

Counting U.S. Postsecondary and Secondary Credentials



2022



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LETTER OF INTRODUCTION

Credential Engine's mission is to make the credential and skills landscape fully transparent to everyone. This landscape is vast, complex, and too often inequitable. With over a million credentials and fifty thousand providers in the United States alone, our work is more important than ever. Credential Engine's goal is to ensure that anyone, anytime, anyplace has access to the information they need to make the most informed decision about their education and career path.

The goal of this report is to raise awareness of the ecosystem and spur action by policymakers, system and institutional leaders, and advocates to improve our data systems through linked, open, interoperable data.

Credential Engine is currently working with over 30 states and regions, federal agencies, international standards organizations, and a growing number of technology and service partners to improve the education and training market. And we welcome new partners continuously.

We invite you to read this report and consider how you can contribute to our mission. It is our goal to make sure the future of our work and this landscape address the challenges students, workers, employers, educators, and the general public face every day to find transparent and equitable data. We envision a future where millions of people worldwide have access to information about credentials that opens their eyes to the full range of opportunities for learning, advancement, and meaningful careers.

Please do not hesitate to contact us if you have any questions or want to get involved.

BARBARA GELLMAN-DANLEY

Board Chair
Credential Engine

President
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SCOTT CHENEY

Chief Executive Officer
Credential Engine

ABOUT CREDENTIAL ENGINE

Credential Engine's mission is to bring transparency to all credentials, reveal the marketplace of credentials, increase credential literacy, and allow students, workers, employers, educators, and policy makers to make better informed decisions about credentials and their value.

To achieve this mission, Credential Engine aims to produce a comprehensive, reliable count of every unique credential in the United States and improve the uniformity of how all types of credentials are described so they can be searched, discovered, compared, and valued.

Since 2017, Credential Engine has diligently worked to lay bare an increasingly complex, and confusing, landscape of U.S. credentials, and to create the building blocks to make reliable and useful credential information more accessible for students, workers, and the employers who hire them. We have created a common taxonomy, or schema, through the Credential Transparency Description Language (CTDL) that allows individuals to make "apples-to-apples" comparisons between and among credentials; allowing us to map the connecting points between credentials, competencies, jobs, education, and training opportunities—the information that so many have been looking for.

The driving force behind Credential Engine's work has been a lack of clarity about what exactly is available in terms of education and training, the value of credentials in the labor market, and what enables certain individuals to benefit from those opportunities more than others. To create a credential landscape that is transparent—accessible, discoverable, understandable, and navigable—we first must understand the landscape itself. We needed a clearer picture of what we are all dealing with so that we could appropriately act to meet the challenge of full and meaningful credential transparency.

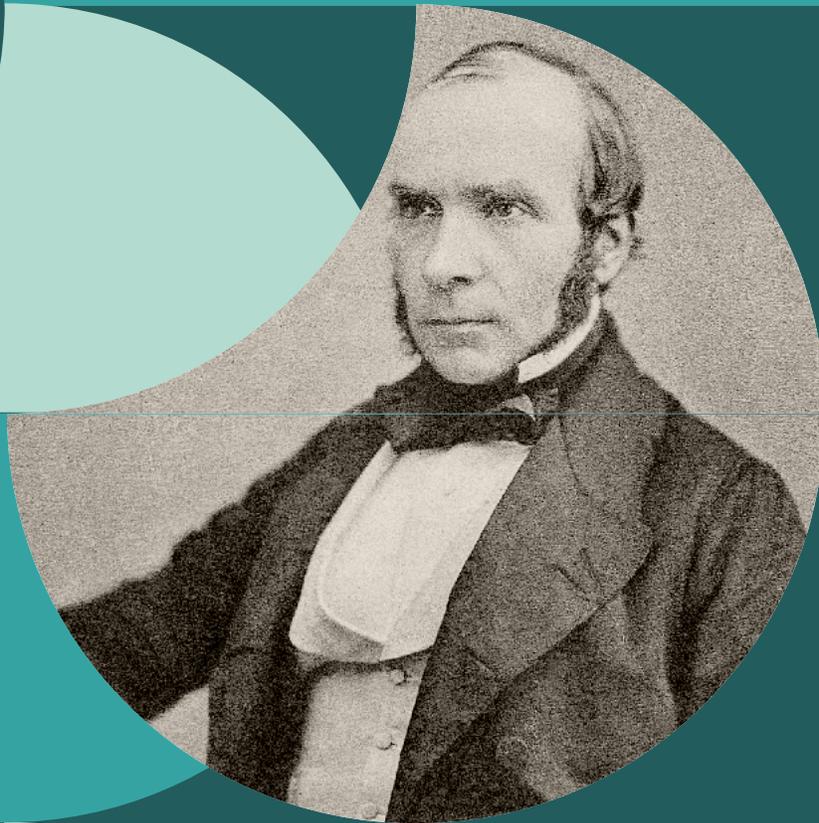
Meaningful credential transparency relies on all of us contributing to and using the information found in the national Credential Registry—an open data, open-access network for timely and trusted information about credentials across states, regions, and the entire country. Data added to the Registry uses the CTDL schema to clarify, connect, and publish the credential information for others to use. The CTDL is already regarded as the standard language through which these million unique credentials and their competencies can be connected, compared, and contrasted—from evaluating whether a credential leads to a specific career and higher wages or if it leads to a higher-level credential, enhancing economic momentum and mobility.

To learn more about Credential Engine and find ways to get involved, please visit www.credentialengine.org and/or email info@credentialengine.org.

FOREWORD

DR. JOHN SNOW'S LEGACY OF DATA-INFORMED DECISION-MAKING

Data has
the power
to change
lives.



Cholera was deadly and devastating in 19th century London, where it killed more than 10,000 people in 1853 alone. Scientists' prevailing theory for its cause — airborne transmission of poisonous vapors — had not advanced since the time of Hippocrates. Yet one physician, convinced that cholera spread through sewage-contaminated water, seized the opportunity to prove his unpopular theory when one of London's deadliest outbreaks ravaged his own neighborhood.

For evidence, Dr. John Snow turned to the data. From mortality reports, he collected addresses for the hundreds of dead. From maps, he determined

proximity to public water sources. And as his suspicions began to focus on a water pump located at the epicenter of the outbreak, his interviews with locals provided details that filled in gaps. A prison near the pump that suffered few fatalities, for instance, had its own water source. Three children who died of cholera lived closer to another pump but drank from the suspect one on their walk to school.

At Snow's urging and bolstered by the data he had assembled, the still-doubtful authorities removed the pump's handle. New cases of cholera, already subsiding, trickled to a stop within days.

Snow's map of cholera deaths, centered on the Broad Street water pump, the epicenter of the outbreak.



The potential for harnessing the right data for the right person at the right time is immense.

In our work, focused on linkages between education and opportunities in the workforce, data have the transformational power to drive equity and empower individuals to choose education and training paths that lead to economic mobility and more fulfilling lives. To a substantial degree, the data that could yield such impact are already widely available today: wage records, job postings, employment data, compensation records, career histories, and verified records of training and education, among many others. But they also are disconnected, incomplete, incongruous, and fragmented, while often far too inaccessible and lacking insight. The compilation, normalization, and integration of these data into a comprehensive Learning and Employment Record (LER) infrastructure and ecosystem is an example of the potential for impactful transformation.

Even in their current disaggregated state, we have the potential to access data of unprecedented power — but only if stakeholders have the tools, awareness, and data ecosystem supports to leverage them. The availability of data is no guarantee of data-driven decision making. For data to be an effective catalyst for change, data literacy and analytical frameworks need to become integrated into core decision making processes and relevant metrics need to be embedded within key workflow systems.

Individuals deciding whether to invest time, money, and effort in additional education and training — without any evidence that it is likely to pay off in the form of higher pay and better job prospects — are left to doubt whether such a big endeavor is a gamble worth taking. The data ecosystem needs to acknowledge skill and learning development as learners and workers move through their education and career journey. To enable this end, education and workforce

data must be not only collected, but also curated and connected. The potential for harnessing the right data for the right person at the right time is immense. Beyond workers and learners, data that are transparent, verifiable, linked, and interoperable will help policymakers make decisions, employers source talent, and educators build timely programs that respond to evolving market needs.

The lack of actionable data and the frameworks for evaluating them has long plagued the development of a more robust ecosystem of credentialing — a critical underpinning for more equitable access to opportunity at a time when economic mobility has been on a decades-long slide and a desperately needed mechanism for broadening the base of talent at a time when industry struggles to find the skills needed to drive growth. Yet, until recently, little has been known about the landscape of credentials. Which skills and occupations do they cover? Which credentials are in demand? Where are they proving effective in unlocking opportunity for non-traditional candidates and where are they struggling to gain currency? What is the real-world career advancement experienced by credential earners? The continued progress of the skills-based hiring movement, along with efforts to build a more effective infrastructure for upskilling and reskilling amidst rising concern of automation-driven displacement, requires data-driven insights on these questions.

Now is the time to build these critical connections. Now is the time to embrace a shared language and standard for what is behind a credential or skill — such as the Credential Transparency Description Language (CTDL) — to enable a range of stakeholders to communicate both about the information they have and the information they need. As we build a data architecture for improving how

Now is the time to embrace a shared language and standard for what is behind a credential or skill.

education and employment work together, such a shared language will be the backbone for capturing and sharing outcomes data and communicating among learners, policymakers, employers, and education providers.

Already, several organizations devoted to this work, such as the National Student Clearinghouse, Workcred, U.S. Chamber of Commerce Foundation, and National Governors Association, are accelerating their efforts to fill critical data gaps and ensure interoperability and wide adoption of transparent outcomes data. Many states, too, are taking part, with efforts such as the Coleridge Initiative. Still, part of our challenge is to encourage broader buy-in at the state and federal levels so that no one is left out of this revolution in how we share information.

Take a pilot program at the University of Texas System that employed data from seekUT, an online tool that pulls information from the U.S. Census, the Texas Higher Education Coordinating Board, and the Texas Workforce Commission. Leveraging employment and earnings data, the system identified majors where graduates tend to earn the lowest salaries — and then determined which ones attracted a higher number of students from historically underserved populations. The university system is embedding into the degree programs credentials that would improve employability and income for their graduates — creating just one example of the immediate power of data.

Also underway is the American Council on Education and Carnegie Foundation's partnership to add social and economic mobility outcomes to the Carnegie Classifications, the nation's leading framework for classifying U.S. higher education institutions. This move will incentivize colleges and universities to focus more on inclusivity and student success, not selectivity and prestige — and will provide another critical piece of data that helps us complete the puzzle.

Creating a more transparent, functional, interlocking set of information to guide the future of education and work for students, workers, employers, policymakers, educators, and the organizations that advocate for them requires cooperation and persistence. The ultimate solution will not be as straightforward as removing the handle of a water pump. But the data that will lead us to unlock the solutions have the potential to create a more equitable future and empower us all to make better-informed decisions.

