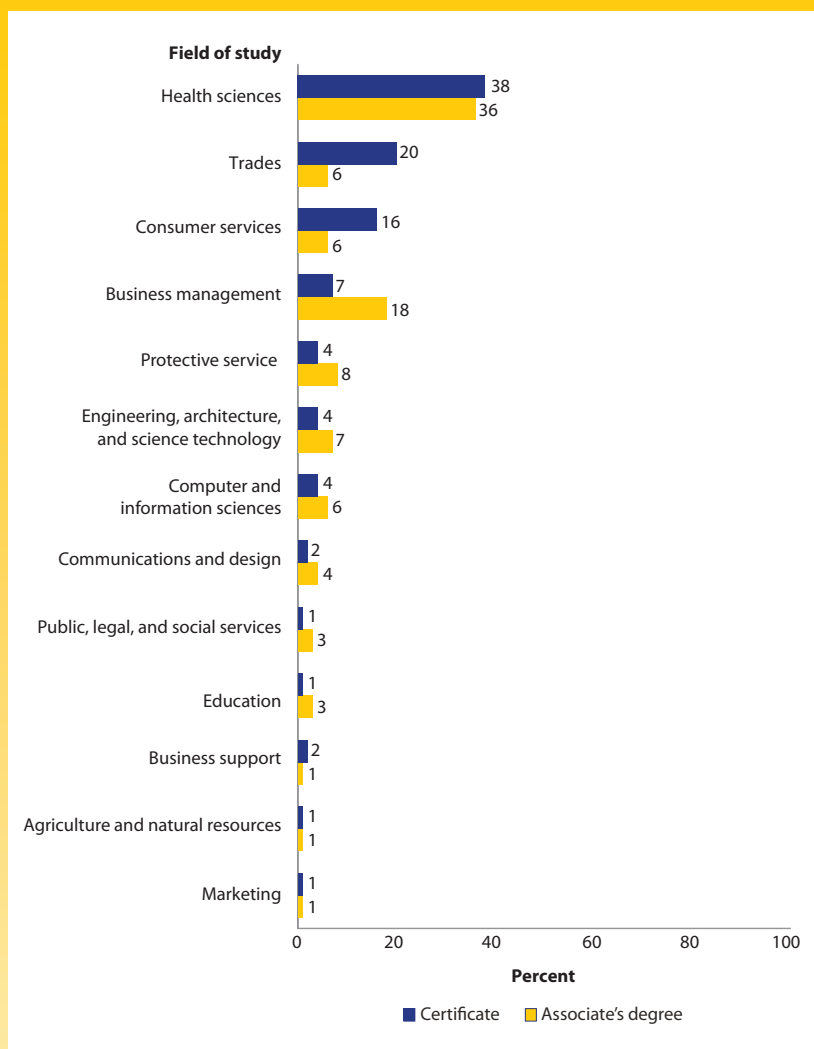
more than twice as often at the associate's degree level than at the certificate level.

In addition to the analysis of the distribution of subject fields within each credential level, subject fields were also examined across credential levels. As previously noted, 61 percent of all 2015 subbaccalaureate occupational credentials were certificates; however, that percentage varied from 33 to 85 percent among the 13 subject fields (figure 13). Certificates were more heavily predominant (making up over 60 percent of credentials) in four fields: the trades, consumer services, business support, and health sciences. Credentials were roughly evenly split between certificates and associate's degrees (no more than 60 percent at either level) in the six fields of computer and information science; marketing; engineering, architecture, and science technologies; protective services; agriculture and natural resources; and communications and design—although associate's degrees were more prevalent than certificates in each of these fields. Associate's degrees were more heavily predominant (making up over 60 percent of credentials) in the three fields of education; business management; and public, legal, and social services.

Another way to examine subject fields is to look at the percentage of all subbaccalaureate occupational credentials that were awarded in each combination of credential level and subject field. As figure 14 shows, the

FIGURE 12.