As we envision bringing to life a hopeful future for America in which postsecondary education and training providers enable equitable pathways to opportunity, the transformational power and potential of harnessing the right data for the right purpose at the right time cannot be overstated. Each of our organizations is committed to helping create this exciting future, and we are grateful for the essential role that Credential Engine is playing in this important work.

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Executive Summary

Learners, educators, and policymakers recognize that high school completion and education beyond high school are critical for individuals to thrive in a complex global economy.

This fourth Counting Credentials report attempts to count the total credentials available, following a thorough and rigorous method for each credential type. The report identifies **1,076,358 unique credentials** in 18 detailed credential categories across four broad types of credential providers:

- **POST-SECONDARY EDUCATIONAL INSTITUTIONS—350,412** degrees and certificates
- **MASSIVE OPEN ONLINE COURSE (MOOC) PROVIDERS—13,014** course completion certificates, micro-credentials, and online degrees from foreign universities
- **NON-ACADEMIC PROVIDERS—656,505** badges, course completion certificates, licenses, certifications, and apprenticeships
- **SECONDARY SCHOOLS—56,179** diplomas from public and private secondary schools, alternative certificates from secondary schools, and high school equivalency diplomas

Of these four types of credential providers, the group with the highest count of credentials is “non-academic providers”, with a total credential count of 656,505 credentials. The two largest credential categories within this provider type are online course completion certificates and digital badges, offering 177,292 and 430,272 credentials, respectively. Both numbers increased from the previous count. Recommendations for future research, detailed below, include better understanding these large credential categories, which remain opaque given the difficulty in attaining detailed information on what these digital credentials represent to participating providers and learners.

This report discusses each of the 18 credential categories in detail, describing the nature of each credential, sources and methods for developing the credential count, and advances since the 2021 report. As in prior years, this report demonstrates the nation’s need to dramatically improve transparency in the credential marketplace to promote economic growth and individual mobility.

In order to make progress and address key issues highlighted in this report, we will need to know more about how credentialing practices overlap, including how certificates offered by institutions of higher education stack to further certificates and degrees, as well as how badges are utilized to represent these and other credentials. We expect that, in many cases, badges are used to issue other types of credentials, such as certificates and certifications. However, most badges do not currently use a standardized way of identifying the credential type. More information is needed regarding the content of different credentialing programs to properly categorize and understand them, such as the competencies they aim to highlight, the time they require to complete, and their relative value in the marketplace.



Advances Since
Third Credential
Count Estimate

1 Credential Engine, "Counting U.S. Secondary and Postsecondary Credentials," April 2018. <https://credentialengine.org/2018/04/05/counting-u-s-secondary-and-postsecondary-credentials-april-2018-report/>

2 Credential Engine, "Counting U.S. Secondary and Postsecondary Credentials," September 2019. https://credentialengine.org/wp-content/uploads/2019/09/Counting-US-Postsecondary-and-Secondary-Credentials_190925_FINAL.pdf

In April 2018, Credential Engine produced the first iteration of a nationwide credential count, which found 334,114 credentials across eight categories.¹

The second report in 2019 counted more than 738,428 credentials across 17 categories.²

The third report in 2021 counted 967,734 unique credentials across 16 categories. This fourth report finds **1,076,358** unique credentials across **18** categories.

The two credential categories added this year are at the secondary level: **alternative high school completion certificates** and **high school equivalency awards** for individuals completing a set of requirements or passing tests that do not require graduating from high school with a full diploma. This is the first time the report has recognized these alternative credentialing outcomes resulting from a high school education. No categories were removed.

Last year, we introduced **counts by state**, and state counts are provided again this year for select credentials: degrees, certificates, licenses, apprenticeships, high school diplomas, high school equivalency diplomas, and high school alternative diplomas. See Appendix B for updated counts by state.

For the first time, the report includes the **number of credential providers** associated with each of four broad types of providers—post-secondary educational institutions, MOOC providers, non-academic providers, and secondary schools—as well as for each of the 18 credential categories. Definitions for "credential provider" are included in each detailed section below describing our methodology for each credential category. See Appendix A for provider counts across all categories.

Additionally, this report includes credential numbers by occupation and by industry for the first time:

- **CREDENTIAL NUMBERS BY OCCUPATION** across 24 major occupations for 13 credential categories – see Appendix C for occupation counts for degrees, certificates, microcredentials, massive open online courses (MOOCs), licenses, certifications, registered apprenticeships, coding bootcamps, and non-academic online course completion certificates. This tremendous effort to map credentials to related professional fields by occupation sets the stage for further research.
- **INDUSTRY PROFILES** for 19 major industries are presented with information on occupational mix and associated credentials – see Appendix D. This initial translation of occupational trends to industries provides a starting point for mapping credentialing trends across industries.

Some methods changed from the previous count. We relied on a new data source for the state Eligible Training Provider Lists (ETPLs) that was not previously available. We previously acquired these state lists, required by the Workforce Innovation and Opportunity Act (WIOA), from each responsible state agency. This year we relied on a compilation of state lists created by the Employment and Training Administration (ETA) of the U.S. Department of Labor and first published online in 2020, at the end of our previous data collection period. The new source eased our data collection burden and shifted our focus to navigating the nuances of the database.

We also expanded our utilization of the NCES IPEDS database, which now includes a new variable for short-term programs at post-secondary educational institutions, denoting programs that are shorter than 300 hours.

Additionally, we found a new online course certificate completion platform, removed hundreds of invalid certifications counted last year, and identified unregistered, apprenticeship-like employer-sponsored training programs through new exploratory methods.

With these improvements and adjustments, we found more than 1 million credentials, including many new digital badges and online courses offered independently of and in collaboration with higher educational institutions. We continue to rely on innovations in data collection and improved information from public agencies and private sector conveners to refine the count. As public and private actors seek to rationalize the credentialing landscape for their various constituents, we must also address the discrepancies and challenges in definitions and data sources that arise with these innovations and advances. As such, accounting methods are still in flux with changes in the availability and nature of data sources. Our own understanding of the data sources and the credentials they represent continues to evolve regarding how they overlap and how they could someday be connected.

NOTABLE CHANGES IN CREDENTIAL COUNTS

The count of Title IV eligible certificates is 67,334 lower than in the February 2021 report. This is due to changes in sources and methods for counting Title IV and non-Title IV certificates using available administrative data.

Since the last report, many states have cleaned and organized their eligible training provider lists (ETPL), an activity which often results in fewer recognized programs. Also, since the last report, ETA has gathered these state ETPL (which the research team previously collected from each state) into a master database that was used as the primary data source for this report. The cleaned lists appearing in the ETA ETPL master database have less detail on locations of branch campuses or satellite locations. As a result, detail on locations was lost in the switch from utilizing state ETPL to the new master ETPL. The research team estimated the amount of missing information and added the number of likely missing locations of Title IV institutions, proprietary, and religious schools to the final count.

Using IPEDS, we were able to recategorize more than 30,000 Title IV certificates to Non-Title IV. Additionally, there was a real reduction in the number of Title IV institutions in IPEDS and any associated programs (about 2,000 programs) since the last count.



Findings

With this report, Credential Engine identifies **1,076,358** unique credentials in the United States, organized into 18 categories and delivered through four types of education and training providers— post-secondary educational institutions, Massive Open Online Course (MOOC) providers, non-academic organizations, and secondary schools. In Table 1, we report by category the 2022 count numbers, the change in count from 2021, the nature of the count (estimation or enumeration), the data sources used in the count, and the availability of count by state.

The count for each credential type in the table is characterized in one of three ways—Enumeration, Partial Enumeration, or Estimate. These differ in terms of the completeness and the certainty of a count.

- Enumerations (9) are both complete and certain – that is, they include all the credential opportunities in the category.
- Partial enumerations (3) are certain, but not complete.
- Estimates (6) add approximations of missing credentials to partial enumerations, for example through extrapolations based on a sample of states or industries.

Subsequent sections discuss the nature and method for counting within each credential type.

2022 Count of U.S. Secondary and Post-secondary Credentials

Credential Type	2022 Count	2021 Count	Change in Count from 2021	Estimation or Enumeration*	Data Sources
Total Credential Count	1,076,358	967,734	108,624		
Post-secondary Educational Institutions	350,412	359,713	-9,301		
Title IV Degrees	233,676	196,139	37,537	Estimate	NCES IPEDS, WIOA ETPL, a sample of states' ETPL
Non-Title IV Degrees	4,541	1,350	3,191	Partial Enumeration	NCES IPEDS, WIOA ETPL, a sample of states' ETPL
Title IV Certificates	53,853**	122,048	-68,195	Estimate	NCES IPEDS, WIOA ETPL, a sample of states' ETPL
Non-Title IV Certificates	58,342**	40,176	18,166	Estimate	NCES IPEDS, WIOA ETPL, a sample of states' ETPL

Credential Type	2022 Count	2021 Count	Change in Count from 2021	Estimation or Enumeration*	Data Sources
MOOC Providers	13,014	9,390	3,624		
Microcredentials	1,603	820	783	Enumeration	edX, Coursera, FutureLearn, Kadenze, Swayam, Udacity
Degrees from Foreign Universities	54	50	4	Enumeration	Class Central
Course Completion Certificates	11,357	8,520	2,837	Enumeration	edX, Coursera, FutureLearn, Kadenze, Swayam
Non-Title IV Certificates	58,342**	40,176	18,166	Estimate	IPEDS + WIOA ETPL, a sample of states' ETPL
Non-Academic Organizations	656,753	549,712	107,041		
Occupational Licenses	12,152	11,938	214	Estimate	ETA COS License Finder
Occupational Certifications	7,051	8,165	-1,114	Enumeration	ETA COS Certification Finder, Military COOL, ETA COS Competency Clearinghouse, ANSI, NCCA, ICAC
Registered Apprenticeships	27,385	23,400	3,985	Enumeration	ETA OA Registry
Unregistered Apprenticeships	448	50	398	Estimate	Jobs postings data set sample
Coding Bootcamp Course Completion Certificates	2,153	1,560	593	Partial enumeration	Course Report
Online Course Completion Certificates	177,292	123,038	54,254	Estimate	Udemy, LinkedIn Learning SkillSuccess, Alison, Skillshare, PluralSight, ANSI
Digital Badges	430,272	381,561	48,711	Enumeration	Certif-ID, Edalex, Idaho Division of Career Technical Education, Instructure, Participate, Pearson

Credential Type	2022 Count	2021 Count	Change in Count from 2021	Estimation or Enumeration*	Data Sources
Secondary School diplomas and equivalencies	56,179	48,919	7,260		
Public School Districts – Diplomas	34,457	36,548	-2,091	Estimate	NCES CCD, Departments of Education for each of the 50 states and D.C.
Public School Districts – Alternative Certificates	10,062	N/A	N/A	Estimate	NCES CC, Departments of Education for each of the 50 states and D.C.
Private Schools – Diplomas	11,603	12,371	-768	Enumeration	NCES PSS
High School Equivalency Diplomas	57	N/A	N/A	Enumeration	GED, HiSET

*Enumeration (Complete Count), Partial Enumeration (Partial Count), Estimate (Count plus Extrapolation)

** The decrease of 67,334 Title IV certificate programs offered by post-secondary educational institutions is due to changes in methods of counting Title IV and non-Title IV certificates: recategorization of Title IV to Non-Title IV using IPEDS variables, detail on campuses was not available in the switch from utilizing state ETPL to the new master ETA ETPL, and there was a real reduction in the number of Title IV schools in IPEDS and any associated programs (2,000 programs). Extrapolation was applied to represent missing locations of Title IV institutions and proprietary and religious schools.

Source Abbreviations & Acronyms

Federal Department	Subagency	Data Source
DOL – U.S. Department of Labor	ETA – Employment and Training Administration	COS – CareerOneStop
		OA – Office of Apprenticeships
		WIOA ETPL – Workforce Innovation and Opportunity Act Eligible Training Provider List
DoEd – U.S. Department of Education	NCES – National Center for Education Statistics	IPEDS – Integrated Postsecondary Education Data System
		CCD – Common Core of Data
		PSS – Private School Survey
DOD – U.S. Department of Defense		COOL – Credentialing Opportunities On-Line

Methods Definitions

Count types are characterized as an **Enumeration** (Complete Count), a **Partial Enumeration** (Partial Count), or an **Estimate** (Count plus Extrapolation).

Enumeration

COMPLETE, CERTAIN

Count based on a register of all known programs in the category.

Partial Enumeration

INCOMPLETE, CERTAIN

Count based on credentials register that does not fully cover category or sum across known providers.

Estimate

COMPLETE, SOMEWHAT UNCERTAIN

Count from partial enumeration plus estimate of additional credentials per extrapolation from sample of state or industry lists or count of credential-granting institutions multiplied by number of credentials offered by each institution.

This count was conducted in 2022, relying on data available for 2020-2022. The data includes credential information captured during the early onset of the COVID-19 pandemic.

Credential Categories: Definitions and Methodology

This section discusses each of the 18 credential categories in detail. The categories are organized into four groups by type of institution or provider:

- Post-secondary educational institutions (4 credential categories);
- MOOC providers (3 categories);
- Non-academic organizations (7 categories); and
- Secondary schools (4).

In the following pages, each of 18 credentials across the four broad categories are defined, the sources and methods of the count are explained and discussed, and suggestions for future research are offered.

Post-secondary Educational Degrees and Certificates

TABLE 2: Count of Post-secondary Educational Degrees and Certificates

Credential Type	2022 Count	2021 Count	Change in Count from 2021	Estimation or Enumeration	Data Sources
Post-secondary Educational Institutions	350,412	359,713	-9,301		
Title IV Degrees	233,676	196,139	37,537	Estimation	NCES IPEDS, WIOA ETPL, a sample of states' ETPL
Non-Title IV Degrees	4,541	1,350	3,191	Partial Enumeration	NCES IPEDS, WIOA ETPL, a sample of states' ETPL
Title IV Certificates	53,853	122,048	-68,195	Estimation	NCES IPEDS, WIOA ETPL, a sample of states' ETPL
Non-Title IV Certificates	58,342	40,176	18,166	Estimation	NCES IPEDS, WIOA ETPL, a sample of states' ETPL

According to the Higher Education Opportunity Act of 2008 (HEA), educational institutions that award post-secondary degrees and certificates include Institutions of Higher Education, Post-secondary Vocational Institutions (public or private nonprofit), and many Proprietary Institutions of Higher Education (private and for-profit). Institutions are eligible to participate in HEA Title IV financial student aid programs if they are open enrollment and offer programs that meet minimum instructional criteria.³

Degrees and certificates are described in the following sections as either Title IV eligible or not eligible based on the Title IV status of the educational institution offering the credential and the eligibility of the credential offered.

¹ For the purposes of the HEA Title IV eligibility, the educational institution must be located within "the 50 states, American Samoa, Puerto Rico, the District of Columbia, Guam, the U.S. Virgin Islands, the Commonwealth of the Northern Mariana Islands, the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau." The Higher Education Opportunity Act (HEA). Public Law 110-315. 2008. 34 CFR 600.2

POST-SECONDARY EDUCATIONAL DEGREES AND CERTIFICATES

Title IV Degrees

The Credential

A degree is an award conferred by a college, university, or other post-secondary education institution as official recognition for completing a program of study. Primary degree levels include Associate's, Bachelor's, Master's, Doctoral, and specific professional degrees (such as M.D. [Doctor of Medicine] and J.D. [Juris Doctor]).

According to the HEA, the minimum time to completion for each degree level is:

- 24 months for an Associate's degree,
- 48 months for a Bachelor's degree, and
- 12 months for a Master's degree.

The minimum time to completion requirements for Doctoral and professional degrees are variable across fields and degree type.⁴ When a Title IV institution reports a degree to the Department of Education, that degree is assumed to be a degree program eligible for Title IV funding.

⁴ U.S. Department of Education. (2021). *2020-2021 Federal Student Aid Handbook*. Fsapartners.ed.gov/knowledge-center/fsa-handbook/2020-2021/vol2

The Credential Provider

Title IV degrees are awarded by Title IV public, private nonprofit, or proprietary institutions of higher education (colleges and universities). Title IV post-secondary institutions must be approved to operate by their state department of higher education and accredited by an accrediting body recognized by the U.S. Department of Education. The credential provider is counted as the institution with a written agreement with the U.S. Secretary of Education, allowing the institution to participate in Title IV federal student financial aid programs. However, the degree program may be delivered at a location or satellite campus other than the main campus.

Credential Count Source and Method

For the count of Title IV degrees, researchers relied on Title IV degree data provided by the Integrated Postsecondary Education Data System (IPEDS) and maintained by the National Center for Education Statistics (NCES) in the U.S. Department of Education.⁵ IPEDS covers the universe of 6,163 schools categorized as Title IV institutions. Under Title IV, these schools must submit program and student completion data to NCES for all for-credit programs for which students may receive Title IV funds. 179,911 Title IV degree programs were reported in IPEDS.

⁵ National Center for Education Statistics. (2021). *Integrated Post-Secondary Education (IPEDS) [dataset]*. U.S. Department of Education. <https://nces.ed.gov/ipeds/use-the-data>

In past reports, the research team incorporated data from the Workforce Innovation and Opportunity Act (WIOA) Eligible Training Provider Lists (ETPL) created in each state to identify degree programs not captured in IPEDS. Since the last report was published in 2021, the Department of Labor (DOL) Education and Training Administration (ETA) has collected the ETPL lists from all 50 states, Washington, DC, and four territories into a master database. The database provides additional details about Title IV institutions, including degree programs offered at alternative campuses or programs at the main campus that may not have had completions to report to IPEDS. An additional 1,374 Title IV eligible degree programs were identified in ETPL.

To account for the missing data on programs and institution locations, we compared the WIOA ETPL with the Eligible Training Provider lists in six states. A large number of Associate's degrees were identified and were the basis for an assumed multiplier for all Associate's degrees counted in IPEDS and WIOA ETPL. The resulting estimate of 52,391 Associate's degrees was added to the enumerations in IPEDS and WIOA ETPL. No extrapolation was used for Bachelor's, Master's, or professional degrees.

Discussion

The count of Title IV degrees (233,676) is 37,748 greater than the credentials counted in previous reports.

This count is an estimation, including an enumeration of degrees in IPEDS and ETPL, and an extrapolation of two-year degrees (46,104) that were missing from the national data sources. The extrapolation helps to identify programs authorized by a state but not recorded in either of the national data sources, NCES IPEDS and WIOA ETPL.

Deep dives into the credentials offered by large public and private universities and community colleges revealed inconsistencies between the total number of locations reported in IPEDS, locations and credentials reported through ETPL, and the actual number of locations and credentials the institutions report on their websites.

The main contribution of the WIOA ETPL to this count was identification of all degree programs offered at all locations of the credentialing institutions, supplementing the number of campuses and additional program delivery sites for Title IV institutions, since these are inconsistently provided in IPEDS. The research team found fewer locations of community colleges and public universities listed in either data source than in previous reports.

It is important to note that the 2021 IPEDS data reports the 2019–2020 school year (Summer 2019, Fall 2019, and Spring 2020). Many academic programs were disrupted in the spring semester of 2020, which affected the number of degrees completed and reported to IPEDS. The challenges posed by the COVID-19 pandemic affected students and institutions alike; some programs, although offered, had no completions to report to IPEDS and are therefore not included in the database.

Suggestions for Future Research

New rules adopted by the U.S. Department of Education in 2021 reflect the evolving nature of training delivery for degree and certificate programs. Increased flexibility in an institution's or credential program's eligibility for HEA Title IV programs includes eligibility for subscription-based distance-education programs.⁶ This may have implications for future counts of degrees earned through Title IV institutions and MOOC providers. Future research should investigate the implications of the Department of Education's new distance education rules that increased the flexibility of eligibility for Title IV programs.

As data collection and reporting on educational institutions evolve, the data sources must continue to be evaluated for their validity and value. The consolidation of the state ETPL into a national database by BLS requires further understanding to inform future research. The creation of this national database makes it possible to imagine a more structured and effective approach to matching the IPEDS and ETPL databases, such as the creation of a crosswalk, the assignment of common identifiers to institutions across the IPEDS and ETPL databases, or a matching algorithm fine-tuned to address specific naming discrepancies we encounter.

The research team recognized inconsistencies in institutional names, locations, and relationship across the IPEDS and ETPL databases and other publicly available data sources for individual institutions. These inconsistencies reflect differences in data collection, reporting, and presentation, reflecting the varying purposes and priorities of the data. Future research can examine the data processes states follow to manage their own ETP data and the processes they use to report to the ETA. Additionally, researchers could understand the cleaning and verification methods applied to the ETA ETPL database and identify strategies to ensure alignment across states and institutions.

Finally, as data availability and quality improve, future research into the value of a degree earned at different training locations within the same institution may be possible. Degrees earned completely online may also constitute a degree separate from one earned on campus. Methods to identify these degrees earned through training provided at alternative locations can be explored as IPEDS and ETPL datasets evolve.

6 U.S. Department of Education. (2020). *Summary of Distance Education and Innovation: Final Rule*. www2.ed.gov/policy/highered/reg/hearulemaking/2018/index.html

POST-SECONDARY EDUCATIONAL DEGREES AND CERTIFICATES

Title IV Certificates

The Credential

A Title IV certificate is a type of award conferred by a college, university, or other post-secondary education institution indicating the completion of a non-degree program of study that prepares a student for a recognized occupation. Typically, the course requirements for earning a certificate are less than those for earning a degree. Title IV certificates awarded by public and nonprofit post-secondary institutions require at least one year of full-time academic effort. Title IV Certificates earned at a for-profit post-secondary institution or a vocational institution require at least one semester of fulltime academic effort. Dependent upon the degree prerequisite for entrance to the certificate program, the semester length can be measured as 10-15 weeks, 300-600 clock hours, or 8-16 semester hours.