OCCUPATIONAL CERTIFICATES AND ASSOCIATE'S DEGREES, BY FIELD OF STUDY
Percentage distribution of occupational certificates and occupational associate's degrees, by broad field of study: 2015



NOTE: Percentages derived from data in table P167 at <https://nces.ed.gov/surveys/ctes/tables/P167.asp> (certificates) and table P170 at <https://nces.ed.gov/surveys/ctes/tables/P170.asp> (associate's degrees). Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2015–16 Institutional Characteristics component and 2014–15 Completions component.

largest proportion of subbaccalaureate occupational credentials were certificates in health sciences (23 percent of these credentials), followed by associate's degrees in health sciences (14 percent). Next most common were certificates in the trades

(12 percent), followed by certificates in consumer services (10 percent).

Taken together, these findings show that the overall predominance of certificates within subbaccalaureate occupational education arises from the

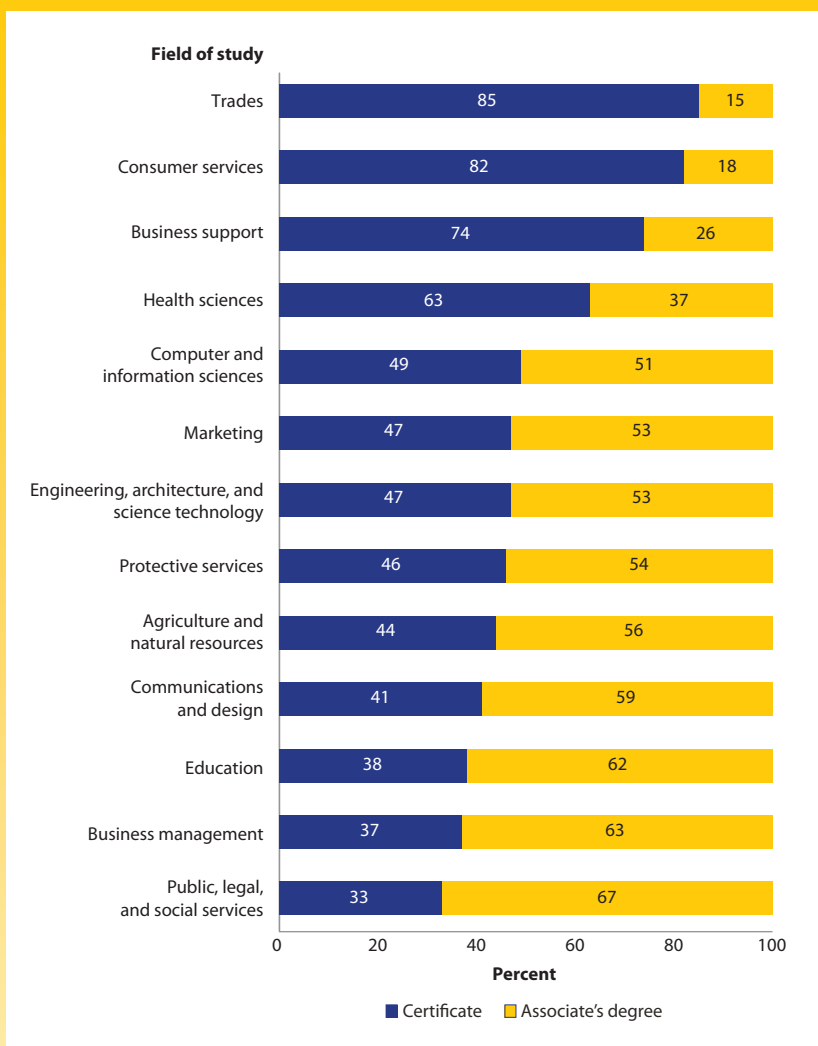
three largest subject fields of health sciences, the trades, and consumer services.

Trends in field of study. From 2003 to 2015, the number of subbaccalaureate occupational credential awards increased by about 449,000, or 47 percent (not in figures; see <https://nces.ed.gov/surveys/ctes/tables/P166.asp>). This overall increase in subbaccalaureate occupational credentials reflects increases in 10 of the 13 broad fields of study (figure 15). For three fields—marketing, business support, and computer and information sciences—the number of credential awards declined from 2003 to 2015.