The Credential Provider

Like Title IV degrees, Title IV certificates are awarded by Title IV public, private nonprofit, or proprietary institutions of higher education (colleges and universities). Additionally, public and private nonprofit vocational institutions may also provide Title IV eligible certificates.

Title IV post-secondary institutions must be approved to operate by their state department of higher education and accredited by an accrediting body recognized by the U.S. Department of Education. The credential provider is the institution that has a written agreement with the U.S. Secretary of Education, allowing the institution to participate in Title IV federal student financial aid programs. The certificate program may be delivered at a location or satellite campus other than the main campus.

Credential Count Source and Method

The count of 53,852 Title IV certificates is an estimation. The research team first prepared an exact count of certificate programs in IPEDS offered by Title IV post-secondary education institutions (42,663 certificates). By following the same Title IV degrees category methodology, additional campuses for Title IV institutions were identified in WIOA ETPL. This comparison added 1,613

Certificates were identified as Title IV eligible based on the length of program and whether the institution was described as Title IV eligible in IPEDS or not. All certificates that met the minimum requirement for the type of Title IV eligible institution were assumed to also be Title IV eligible.

The research team used the same method to extrapolate as in Title IV degrees to account for the missing data on programs and institution locations. A large number of certificates were identified and were the basis for an assumed multiplier. The distribution of Title IV and non-Title IV certificates found in IPEDS and WIOA ETPL were combined with the multiplier and applied to the Title IV certificates counted in the national data sources. The resulting estimate of 9,577 Title IV certificates was added to the enumerations in IPEDS and WIOA ETPL.

Discussion

Based on a detailed review of the data provided by large public and private universities and community colleges to different forums and across databases, the research team identified that ETPL does not capture all locations or all credentials offered. This is especially true for online-campuses, which appear inconsistently in ETPL. Because we know this dataset is incomplete, the count of Title IV certificates found using this database is a partial enumeration. The final number reported here includes an extrapolation from a sample of the data to estimate missing programs and is an estimate.

This count is an estimation, including an enumeration of Title IV certificates in IPEDS and ETPL, and an extrapolation. The extrapolation assumes there are 9,577 additional programs authorized by states offered at additional locations or are newly developed programs, since the IPEDS data was last published.

This report's count of Title IV certificates (53,853) is 67,334 less than the previous report. This is partially due to two changes in methods. First, researchers were able to use a variable in IPEDS to describe the length of certificate program (AWLEVEL), which allows a direct count of Title IV and non-Title IV certificates, when combined with the control and Title IV status of the given institution (PSET4FLAG). The new method resulted in reclassification of over 30,000 certificates from Title IV to non-Title IV.

Second, the research team recognizes the ETPL data is incomplete. Previous reports used data from each of the 50 states and Washington DC. Some of these datasets were limited and incomplete while others provided details that is not included in the new national database.

Third, the number of institutions reporting programs to IPEDS has decreased since the last count. The decrease may be related to the COVID-19 pandemic, which prevented many certificate programs from being completed. Programs that were not easily transferable to distance-education formats were paused for the remainder of the school year—during the IPEDS reporting dates of July 2, 2019, to June 30, 2020. There may be an increase in certificate programs in future counts as the instructional formats are adapted to online platforms.

This year, the consolidated ETPL data set is more consistent across states, but some detail has been lost. To account for missing certificate programs and institution locations, researchers extrapolated from a sample of states to estimate the total number of Title IV certificates included on state Eligible Training Provider Lists but missing from the WIOA ETPL.

Suggestions for Future Research

In future reports, the research team should attempt to identify trends in certificates offered related to educational closures and policies during the COVID-19 Pandemic disruptions. The research team can compare the changes in credential providers, training providers, and the credentials offered in different industries and states.

Future counts may evolve as IPEDS and ETPL data sources are refined. In addition to duration, the Title IV status of certificates is affected by credential prerequisites, which our current methods did not account for. As the IPEDS and ETPL become easier to use, the inclusion of the Title IV prerequisite criteria may also be applied, resulting in an even more precise count.

Further refinements of the IPEDS database could include clearly identifying programs as either Title IV eligible or not, rather than only flagging the institutions as Title IV eligible. Refinements of the ETPL database could include a more detailed reporting options to reduce the number of credentials reported as either an "other recognized credential" or a "measurable skills gain".

As with Title IV degrees, the count of Title IV certificates attempts to include unique program delivery locations. Future reports may be able to identify additional Title IV certificates offered off-campus. If online-only certificate programs are identifiable, they may warrant a new credential category.

POST-SECONDARY EDUCATIONAL DEGREES AND CERTIFICATES

Non-Title IV Degrees

The Credential

A non-Title IV Degree is an academic degree offered by post-secondary institutions without a Title IV designation. Typical degree levels are similar to Title IV degrees: Associate's, Bachelor's, Master's, Doctoral, and professional degrees such as M.D. (Doctor of Medicine) and J.D. (Juris Doctor). All degrees offered at non-Title IV institutions are, by definition, not Title IV eligible. These degrees are not accountable to the HEA rules, so there is no defined time to completion.

The Credential Provider

Institutions that provide non-Title IV degrees are typically proprietary or for-profit post-secondary institutions. Other types of institutions that offer degrees that are not eligible for Title IV funding are public institutions that are not open to the public, such as military academies and some schools controlled by religious organizations.¹⁷ Non-Title IV institutions may or may not be accredited by an independent accreditor. Non-Title IV institutions are not required to report to IPEDS and might not be included in state ETP lists.

Credential Count Source and Method

In the same process used to identify Title IV degrees, IPEDS and ETPL were compared to identify additional campuses not listed in IPEDS. For this count, the degrees that non-Title IV institutions reported to IPEDS were counted first (481 degrees). Those programs were then compared to degrees listed in WIOA ETPL. An 4,060 additional non-Title IV degree programs found in WIOA ETPL were added to the count.

After comparing a sample of state ETP lists with non-Title IV degrees listed in IPEDS and WIOA ETPL, no new locations or degree programs were identified. As a result, the research team decided not to extrapolate these credentials.

Discussion

The research team recognizes that the universe of non-Title IV institutions is not included in either IPEDS or ETPL. These institutions are only included in either data source if they actively engage with state WIOA programs or federal HEA programs. There are an unknown number of post-secondary education institutions in the U.S. that offer degrees. For that reason, the count produced is considered a partial enumeration.

There are no common identifiers to easily compare the IPEDS and ETPL databases. In past years, addresses were used to match institutions. However, irregularities found in the spelling and format of institution names and addresses, especially in the reporting of non-Title IV institutions, prevented direct matching. For this report, the research team relied on street names and cities for common identifiers to match institution names.

Suggestions for Future Research

In recognition of the incomplete data available on non-Title IV institutions in IPEDS and ETPL, future research can investigate alternative datasets which may identify other non-Title IV eligible institutions and their programs.

As the landscape of online education continues to evolve, non-Title IV institutions that offer online-only credential programs may utilize platforms that are similar to MOOC providers. Future research may consider the overlap between the count of non-Title IV degrees and programs offered through MOOC platforms.

POST-SECONDARY EDUCATIONAL DEGREES AND CERTIFICATES

Non-Title IV Certificates

The Credential

This category includes certificates offered by non-Title IV institutions or certificates that do not meet the HEA Title IV eligibility requirements at Title IV institutions. These are frequently short programs that do not require full admission to an institution of higher education, such as continuing education or professional development programs. They may be stackable and lead to a Title IV eligible certificate or degree.

All certificates offered by non-Title IV institutions are, by definition, not Title IV eligible. At Title IV public post-secondary institutions, all certificates that are completed in less than one year of full-time academic effort are not eligible for Title IV funding. The minimum criteria for Title IV certificates at Title IV proprietary and vocational institutions is equivalent to one semester of full-time effort, dependent upon the academic prerequisites for entry to the program.

Not all Title IV certificates earned at Title IV institutions are reported in IPEDS. The certificates that are not reported are often considered non-credit programs. Non-credit certificate programs at Title IV post-secondary institutions are frequently less than one semester in length and may be stackable, leading to industry certifications or meeting prerequisite requirements into for-credit programs.

The Credential Provider

Non-Title IV certificates are offered by both Title IV and non-Title IV institutions. All institutions that report non-Title IV certificates in IPEDS are considered credential providers. Institutions only found in ETPL may have multiple locations listed, and each of these reported locations is considered a credential provider. Additional locations of the institution are found inconsistently in the ETPL.

Credential Count Source and Method

The count of 58,341 non-Title IV certificates combines an enumeration of those found in IPEDS, in WIOA ETPL, and an extrapolation. Similar to the method used to identify Title IV certificates in IPEDS, two variables were utilized to identify a certificate's eligibility for Title IV funding. Certificates offered by non-Title IV eligible institutions and any certificate with a duration of fewer than 12 weeks were identified as non-Title IV eligible. Certificates of less than 12 months at Title IV post-secondary institutions were also identified as non-Title IV eligible. 26,018 non-Title IV certificates were counted in IPEDS.

IPEDS and ETPL data sets were then compared to identify another 25,262 non-Title IV certificates. When a match in institution name and location was found between IPEDS and ETPL, only new certificates at that location were counted. All certificates offered at Non-Title IV institutions that were not included in IPEDS were added to the total count. Certificates at additional locations of Title IV post-secondary institutions were identified as non-Title IV eligible if the program was described as less than 600 hours. Certificates at additional locations of Title IV proprietary and vocational institutions were identified as non-Title IV if they were described as less than 300 hours.

The same method used to extrapolate Title IV certificates to account for the missing data on programs and institution locations was applied to the count of non-Title IV certificates. A large number of certificates were identified and were the basis for an assumed multiplier. The distribution of Title IV and non-Title IV certificates found in IPEDS and WIOA ETPL were combined with the multiplier and applied to the non-Title IV certificates counted in the national data sources. The resulting estimate of 7,062 Title IV certificates were added to the enumerations in IPEDS and WIOA ETPL.

Discussion

The methods used in this report to count 58,342 non-Title IV certificates is a refinement over previous counts. Past counts of non-Title IV certificates in IPEDS were limited to those reported by non-Title IV institutions. Most of the 40,176 non-Title IV certificates counted last year came from the identification of certificate programs in state ETPL with fewer than 300 hours.

Despite the improved methods, the research team recognizes that the number of non-Title IV certificates reported here is a significant undercount due to limited data available in IPEDS and ETPL.

Public universities and colleges often offer continuing education and professional development certificate programs that do not earn college credit. Nearly all of the non-credit certificate programs at Title IV institutions would meet the criteria of a non-Title IV certificate. However, few states have systems for collecting data on non-credit certificate programs. Additionally, the National Center for Education Statistics recently decided not to pursue a revision of the IPEDS reporting process to collect this information. The limited information on non-credit certificates excludes a large, unknown number of non-Title IV certificates.

Suggestions for Future Research

Future research can consider the effects of the COVID-19 pandemic on the business practices of non-Title IV institutions that only offer certificates. Unique and evolving training systems, methods, and programs may warrant another credential category.

The non-Title IV training providers described in ETPL with similar names reflect a wide range of proprietary organizations. The data currently available does not allow for the identification of a corporate or centralized credential provider. Researchers should investigate alternative data sources to collect more information about non-Title IV institutions.

Researchers should consider accessing data about non-credit certificates at Title IV institutions directly from the institutions themselves. This information may allow for an estimate of the number of non-credit programs across the nation.

MOOC Providers

TABLE 3: Credential Count from MOOC Providers

Credential Type	2022 Count	2021 Count	Change in Count from 2021	Estimation or Enumeration	Data Sources
MOOC Providers	13,014	9,390	3,624		
Microcredentials	1,603	820	783	Enumeration	edX, Coursera, FutureLearn, Kadenze, Swayam, Udacity programmatic information
Degrees from Foreign Universities	54	50	4	Enumeration	Class Central report
Course Completion Certificates	11,357	8,520	2,837	Enumeration	edX, Coursera, FutureLearn, Kadenze, Swayam programmatic information

Massive Open Online Course (MOOC) providers offer students electronic platforms for taking courses at a distance. Through MOOC platforms, diverse academic education and training organizations offer courses that lead to microcredentials, course completion certificates, and academic degrees. The MOOC platforms identified are utilized by non-academic organizations, such as large businesses and nonprofits, and academic institutions. For the counts reported below, we count all programs regardless of the organization partnering with the MOOC platform.

MOOC PROVIDERS

Microcredentials

The Credential

The definition of a microcredential is still evolving as there is no regulatory authority or established definition even among institutions of higher education. Experts describe a microcredential in the following ways:

- Is a record of focused learning achievement verifying what the learner knows, understands or can do.⁷
- Smaller in terms of time or credits than a traditional academic award;
- More targeted in the bundle of skills or study topics than a traditional academic award;
- More flexible in its delivery than traditional higher education.⁸

There are some recognized similarities to traditional academic credentials, including:

- assessments based on clearly defined standards and is awarded by a trusted provider;
- stand-alone value and may contribute to or complement other credentials, including through recognition of prior learning.
- meets the standards required by relevant quality assurance.⁹

A microcredential may be awarded by an university for completing a series of courses. Each MOOC platform uses unique labels for the microcredentials it offers:

- Coursera¹⁰ – Specializations, MasterTrack Certificates, University Certificates, Professional Certificates
- edX¹¹ – Professional Certificates, Professional Education, MicroBachelors, MicroMasters, XSeries
- FutureLearn¹² – Microcredentials, ExpertTracks
- Udacity¹³ – Nanodegrees
- Kadenze¹⁴ – Specialist Certificate

The Credential Provider

Microcredentials counted here are provided via an online MOOC platform independently or on behalf of a partnering organization, such as a university. Some universities offer curriculum and award academic credits via the MOOC platform, in which case the university is the credential provider. In other cases, the microcredential is the creation of the MOOC platform, in which case the platform is the credential provider.

⁷ United Nations Educational, Scientific and Cultural Organization. (2022). *Towards a common definition of micro-credentials*. <https://unesdoc.unesco.org/ark:/48223/pf0000381668>

⁸ Zanfille, Holly. (2021) Nondegree Credentialing: A Global Issue. Nondegree Credential Research Network. George Washington Institution of Public Policy. The George Washington University. https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/8/3867/files/2021/05/NCRN-Report_OECD-Webinar_May-12-2021_final_PDF.pdf

⁹ United Nations Educational, Scientific and Cultural Organization. (2022). *Towards a common definition of micro-credentials*. <https://unesdoc.unesco.org/ark:/48223/pf0000381668>

¹⁰ Coursera, <https://www.coursera.org/>

¹¹ edX, <https://www.edx.org/search?tab=course>

¹² FutureLearn, <https://www.futurelearn.com/courses>

¹³ Udacity, <https://www.udacity.com/courses/all>

¹⁴ Kadenze, <https://www.kadenze.com/courses>

Credential Count Source and Method

Using the Class Central Census¹⁵ to identify MOOC platforms, the team visited each platform's website and counted the number of microcredential programs offered. The five platforms included Coursera, edX, FutureLearn, Udacity, and Kadenze. Only microcredentials offered via these platforms are counted.

The count for MOOC microcredentials (1,603) is the sum of each MOOC platform's offerings. A microcredential is counted if it is an online educational credential that is more than a single course but is less than a full degree, with a few exceptions (see discussion of FutureLearn's Microcredentials). Offerings by each MOOC platform were assumed to be unique.

Discussion

This count is an enumeration of programs listed by each MOOC platform. Previous counts utilized the annual Class Central Census of microcredential programs, reporting the total number of programs presented by the census. This year, the count includes the census's count at the time of its 2021 publication, plus additional programs identified by the research team added since the last census, published at the end of 2021. The Class Central Census provided the initial list of microcredential providers, which the research team investigated to identify their offerings.

Since the last count, the research team has improved the differentiation of microcredentials and course completion certificates. Many certificates awarded for completing multiple courses, now counted in this "microcredential" category, were previously counted in the course completion certificate category. Various studies encouraged the research team to distinguish these microcredentials because they are more than a certificate of completion.

FutureLearn is an exception to this report's understanding of microcredentials. FutureLearn's "Microcredentials" include for-credit single-course certificates awarded in partnership with an academic institution. The microcredentials follow the Common Microcredential Framework (CMF) from the European MOOC Consortium (EMC). Although these microcredentials may consist of only one course, they are included in this count as they are difficult to distinguish from other microcredentials on the same platform.

Suggestions for Future Research

- Monitor the evolving nature of the definitions and frameworks used to classify microcredentials and evaluate the potential to incorporate these credentials into a different category. For example, it may be possible to distinguish between programs that constitute a bundled set of courses versus a more established credential.
- Support the emerging standards for defining microcredentials so these can be better distinguished across platforms.
- Continue to follow the work of leading scholars for a detailed understanding of the nature of various microcredentials. Support the emerging standards for defining microcredentials so these can be better distinguished across platforms.
- As the types of organizations offering microcredentials via the MOOC platforms continue to expand, start to identify non-academic organizations and their offerings. Many of the microcredentials on these platforms are offered in partnership with academic institutions, but other organizations may offer these too.
- Only microcredentials offered via these platforms are counted. The research team should consider whether microcredentials are offered via other platforms or in other ways.
- Workforce boards and other organizations are beginning to incorporate microcredentials that are stackable to for-credit credentials. Future research should compare the cross-over, if any, between post-secondary degrees and certificates and microcredentials.

¹⁵ Class Central. (2021). *By the Numbers, MOOCs in 2021*. <https://www.classcentral.com/report/mooc-stats-2021/>

¹⁶ The commonalities were described by Thomas Weko in the report [Nondegree Credentialing: A Global Issue \(May 2021\)](#) presented to the Nondegree Credential Research Network. Weko describes the common traits of a microcredential, based on his study of OECD references, including coverage of more than a certificate of completion. Weko, Thomas. (2021) *Nondegree Credentialing: A Global Issue*. Nondegree Credential Research Network. George Washington Institution of Public Policy. The George Washington University. https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/8/3867/files/2021/05/NCRN-Report_OECD-Webinar_May-12-2021_final_PDF.pdf

¹⁷ The Common Microcredential Framework (CMF) is developed by the European MOOC Consortium consisting of FutureLearn (UK), FUN (France), MiríadaX (Spain and IberoAmerica), EduOpen (Italy), and OpenupEd/ the European Association of Distance Teaching Universities (EADTU). Their standards can be found at [The Common Microcredential Framework - FutureLearn](#). European MOOC Consortium. The Common Microcredential Framework (CMF). <https://emc.eadtu.eu/cmf-awarded-programmes#:~:text=The%20Common%20Microcredential%20Framework%20%28CMF%29%20uses%20the%20European,readable%20and%20understandable%20across%20different%20countries%20and%20systems.>

MOOC PROVIDERS

Degrees from Foreign Universities

The Credential

Some MOOC platforms, such as EdX, Coursera, and FutureLearn, provide opportunities to earn an academic degree online (primarily Bachelor's or Master's) offered online by a university based outside of the U.S.¹⁸ This credential category includes only degrees from foreign universities offered via these specific platforms.

Degrees offered by U.S.-based universities on these platforms are not included in this category; these 36 degree programs are included in the post-secondary educational degree categories.

The Credential Provider

The credential providers of foreign degrees are the foreign universities that deliver their educational programs and award credentials via MOOC platforms. The foreign universities included in this count are based in Australia, the United Kingdom, Spain, and France.

Credential Count Source and Method

The count for foreign academic degree programs offered through MOOC platforms (54) is based on a program list included in Class Central's annual report on MOOCs, published in January 2022.¹⁹ The research team assumed that each U.S.-based program is included in the count of degrees presented earlier, so U.S.-based degree programs were excluded from this count.

Discussion

This count is an enumeration. The Class Central Report includes both U.S.-based and non-U.S.-based universities and we treat this source as authoritative and comprehensive for the purposes of this report.

Suggestions for Future Research

- Search for additional sources of foreign degrees offered online in the U.S., in addition to Class Central's annual report.
- Continue to confirm that each U.S.-based online degree program (excluded from this category) is included in NCES IPEDS and in the count of Title IV degree programs.

¹⁸ Class Central. (2022) *70+ Legit Online Master's Degrees*, <https://www.classcentral.com/report/mooc-based-masters-degree/>

¹⁹ *ibid*

MOOC PROVIDERS

Course Completion Certificates

The Credential

A course completion certificate from a MOOC platform indicates completion of a specific, individual academic course. Courses may provide knowledge and skills but do not, on their own, lead to another recognized credential, such as an academic certificate, degree, or microcredential, or a professional certification. However, individuals may take these courses to prepare for one of these other credentials.

The Credential Provider

The providers of the course completion certificates credentials are the MOOC platforms themselves. Credentials in this category are typically only provided by these platforms and not issued in collaboration with partnering institutions such as universities, even if course completion contributes to a university-awarded credential.

Credential Count Source and Method

Five MOOC platforms (Coursera, edX, FutureLearn, Kadenze, and Swayam) offer students the option of obtaining a certificate of course completion. Udacity is not included here as that MOOC platform only offers microcredentials such as nanodegrees.

Each MOOC platform's website indicates the number of courses it offers. The research team assumed these platforms are all offering unique course completion certificates and summed the number of courses across the five websites.