About half (49 percent) of the overall increase in subbaccalaureate occupational credential awards was due to the increase in health sciences (not in figures; see <https://nces.ed.gov/surveys/ctes/tables/P166.asp>). Other fields with relatively large increases over this period were the other occupational fields that were initially largest in 2003—the trades, consumer services, and business management. Percentage change shows a somewhat different picture, as it indicates change relative to the initial size of an occupational field. Six fields stand out as having relatively large percentage increases of 50 percent or more: protective services, health sciences, the trades, business management, education, and consumer services

FIGURE 13.

LEVEL OF OCCUPATIONAL CREDENTIALS IN EACH SUBJECT FIELD
Percentage distribution of subbaccalaureate occupational certificates and associate's degrees, by broad subject field: 2015



NOTE: Percentages derived from data in table P167 at <https://nces.ed.gov/surveys/ctes/tables/P167.asp> (certificates) and table P170 at <https://nces.ed.gov/surveys/ctes/tables/P170.asp> (associate's degrees).
 SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2015–16 Institutional Characteristics component and 2014–15 Completions component.

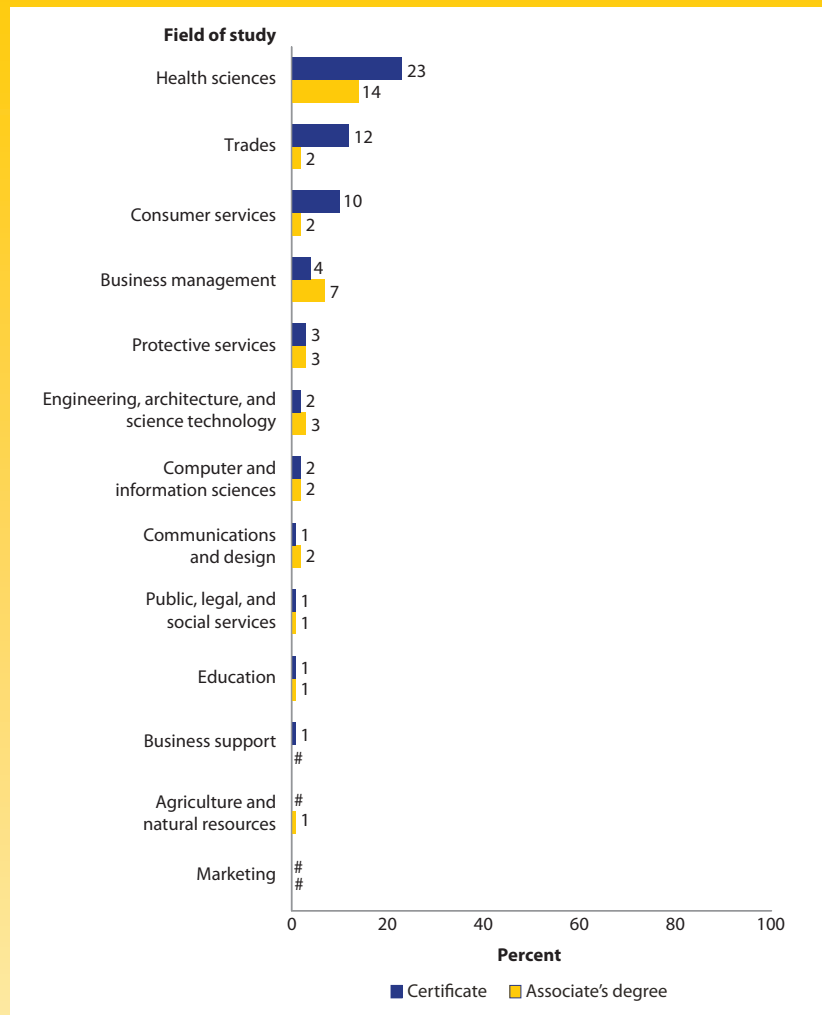
(figure 16). Health sciences thus had the largest numeric increase in credential awards and had one of the largest percentage increases as well (69 percent).

Looking at fields with declines in credential awards, computer and information sciences was the largest of the three fields with declines. This subject field had the largest numeric

decline in credential awards, but it had the smallest percentage decline. Credentials in business support declined by 35 percent, in marketing by 32 percent, and in computer and information sciences by 21 percent. Thus, relative to the initial size of a credential field, business support experienced the largest decline in subbaccalaureate occupational awards from 2003 to 2015.

FIGURE 14.

SUBJECT FIELDS ACROSS OCCUPATIONAL CERTIFICATES AND ASSOCIATE'S DEGREES
Percentage distribution of subbaccalaureate occupational credentials, by credential level and broad field of study: 2015



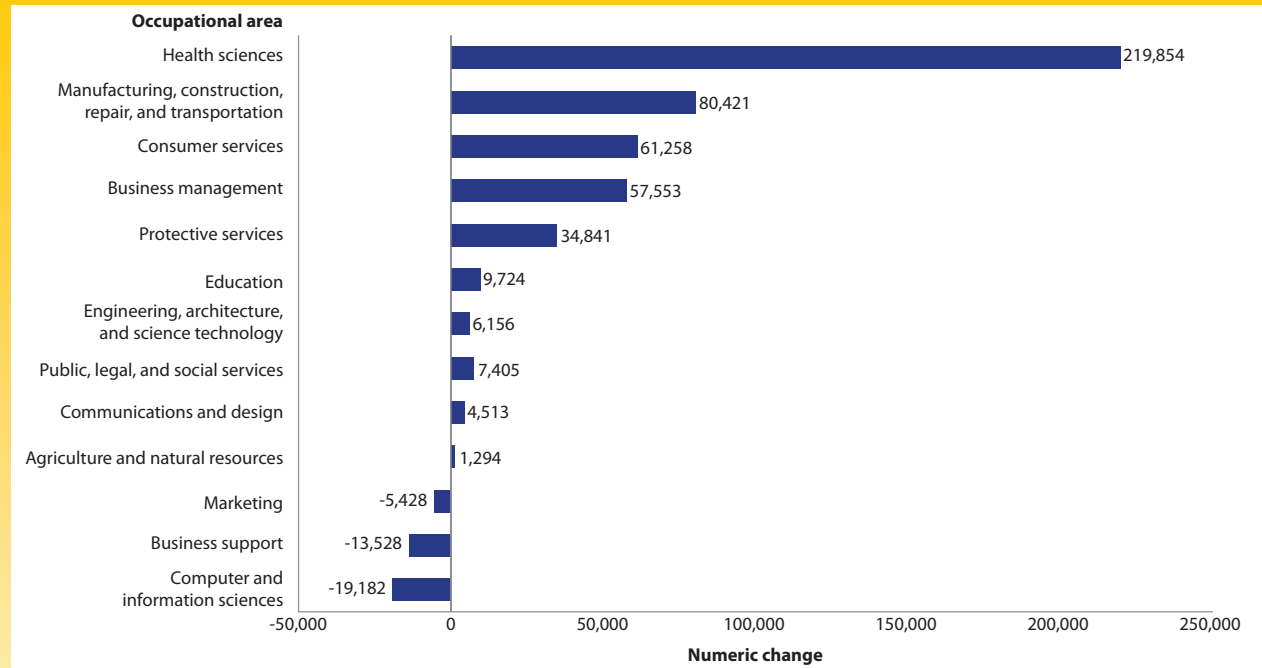
Rounds to zero.

NOTE: Percentages derived from data in table P167 at <https://nces.ed.gov/surveys/ctes/tables/P167.asp> (certificates) and table P170 at <https://nces.ed.gov/surveys/ctes/tables/P170.asp> (associate's degrees).

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2015–16 Institutional Characteristics component and 2014–15 Completions component.

FIGURE 15.