This count of 11,357 course completion certificates is an enumeration based on numbers published online by these MOOC platforms. Some of the platforms reported the number of unique courses and related certificates available; in other cases, the research team navigated these platforms to count all offerings.

Discussion

Course completion certificates are offered upon the completion of a single course and can be obtained on the path to other credentials such as a microcredential or a degree.

This year we noted several non-academic partners participating with the MOOC platforms, so the single courses and completion certificates may also lead to non-academic credentials endorsed by these organizations. Organizations offering microcredentials and content leading to course completion certificates through MOOCs include not only U.S.-based and foreign universities and colleges, but also:

- Large U.S.-based businesses (e.g., IBM, Autodesk, Cisco, Google, SAS, and Microsoft);
- Smaller U.S.-based businesses (e.g., deeplearning.ai and Unity);
- Nonprofits (e.g., Linux Foundation);
- Non-U.S.-based businesses (e.g., Yandex);
- Non-academic training organizations (e.g., HubSpot Academy and Palo Alto Network).

Suggestions for Future Research

- Identify the extent to which organizations that are not universities are participating with these platforms and creating courses that lead to MOOC course completion certificates.
- Continue to report the number of courses each provider offers and confirm each platform offers unique courses.
- To ensure timely reporting for future counts, establish when websites are updated and the best dates to pull information for the count.

Non-Academic Organizations

TABLE 4: Credential Count from Non-Academic Organizations

Credential Type	2022 Count	2021 Count	Change in Count from 2021	Estimation or Enumeration	Data Sources
Non-Academic Organizations	656,753	549,712	107,041		
Occupational Licenses	12,152	11,938	214	Estimate	ETA COS License Finder
Occupational Certifications	7,051	8,165	-1,114	Enumeration	ETA COS Certification Finder, ETA COS Competency Clearinghouse, Military COOL, ANSI, NCCA, ICAC
Registered Apprenticeships	27,385	23,400	3,985	Enumeration	ETA OA Registry
Unregistered Apprenticeships	448	50	398	Estimate	Job Postings data
Coding Bootcamp Course Completion Certificates	2,153	1,560	593	Estimate	Course Report
Online Course Completion Certificates	177,292	123,038	54,254	Estimate	Udemy, LinkedIn Learning, SkillSuccess, Alison, Skillshare, PluralSight, ANSI
Digital Badges	430,272	381,561	48,711	Enumeration	Certif-ID, Edalex, Idaho Division of Career Technical Education, Instructure, Participate, Pearson

NON-ACADEMIC ORGANIZATIONS

Occupational Licenses

The Credential

A government requires an occupational license for individuals to practice their professions in that jurisdiction. Workers who wish to practice in licensed professions must meet state-specific educational, training, and testing requirements, which state licensing boards oversee. According to the National Conference of State Legislatures (NCSL), “When implemented properly, occupational licensing can help protect the health and safety of consumers by requiring practitioners to undergo a designated amount of training and education in their field.”²⁰

The Credential Provider

State licensing boards typically regulate licensing with authority granted by state legislatures. Licensing boards set and update licensing requirements, manage license application and renewal processes, including fee collection, and maintain lists of license holders.

Credential Count Source and Method

The count in this report (12,152) was determined by counting the number of state-specific, occupation-specific licenses in the CareerOneStop (COS) License Finder database and estimating the number of licenses not included in the License Finder database.²¹

The License Finder database, published in March 2022, contained 10,386 unique licenses. Licenses reported by the states to COS are included in License Finder if they have sufficient descriptive information. The team compared the licenses described on a sample of states’ websites to the number of licenses reported in License Finder. The research team estimated 1,766 licenses were missing from License Finder (17 percent), bringing the nationwide estimate to 12,152.

²⁰ Center for Excellence in State Occupational Licensing (2020). *Occupational Licensing Final Report: Assessing State Policies and Practices*. National Conference of State Legislatures. <https://www.ncsl.org/research/labor-and-employment/occupational-licensing-final-report-assessing-state-policies-and-practices637425196.aspx>

²¹ License Finder is a database and search tool maintained on the U.S. Department of Labor (DOL), Education and Training Administration’s CareerOneStop website (ETA COS). Information on the site is gathered by each state’s Labor Market Information agency under a DOL grant. CareerOneStop. *License Finder*. (2022). Education and Training Administration. U.S. Department of Labor. <https://www.careeronestop.org/Toolkit/Training/find-licenses.aspx>

Discussion

Though improvements have been made to the centralized license database supported by the Analyst Resource Center, two sets of information seem to be persistently missing from the centralized ETA COS License Finder database: variations in license type (temporary, apprentice, intern) and variations in medical licenses, such as in nursing and nursing specializations. These discrepancies are likely due to a rolling data reporting schedule (some states are more up-to-date in the database), different state regulations and reporting processes, state decisions about how and what to report to COS, and license fit with the occupational code structure used by COS.

Based on the findings from previous years and re-examining state registries and licenses listed by individual licensing authorities in three states (Iowa, Louisiana, and Nebraska), the research team decided to maintain its estimate that 17 percent (1,766) of licenses were missing from License Finder. These three states had the most discrepancies in license types and medical licenses in 2020 and we found those differences were still relevant, to varying degrees, across the three states.

The count of occupational licenses is an estimate. States may vary in terms of completeness of coverage in License Finder. It is challenging to verify completeness since publicly available lists of licenses regulated by state licensing authorities can be challenging to find.

Suggestions for Future Research

- Verify which states have a publicly available and centralized list of licenses to compare with the results in License Finder.
- Compare state registries to validate or update the percentage of missing licenses, ideally from at least five representative states, to re-assess the accuracy of the extrapolation method.
- Identify if any single licensing authority is missing from the ETA COS License Finder Database.
- Obtain and analyze information from any missing licensing authorities.
- Continue to collaborate with the License Finder team at ETA CareerOneStop to recognize trends and potential challenges to accurate accounting through the centralized reporting system.

NON-ACADEMIC ORGANIZATIONS

Occupational Certifications

The Credential

An occupational certification is a credential awarded by an authoritative body—such as an industry or professional association—to an individual who demonstrates designated knowledge, skills, and abilities in a particular occupation. Many certifications are time-limited and renewable.

The Credential Provider

Certification providers are typically private or nonprofit organizations that create and promote their certifications to professionals. These may seek accreditation from third-party accrediting organizations though accreditation is not uniform. Certification providers may provide training materials and administer qualifying tests or may allow other organizations to provide courses and administer the tests. They may maintain records of individuals that have attained certification, but these are rarely publicly available.

Credential Count Source and Method

The count in this report (7,051) was determined by counting the number of unique certifications in the Department of Labor (DOL) Education and Training Administration's CareerOneStop website (ETA COS) Certification Finder and identifying certifications not included in Certification Finder.

Certification Finder is a directory and search tool maintained by ETA COS for learners to identify relevant certifications and certification providers. In June 2022, Certification Finder contained 5,254 unique industry-recognized certifications. A certification is included in Certification Finder if it:

- is not a license, although it can be a precursor to a license,
- is based on skill standards or a competency framework developed by practitioners,
- has an identifiable occupation or occupation(s) that it can be applied to,
- has a website URL,²²
- requires passing a test of skills, competence, or knowledge,
- requires periodic renewal, except in the case of vendor product certification, and
- includes a certificate or document award at completion.²³

The research team did not limit their search for certifications to the criteria established by Certification Finder nor to certifications recognized by accrediting agencies. Additional certifications were collected from several sources:

- Lists of accredited programs: American National Standards Institute (ANSI)²⁴ accredited program list, the National Commission for Certifying Agencies (NCCA)²⁵ accredited program list, the International Certification Accreditation Council members (ICAC)²⁶ accredited program list
- Lists of programs by government agencies and their partners: Credentialing Opportunities On-Line (COOL),²⁷ an inventory of military-recognized civilian credentials (certifications, licenses, apprenticeships) maintained by the Department of Defense.
- Lists of programs by industry that are provided by the National Coalition of Certification Centers (NC3).²⁸

²² CareerOneStop recommends that the website clearly describes the requirements (education, training, work experience, etc.) for sitting for an exam or demonstrating a skill proficiency and specifies what competencies will be enhanced through the process.

²³ CareerOneStop. *Certification Finder Help*. (2022). Education and Training Administration. U.S. Department of Labor. <https://www.careeronestop.org/Toolkit/Training/find-certifications-help.aspx>

²⁴ American National Standards Institute (ANSI), National Accreditation Board (ANAB). <https://anabpd.ansi.org/Accreditation/credentialing/personnel-certification/ALLdirectoryListing?menuID=2&prgID=201&statusID=4>.

²⁵ National Commission for Certifying Agencies (NCCA), Institute for Credentialing Excellence (ICE). <https://ice.learningbuilder.com/Public/MemberSearch/ProgramVerification26> International Certification Accreditation Council (ICAC). <https://www.icacnet.org/membership/accredited-programs/>.

²⁷ Department of Defense (DOD) Credentialing Opportunities On-Line (COOL). <https://cool.osd.mil/research-related-credentials.htm>.

²⁸ National Coalition of Certification Centers (NC3). <https://www.nc3.net/certifications-by-program/>

Credential Count Source and Method (continued)

Certifications recognized by third parties were added to the count. When these lists were compared to those found in Credential Finder, duplicate items were removed from the third-party source lists. The research team found 1,410 certifications in the third-party lists that were not included in Certification Finder.

Three industry-specific investigations were conducted to identify certifications associated with specific industries (Information Technology (IT), Manufacturing, and Energy). These certifications were compared to those counted from Certification Finder or the third parties. Any duplicates were removed from the new industry lists. This investigation revealed 631 additional certifications.

For the final count, the research team added the additional certifications found from the deduplicated third-party lists (1,410) to the number of certifications from the deduplicated industry-specific lists (631) to the number of certifications in Certification Finder (5,254).

Discussion

In previous years, the research team examined three industries, including healthcare, manufacturing, and IT, to estimate the total number of certifications not included in Certification Finder. The research team refined its approach this year, and no extrapolation or estimation was applied to the count. Industry research focused on the IT and manufacturing sectors and added a new industry: energy. These sectors were chosen because they are emerging industries or had a high prevalence in previous counts. The research team found 631 certifications not included in Certification Finder.

This count of 7,051 certifications is an enumeration. The count in this category is less than that in the previous report (8,165), resulting from extensive deduplication across multiple data sources and the decision not to extrapolate. The research team eliminated the list of certifications from the Wikipedia article used last year, which was outdated and unverifiable. The Department of Veteran's Affairs WEAMS Approved Certification List was also eliminated as a source because the site only gives information on providers of certifications, and only limited information can be found on any specific certifications provided.