NUMERIC CHANGE IN OCCUPATIONAL CREDENTIALS IN EACH SUBJECT FIELD
Change in the number of undergraduate credentials awarded in each occupational area: 2003 to 2015

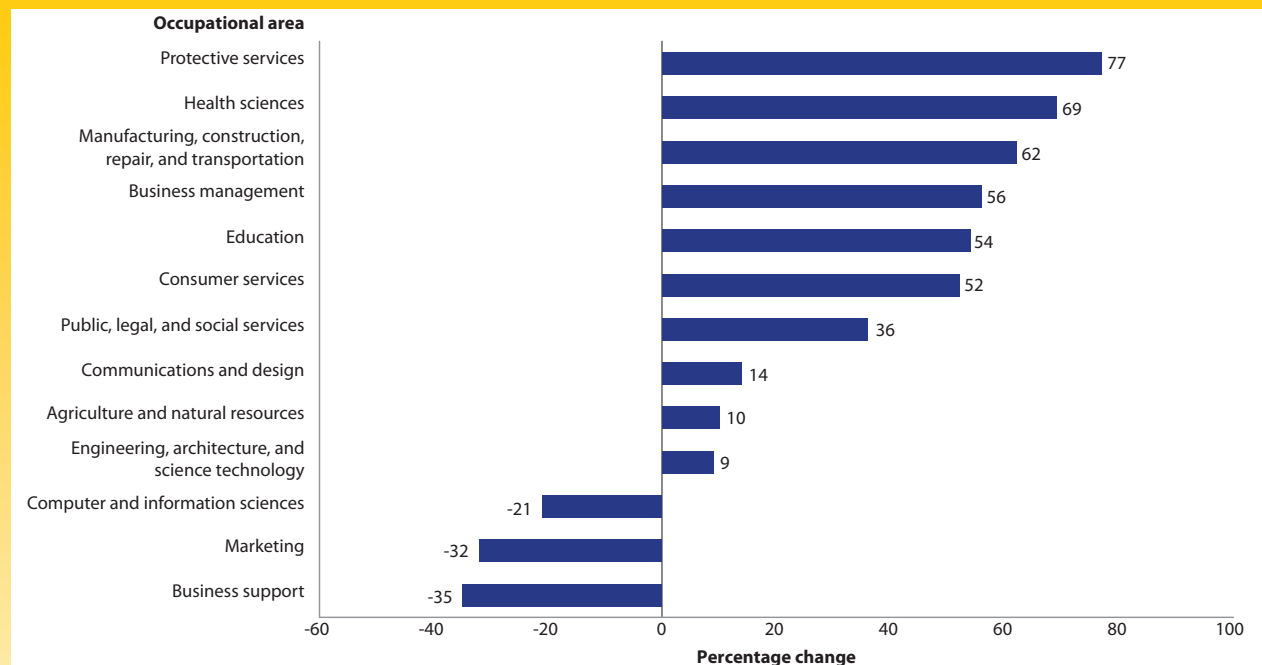


NOTE: Counts derived from data in table P166 at <https://nces.ed.gov/surveys/ctes/tables/P166.asp>.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2003–04 and 2015–16 Institutional Characteristics component and 2002–03 and 2014–15 Completions component.

FIGURE 16.

PERCENTAGE CHANGE IN OCCUPATIONAL CREDENTIALS IN EACH SUBJECT FIELD
Percentage change in undergraduate credentials awarded in each occupational area: 2003 to 2015



NOTE: Percentage change derived from data in table P166 at <https://nces.ed.gov/surveys/ctes/tables/P166.asp>.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2003–04 and 2015–16 Institutional Characteristics component and 2002–03 and 2014–15 Completions component.

TECHNICAL NOTES

The Integrated Postsecondary Education Data System (IPEDS) is a system of 12 interrelated survey components that annually gathers information from every postsecondary institution that participates in federal student financial aid programs.⁸ More than 7,000 institutions complete IPEDS surveys each year. These include research universities, state colleges and universities, private religious and liberal arts colleges, for-profit institutions, community and technical colleges, non-degree-granting institutions such as beauty colleges, and others. IPEDS collects data on postsecondary education in eight areas: institutional characteristics, institutional prices, admissions, enrollment, student financial aid, degrees and certificates conferred, student persistence and success, and institutional resources.