Suggestions for Future Research

The way organizations define certification is changing. CareerOneStop and the DOL have a broad definition of certification. At the same time, American National Standards Institute's (ANSI) National Accreditation Board (ANAB) applies a more specific definition based on the International Standards Organization (ISO) and International Electrotechnical Commission (IEC) 17024 Conformity Assessment. NOCTI and other accrediting organizations may or may not follow suit. In some cases, credentials that previously were called certifications no longer include "certification" in their title. Researchers should monitor how large businesses, such as Adobe and IBM, respond.

The increasing engagement of academic institutions with the landscape of non-degree credentials suggests that future research should investigate possible new certifications recognized by these organizations.

NON-ACADEMIC ORGANIZATIONS

Registered Apprenticeships Certificate of Completion

The Credential

A Certificate of Completion recognizes the completion of a Registered Apprenticeship. An apprenticeship establishes practitioners as qualified technicians in their chosen trade or profession through on-the-job training and classroom instruction. It is operationalized by a formal training contract between an employer and their employee.

The U.S. Department of Labor (DOL) Office of Apprenticeship (OA) manages the U.S. Registered Apprenticeship system, as authorized by the National Apprenticeship Act. An individual employer, labor organization, education institution, or industry association can sponsor a Registered Apprenticeship program. Sponsors can register their program standards and apprentices with OA or a State Apprenticeship Agency (SAA). Recognized by OA, SAAs oversee Registered Apprenticeship programs in 25 states and the District of Columbia. The OA performs that role in the remaining 25 states.²⁹

Upon completing on-the-job training and instructional learning with an employer, apprentices in a Registered Apprenticeship program receive an employer-approved, nationally-recognized Certificate of Completion from the SAA or OA, as appropriate.

The Registered Apprenticeship system includes the United Services Military Apprenticeship Program (USMAP).³⁰ USMAP provides active-duty Navy, Coast Guard, and Marine Corps service members the opportunity to improve their job skills and complete civilian apprenticeship requirements while on active duty. For USMAP graduates, OA provides the nationally recognized Certificate of Completion upon program completion.³¹

The Credential Provider

The OA controls the standards and regulations, and awards the Certificates of Completion. State Apprenticeship Agencies (SAA) serve as OA proxies in 25 states and have the authority to set standards, regulate, and award certificates. Employers and their intermediaries play an important role because they host the apprenticeship, validate the skills and knowledge gained on the job, and confirm the completion of training time and competency milestones, which indicate to the OA or SAA that a certificate can be awarded.

Credential Count Source and Method

The count of active Registered Apprenticeship programs is provided annually by OA on its website.³² The OA receives data from all states quarterly and updates the count of the Registered Apprenticeship system programs at the national and state levels annually. USMAP is included in this count; pre-apprenticeship programs are not.

²⁹ See <https://www.doleta.gov/oa/stateagencies.cfm> for a list of SAAs.

³⁰ United States Military Apprenticeship Program (USMAP). <https://usmap.osd.mil/>.

³¹ See "About Apprenticeships" at <https://usmap.osd.mil/apprenticeships.htm#benefits-of-apprenticeship>.

³² Office of Apprenticeships (OA)(2022). *FY 2021 Data and Statistics*. Department of Labor. <https://www.dol.gov/agencies/eta/apprenticeship/about/statistics/2021>

Discussion

This report's count of Registered Apprenticeships (27,385) is an enumeration provided by the OA for the fiscal year 2021. This count is slightly higher than the previous enumeration by OA (23,400). The OA likely provides an accurate and complete count of the aggregate number of Registered Apprenticeship system programs.

Though the OA data and statistics provide the most comprehensive information on the Registered Apprenticeship system, the Registered Apprenticeship Partners Information Data System (RAPIDS) database, which OA now publishes on its website, includes detailed data from many states. States and territories with missing information include MN, OR, VT, WA, and DC. OA is in the process of integrating data from these states.

Suggestions for Future Research

- Researchers seeking more detail on each apprenticeship program could utilize the Registered Apprenticeship Partners Information Data System (RAPIDS) database, which OA now publishes on its website. This database includes data from the OA and most SAA states.
- The RAPIDS database is unique in providing occupational and industry codes for training programs. This year, the research team categorized and counted apprenticeship programs by occupational code, where that information was available. Next year, the research team could utilize the industry codes to observe occupational training trends for each industry.
- The validity of the program data should be assessed in collaboration with practitioners and experts.

NON-ACADEMIC ORGANIZATIONS

Unregistered Apprenticeships

The Credential

According to experts, there are more than 500,000 paid, structured work-based learning programs that are similar to apprenticeships. These apprentice-like programs are offered by employers, require on-the-job and classroom training, and may culminate in a certificate of completion or another industry-recognized credential.

Since, by definition, there is no centralized authority for these programs, it is difficult to verify that any credential is awarded. These programs are “unregistered” because they are not registered in the Registered Apprenticeship Partners Information Database System (RAPIDS) managed by the U.S. Department of Labor (DOL) Office of Apprenticeship (OA).

The Credential Provider

A provider is an employer, third party, or intermediary that provides a certificate of completion at the end of an unregistered apprenticeship program. These certificates of completion, awarded through programs that are not registered with OA, would not be recognized by the OA. In the cases of third parties or intermediaries representing employers that offer certificates of completion for unregistered apprenticeship programs, the strength of any completion credential depends on the employer’s or intermediary’s brand.

Credential Count Source and Method

The research team examined a sample of job postings from 800 companies referencing apprenticeships and compared these companies and programs to the list of registered apprenticeship sponsors and programs found in the OA RAPIDS database. The goal of the comparison was to determine whether any of the companies with related job postings had any apprenticeship programs registered with OA. From a sample of 74 companies, we found that 52 (56%) were not registered with the OA. Therefore, we estimate that 56% of all companies (800) posting “apprenticeship” jobs, or 448, have unregistered programs.

³⁴ Robert I. Lerman. (2012). *Can the United States Expand Apprenticeship? Lessons from Experience*. IZA Policy Paper. Institute for the Study of Labor. <https://www.econstor.eu/bitstream/10419/91788/1/pp46.pdf>

³⁴ Office of Apprenticeships (OA) Registered Apprenticeship System (RAPIDS). (2020). *FY 2021 Data and Statistics*. Department of Labor. <https://www.dol.gov/agencies/eta/apprenticeship/about/statistics/2021>

³⁵ Of the 74 companies, 24 apprenticeships were identified as registered and 14 companies could not be found. Of the 14, eight were assumed to no longer be offered.

Discussion

This count is an estimate from a partial enumeration and is a conservative estimate. The research team only counted one program per employer, although the largest companies in the sample posted hundreds of relevant jobs.

While experts estimate that many employers offer structured, work-based learning programs similar to apprenticeship programs, such programs are not proactively regulated by the federal government, and there is no active central registry.³⁶ Without a centralized database, it is difficult to identify these programs.

Identifying and tracking relevant programs is also difficult because sponsoring or intermediary organizations may change their approach. For example, the German American Chambers of Commerce (GACC), a U.S.-based nonprofit intermediary, previously relied primarily on the German certification system to validate and recognize the skills of their apprentices. The GACC website now states that their apprenticeship programs must be registered with the Office of Apprenticeship to ensure alignment with Department of Labor (DOL) standards.³⁷

A 2019 report described the Federation for Advanced Manufacturing Education (FAME) program and noted that few employers participating in this apprenticeship-like program were registered with DOL.³⁸ These programs and other youth apprenticeships might not register due to restrictions on youth participation at the worksite, which keep these programs from meeting the DOL standards. Experts report that there may include 6,400 youth apprenticeships in Wisconsin and similar programs in other states such as Georgia and California.

The definition of an unregistered apprenticeship is disputed among experts, but New America's Education Policy researchers suggested in a 2021 report that any apprenticeship program should meet three specific criteria:

- Participants are employed and paid a wage, not a stipend, and the program includes work-based learning,
- The program provides instruction in the form of formal classroom training,
- The program culminates in a credential.³⁹

The research team also investigated the Industry-Registered Apprenticeship Programs (IRAPS) database, a federal program abandoned in 2021. As of September 2022, 127 unregistered apprenticeship programs are listed in the database. However, the current federal administration no longer supports the program.⁴⁰

³⁶ Robert I. Lerman. (2012). *Can the United States Expand Apprenticeship? Lessons from Experience*. IZA Policy Paper. Institute for the Study of Labor. <https://www.econstor.eu/bitstream/10419/91788/1/pp46.pdf>

³⁷ German American Chambers of Commerce (GACC). <https://www.gaccsouth.com/en/services/apprenticeships-in-the-usa>

³⁸ Tamar Jacoby and Robert I. Lerman (2019). *Industry-Driven Apprenticeship, What Works, What's Needed*. Opportunity America. https://opportunityamericaonline.org/wp-content/uploads/2019/02/OA_ApprenticeshipReport_2019.pdf

³⁹ Center on Education & Labor at New America. (2021). *Apprenticeship in Review 2021*. New America. <https://www.newamerica.org/education-policy/reports/apprenticeship-review/apprenticeship-in-review-2021/>

⁴⁰ Employment and Training Administration. (2021). *U.S. Department of Labor Announces Proposal to Rescind Industry-Recognized Apprenticeship Program*. U.S. Department of Labor. <https://www.dol.gov/newsroom/releases/ETA/ETA20211112>.

⁴¹ Robert I. Lerman. (2012). *Can the United States Expand Apprenticeship? Lessons from Experience*. IZA Policy Paper: Institute for the Study of Labor. <https://www.econstor.eu/bitstream/10419/91788/1/pp46.pdf>.

Suggestions for Future Research

Past research into apprenticeships suggested that there may be up to 1,000,000 unregistered apprentices in the U.S..⁴¹ Unregistered apprenticeships are largely unexplored territory and further research is required to understand the landscape.

NON-ACADEMIC ORGANIZATIONS

Coding Bootcamp Course Completion Certificates

The Credential

Coding bootcamps issue certificates of course completion. The first coding bootcamp was founded in 2012, according to Course Report.⁴² Coding bootcamps provide instruction in-person, online, or both in-person and online. While most have locations in one country, several offer courses in multiple countries. This report only counts bootcamps with an on-site U.S. presence, online availability, or both.

The Credential Provider

The credential providers for coding bootcamp course completion certificates are usually private, for-profit education organizations. We also find that some colleges and universities that offer traditional degrees also offer coding bootcamps.

Credential Count Source and Method

Course Report is the primary information source for the coding bootcamp industry. The Course Report directory of bootcamps is the primary source for this count of bootcamp course completion certificates.⁴³ The directory indicates there are 792 schools and provides a profile for 780 unique schools, of which 615 either have a U.S. presence, are online, or both. Identical courses with multiple formats, such as full-time, part-time, online, or in-person, were considered identical and counted as one course. Collectively, the online and U.S.-based schools offer 2,113 unique courses.

The directory does not provide information on 12 schools, so the research team assumed that these have characteristics similar to those with detailed information in the directory: about 79 percent are accessible in the U.S. or online. All schools offered an average of nearly four credentials each. The research team assumed the average applied to the 12 schools without directory information, resulting in an additional 40 courses. All included, a total of 2,153 coding bootcamp course completion certificates were counted.