IPEDS began collecting data from all postsecondary institutions in 1986, when it superseded the Higher Education General Information Survey, which was directed at institutions of higher education. In 1992, the focus of IPEDS became Title IV institutions, when the Higher Education Amendments made reporting to IPEDS mandatory for these institutions. Although other institutions may participate on a voluntary basis, most analyses of IPEDS data focus on Title IV

⁸ The Higher Education Act of 1965, as amended (20 U.S.C. 1094, sec. 487(a)(17) and 34 C.F.R. sec. 668 14(b) (19)), requires that institutions that participate in federal student aid programs report data to IPEDS.

Table A-1. IPEDS postsecondary institution universe size, for U.S. Title IV institutions: 2003–04 to 2015–16

| Year reported in Brief | Academic year | Number of institutions |
|------------------------|---------------|------------------------|
| 2003 | 2003–04 | 6,412 |
| 2004 | 2004–05 | 6,383 |
| 2005 | 2005–06 | 6,463 |
| 2006 | 2006–07 | 6,536 |
| 2007 | 2007–08 | 6,551 |
| 2008 | 2008–09 | 6,632 |
| 2009 | 2009–10 | 6,742 |
| 2010 | 2010–11 | 7,021 |
| 2011 | 2011–12 | 7,234 |
| 2012 | 2012–13 | 7,253 |
| 2013 | 2013–14 | 7,236 |
| 2014 | 2014–25 | 7,151 |
| 2015 | 2015–16 | 7,021 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Institutional Characteristics file, various years.

institutions.⁹ IPEDS collects information from postsecondary institutions in the United States and other U.S. jurisdictions (such as Puerto Rico and the Marshall Islands). The analysis in this Brief, however, is restricted to institutions in the 50 states and the District of Columbia.

This Brief uses data from 2 of the 12 IPEDS components:

- **Institutional Characteristics:** collects basic data on each institution, such as name, location, level of awards offered, types of programs, control or affiliation,

admission requirements, type of calendar system, tuition and fees, and costs for full-time, full-year students.

- **Completions:** collects detailed data on the number of degrees or other formal awards conferred in each academic year, by degree level, student race/ethnicity, student gender, and 6-digit Classification of Instructional Programs (CIP) code.¹⁰ Completions files from 2003–04 to 2009–10 were collected using the 2000 version of CIP, and Completions files from 2010–11 to 2014–15 were collected using the 2010 version of CIP.

⁹ For example, most of the IPEDS-based tables in the annual *Digest of Education Statistics* are restricted to Title IV institutions.

¹⁰ Additional information on the Classification of Instructional Programs can be found at <https://nces.ed.gov/ipeds/cipcode>.

The Institutional Characteristics and Completions data were combined to provide information on the credentials awarded by different types of institutions. Data were combined based on calendar year—for example, the spring 2014–2015 Completions data were merged with fall 2015–16 Institutional Characteristics data to provide estimates for 2015. Table A-1 lists the size of the IPEDS Title IV U.S. postsecondary institution universe for each year included in this Statistics in Brief, based on Institutional Characteristics files. Exhibit A-1 includes a list of the variables used in the analysis.

Response Rates and Imputation Procedures

Beginning with the 1999–2000 IPEDS data collection, a number of changes were made to IPEDS, including an improved reporting process through a web-based data collection system and an increased emphasis on the compulsory nature of IPEDS reporting. These changes have resulted in response rates of nearly 100 percent for all IPEDS components. Information on response rates for each IPEDS year is available in the *First Look* reports containing the data for each IPEDS annual collection.

All components of the IPEDS collection are subject to imputation for nonresponse—both institutional (unit) nonresponse and item nonresponse (should any exist within the component). With the exception

| Variable content | Variable name in the data file |
|--|--------------------------------|
| Institutional Characteristics file | |
| Institution ID number | UNITID |
| Whether institution offers undergraduate degrees or certificates | UGOFFER |
| Whether institution is a Title IV institution | PSET4FLG |
| State code | FIPS |
| Control of institution (public, private nonprofit, private for-profit) | CONTROL |
| Level of highest credential awarded | ICLEVEL |
| Combination of control and level (public 4-year, etc.) | SECTOR |
| Completions file | |
| Institution ID number | UNITID |
| Identifies all awards (for both males and females) | CTOTALT |
| Level of award | AWLEVEL |
| Whether award is first or second major | MAJORNUM |
| Subject field of award | CIPCODE |

of the Institutional Characteristics component, all items collected in each component are eligible for imputation. Within the Institutional Characteristics component, only cost of attendance and other institutional charges data are eligible for imputation.

Only institutions with the following characteristics are candidates for imputation or to serve as donors:

- The institution must participate in Title IV student financial aid programs.
- The institution must be currently active in IPEDS.¹¹

- The institution must not be a child institution (i.e., an institution for which IPEDS data are reported by another institution, referred to as the parent institution).
- For the Completions component, the institution must not be an administrative office, and the institution must not be new to the IPEDS universe.

IPEDS applies a single imputation method for both unit and item nonresponse: The Nearest Neighbor procedure identifies data related to the key statistics of interest for each component (the distance measure), then uses those data to identify a

¹¹Prior to imputation, institutions that do not respond to IPEDS are verified as currently active (open for business) through telephone calls or e-mail.

responding institution similar to the nonresponding institution and uses the respondent's data as a substitute for the nonrespondent's missing item(s).

Tabular Statistics and Statistical Testing

The numbers and percentages from which the figures in this Brief were constructed are available in tabular format on the NCES *CTE Statistics*

website, at <https://nces.ed.gov/surveys/ctes/tables/index.asp?LEVEL=COLLEGE>.

No statistical tests were performed in this Brief, because IPEDS is a census, not a sample survey. All differences across groups and time represent real differences in the population.

REFERENCES

- Carnevale, A.P., Rose, S.J., and Hanson, A.R. (2012). *Certificates: Gateway to Gainful Employment and College Degrees*. Washington, DC: Georgetown University Center on Education and the Workforce.
- Cellini, S.R., and Turner, N. (2016). *Gainfully Employed? Assessing the Employment and Earnings of For-Profit College Students Using Administrative Data*. National Bureau of Economic Research Working Paper Series No. 22287. Retrieved May 2, 2018, from <http://www.nber.org/papers/w22287>.
- Deming, D.J., Yuchtman, N., Abulafi, A., Goldin, C., and Katz, L.F. (2016). The Value of Postsecondary Credentials in the Labor Market: An Experimental Study. *The American Economic Review*, 106(3): 778–806. Retrieved May 2, 2018, from <https://www.aeaweb.org/articles?id=10.1257/aer.20141757>.
- Denice, P. (2015). Does It Pay to Attend a For-Profit College? Vertical and Horizontal Stratification in Higher Education. *Social Science Research*, 52: 161–178. Retrieved May 2, 2018, from <https://www.sciencedirect.com/science/article/pii/S0049089X15000526>.
- Gilpin, G.A., Saunders, J., and Stoddard, C. (2015). Why Has For-Profit Colleges' Share of Higher Education Expanded So Rapidly? Estimating the Responsiveness to Labor Market Changes. *Economics of Education Review*, 45: 53–63. Retrieved May 2, 2018, from <https://www.sciencedirect.com/science/article/pii/S0272775714001150>.
- Horn, L., and Li, X. (2009). *Changes in Postsecondary Awards Below the Bachelor's Degree: 1997 to 2007* (NCES 2010-167). Washington, DC: National Center for Education Statistics, U.S. Department of Education. Retrieved May 1, 2018, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2010167>.
- Hudson, L. (2017). *Changes in Number and Types of Postsecondary Institutions: 2000 to 2014* (NCES 2017-008). Washington, DC: National Center for Education Statistics, U.S. Department of Education. Retrieved May 2, 2018, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2017008>.
- Kress, A. (2012). A Community-Based Approach to Growing the Middle-Skill Workforce. *Community College Week*, 24(17): 4.
- Levy, F., and Murnane, R. (2004). *The New Division of Labor*. New York: Russell Sage Foundation.
- McFarland, J., Hussar, B., de Brey, C., Snyder, T., Wang, X., Wilkinson-Flicker, S., Gebrekristos, S., Zhang, J., Rathbun, A., Barmer, A., Bullock Mann, F., and Hinz, S. (2017). *The Condition of Education 2017* (NCES 2017-144). Washington, DC: National Center for Education Statistics, U.S. Department of Education. Retrieved May 1, 2018, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2017144>.
- Miller, A., Erwin, M., Richardson, S., and Arntz, M. (2016). *Collecting and Disseminating Data on Certificate Awards*. U.S. Department of Education. Washington, DC: National Postsecondary Education Cooperative. Retrieved August 2, 2017, from <https://nces.ed.gov/ipeds/resource/download/NPECCertificateAwardsData.pdf>.
- Tierney, W.G. (2012). The Conundrum of Profit-Making Institutions in Higher Education. In L.W. Perna (Ed.), *Preparing Today's Students for Tomorrow's Jobs in Metropolitan America* (pp. 149–174). Philadelphia, PA: University of Philadelphia Press.

RUN YOUR OWN ANALYSIS

The IPEDS website includes instructions on how to use IPEDS data, as well as several tools that allow users to analyze IPEDS data; see

<https://nces.ed.gov/ipeds/Home/UseTheData>

The screenshot shows the IPEDS website interface. At the top, there is a navigation bar with the IES and NCES logos, the text 'National Center for Education Statistics', and a search bar. Below the navigation bar is the IPEDS logo and the tagline 'Integrated Postsecondary Education Data System'. A search bar is also present with the text 'Search IPEDS'. To the right of the search bar are icons for home, information, user profile, help, and a menu. Below the navigation bar, the main heading is 'Use the Data' with the subtext 'Access IPEDS data submitted to NCES through our data tools or download the data to conduct your research'. The page is organized into two columns of tool cards. The left column includes: 'IPEDS Survey Components' (Learn more about the individual IPEDS Survey Components: view training videos, infographics, answers to frequently asked questions, survey forms, and more.), 'Data Trends' (Use the Trend Generator to view trends on most frequently asked subject areas including: Enrollment, Completions, Graduation Rates, Employees and Staff, Institutional Revenues, and Financial Aid.), 'Look Up an Institution' (Look up information for one institution at a time. Data can be viewed in two forms: institution profile (similar to College Navigator) and reported data (institution's response to each survey question).), 'Data Feedback Report' (Download, print, or customize an institution's Data Feedback Report, a report that graphically summarizes selected institutional data and compares the data with peer institutions.), 'Statistical Tables' (Create simple descriptive statistics (e.g., total, count, average, median, standard deviation, percentiles) on selected IPEDS institutions and variables.), and 'Summary Tables' (Customize a summary table for a select subgroup of institutions on the following popular topics: tuition and fees, room and board, student financial aid, admissions, test scores, student enrollment, degree/certificate awarded, and graduation rates.). The right column includes: 'Compare Institutions' (Download IPEDS data files for more than 7,000 institutions and up to 250 variables. Data files are provided in comma separated value (*.csv) format.), 'Survey Data' (Data are available starting with the 1980-81 collection year for the Complete data files and Custom data files functions, which zip the data into comma separated value (*.csv). Beginning with the 2007-08 collection year, data for each collection year are compiled into an Access database. Below this text is a text input field labeled 'Select download option'), 'Shortcuts' (Use these shortcuts to expedite the research process if you are a frequent or returning data user. Below this text is a text input field labeled 'Select your shortcut'), 'Publications and Products' (Review publications using IPEDS data including First Looks, Web Tables, methodology reports, and Digest Tables.), and 'Resources' (Overview of IPEDS Data, IPEDS Glossary, Archived Survey Forms, Delta Cost Project, and IPEDS Data Center User Manual (4.03 MB)).