⁴² Lauren Stewart. (2022). *How Coding Bootcamps Can Change the Face of Tech*. Course Report. <https://www.coursereport.com/blog/diversity-in-coding-bootcamps-report-2022-scholarships>.

⁴³ Course Report. (2022). *School Directory*. <https://www.coursereport.com/schools>.

Discussion

This count (2,153) is an estimate based on Course Report directory listings. The first credential count, in 2018, included a count of all bootcamp courses (1,718) regardless of location. In 2019, the research team identified 1,014 coding bootcamp courses in the U.S. or online. A steady increase in the credentials identified has followed: 1,560 bootcamp certificates were counted in 2021, and 2,153 bootcamp certificates were counted in 2022.

Course Report and individual bootcamp websites indicate that the programs emphasize course content and outcomes over the nature of the credential provided. Course Report recommends that prospective students choose bootcamps licensed by state regulatory agencies to identify quality programs and credential providers. "Licensing often means that the school has to submit their curricula (and any major curricula changes) for approval, invest in liability insurance in case of closure, and publicize their course catalog."⁴⁴ However, the research team could not obtain information from Course Report regarding the percentage of state-licensed bootcamps.

Suggestions for Future Research

- Identify any schools not profiled in the Course Report directory and seek information on these schools.
- Conduct more in-depth research on the extent to which bootcamp and bootcamp prep courses are included in the count of certificates from non-Title IV organizations.
- Contact Course Report to obtain information on the locations of the coding bootcamps that offer in-person instruction to identify where these programs are offered. Locations were listed online, but there was no way to download this information.

⁴⁴ "Find the Best Bootcamp for You," Course Report, at <https://www.coursereport.com/>. Course Report. (2022). <https://www.coursereport.com/>.

NON-ACADEMIC ORGANIZATIONS

Non-Academic Online Course Completion Certificates

The Credential

Non-academic online course completion certificates are awarded upon the completion of a course conducted via online platforms. This category does not include online courses completed at academic institutions or offered by MOOC providers.

The Credential Provider

Non-academic online course completion certificates counted in this category are offered by for-profit online learning providers, such as LinkedIn Learning and Udemy. The credentials are created and offered by the platform the training is delivered on. These providers vary in the subjects covered, cost, and the number of courses offered, but each provides a clear process for completing courses. The providers may require a paid subscription and may offer free classes (e.g., Alison offers 4,000 free courses as well as courses by fee or subscription).

Credential Count Source and Method

These platforms offer students the option of obtaining a certificate of course completion. Each course provider's website indicates the number of courses it offers and offers some information about them. From seven sources, 177,292 course completion certificates were identified. The research team included online course providers included in previous reports. These include:

- Udemy⁴⁵
- LinkedIn Learning⁴⁶
- SkillSuccess⁴⁷
- PluralSight⁴⁸
- Alison⁴⁹

Further exploration of the landscape added two new sources:

- The American National Standards Institute (ANSI) website listed online course completion certificates, which added 172 certificates to the count.⁵⁰
- The research team also added online course completion certificates from Skillshare, an online learning platform offering classes through a paid subscription.⁵¹ This platform added another 39,390 completion certificates to the count and contributed to a large portion of the increase from the previous report.

The research team gathered course-specific information from each of six training websites and de-duplicated listings within each provider. Assuming no overlapping offerings between providers, the total number of course completions listed on each website were totaled. Certificates of completion that were listed by ANSI were investigated to identify the training delivery platform. Courses that were not connected to the six platforms above were counted and added to the total. The final count of the non-academic online certificates of completions is 177,292. Udemy was the largest platform in the count, offering 115,181 courses.

⁴⁵ Udemy, <https://www.udemy.com>

⁴⁶ LinkedIn Learning, <https://www.linkedin.com/learning/>

⁴⁷ SkillSuccess, <https://www.skillsuccess.com>

⁴⁸ PluralSight, <https://www.pluralsight.com>

⁴⁹ Alison, <https://alison.com>

⁵⁰ American National Standards Institute (ANSI), National Accreditation Board (ANAB), <https://anabpd.ansi.org/accreditation/credentialing/certificate-issuers/>

⁵¹ Skillshare, <https://www.skillshare.com/en/about>

Discussion

This count (177,292) is an estimation of publicly available listings of online course completion certificates. Due to the proprietary nature of these platforms and limited data access, the research team used the description of courses and advertised numbers to estimate the number of courses offered for two of these platforms: Udemy and PluralSight.

These providers differ from MOOC providers. MOOC providers are intermediaries that offer a web platform for course delivery and multi-course credential (or microcredential) programs by academic institutions and businesses. The online course providers included in this category do not serve large education and training organizations and do not offer microcredentials or degrees. Programs sponsored, created, or required by large businesses do not appear on these platforms. These distinctions may be less clear in the future as platforms shift in response to market demand.

Suggestions for Future Research

This year, the research team added online course completion certificates from Skillshare to the count, as well as certificates identified by ANSI. Adding the Skillshare platform alone added over 39,000 certificates to the count. Future efforts should continue to search for online course providers other than those named here.

Future efforts should continue to identify the nature of these online course certificates to differentiate them from other types of certificates and to consider the overlap with MOOC providers.

The websites for platforms offering course completion certificates often state a number of programs, however those numbers often include duplicates. The research team had to perform extensive deduplication for some of these platforms to ensure the counts were not inflated. Future research should continue to build on the deduplication efforts to ensure further accuracy of the count.

These are not academic courses, but rather learning exercises or modules. The courses offered may be better categorized as learning modules, offering certificates of completion to further differentiate these from academic course completion. Course duration varies from ten minutes to 15 hours; the duration of a course might help to distinguish credentials of different qualities.

NON-ACADEMIC ORGANIZATIONS

Digital Badges

The Credential

Open Badges are digital badges that contain embedded metadata about skills and achievements and are shareable across the web. Any organization can issue a badge following the Open Badges specification published by the tEdTech Consortium, Inc. (formally IMS Global Learning Consortium), standardizing how badges are digitally represented.

The Credential Provider

Badges counted here are issued by six badge-issuing technology provider organizations or “vendors” that offer badges within the United States. Badges may be awarded to any individual participating in any activity, acquiring any skill, or completing any program offered by any organization.

Credential Count Source and Method

In the Spring of 2020, Credential Engine and 1EdTech staff surveyed badge vendors via the IMS Global OpenBadges workgroup concerning badge classes in America, replicating questions from a Fall 2018 survey. Participating badge vendors included Badgr, Campus Labs, CanCred, Credly, LRNG, NOCTI, Participate, and SkillStack.

The survey was conducted again in the Summer of 2022, and the following badge vendors participated: Certif-ID, Edalex, Idaho Division of Career Technical Education, Instructure, Participate, and Pearson. Aggregating across all responses yielded a count of 430,272 available badges (“badge classes”).

Discussion

This count is an enumeration. The number of unique digital badges makes up 43 percent of this report’s total count, up from 39 percent of the count in the last report.

The previous count (381,561), conducted in 2020, increased compared to the 2019 report because badge vendors reported more badges. This year’s count (430,272) includes fewer badge providers than previous years; however, they reported offering nearly 50,000 more badges than in 2020.

Because it is difficult to disaggregate badges by credential or achievement type across various badge providers and platforms, the research team was not able to ascertain the extent to which these badges apply to other categories in the count and thereby represent duplicate counts. The Open Badges specification can be used to verify other credential types. For example, the American Medical Certification Association uses badges as one part of their verification services for the Phlebotomy Technician Certification. This practice is likely to become more common, making it even more important to have transparent information within badges to specify the type of credential they represent.

Though digital open badges, by their definition, should be the credential that is most easy to track, systems and search engines are not yet developed to easily read and compare all badges available across different platforms.

Suggestions for Future Research

Credential Engine should continue to collaborate with 1EdTech to execute the annual badge inventory research agenda.

Researchers and technologists should develop systematic solutions to identify, verify, compare and categorize digital badges. Badge metadata should include connections to other credential types (e.g., part of a certificate program or apprenticeship), provider name (i.e., the name of the school or company imparting the skills and knowledge), and provider type (e.g., a university, high school, independent nonprofit or company).

Systematic solutions should identify and differentiate between digital badge authors or creators and the providers that issue the badges to more accurately represent the credential providers.

Future research should consider the role badges play in relation to other credentials. The number of badges presented in this count includes both badges that represent unique credentials and those that are awarded either in addition to or as a proxy for other types of credentials. The research team recognized several certifications and certificates of completion that were awarded along with a badge.

Secondary Schools Diplomas and Equivalencies

TABLE 5: Credential Count from Secondary Schools

Credential Type	2022 Count	2021 Count	Change in Count from 2021	Estimation or Enumeration	Data Sources
Secondary School diplomas and equivalencies	56,179	48,919	7,260		
Public School Districts – Diplomas	34,457	36,548	-2,091	Estimate	NCES CCD; Departments of Education for each of 50 states and DC
Public School Districts – Alternative Certificates	10,062	—	—	Estimate	NCES CCD; Departments of Education for each of 50 states and DC
Private Schools – Diplomas	11,603	12,371	-768	Enumeration	NCES PSS
High School Equivalency Diplomas	57	N/A	N/A	Enumeration	GED; HiSET

SECONDARY SCHOOL DIPLOMAS AND EQUIVALENCIES

Public Secondary School Diplomas

The Credential

This category covers secondary school diplomas offered by public secondary schools. A diploma is a North American academic school-leaving qualification awarded upon high school graduation, typically after a course of study over four years, from Grade 9 to Grade 12. Schools that offer 12th grade may be described as secondary or high schools. The research team utilizes these terms interchangeably and regards a diploma from a high school or a secondary school as one type of credential.

The Credential Provider

Providers of diplomas included in the public secondary school count are public school districts with at least one school that offers grade 12. Public school districts are authorized and regulated by state departments of education.

Credential Count Source and Method

Using the U.S. Department of Education National Center for Education Statistics (NCES) Common Core of Data (CCD), the research team counted the number of public school districts in each state offering Grade 12 (13,742). This is an increase of 677 districts counted in the previous report. If a school district offered grade 12, it was assumed that they provided every diploma option offered by the state.

Diploma options included the number of standard and advanced diplomas, endorsements, and waiver options by state gathered from the Education Commission of the States' 50-State Comparison of diplomas by state. The number of public school districts in each state was multiplied by the number of the state's diploma options. The number of credentials offered in each state totaled 34,457.

Discussion

The data sources available do not provide enough detail to count the number of diplomas offered at individual districts in each state. This count is an estimate because the research team assumed that every school district offers the maximum number of graduation options allowed by its state. Some states offer a greater number of diploma options, including endorsements for career and technical education or advanced academic achievement.

This year's count of secondary school diplomas (34,457) is lower than last year's count because although there are more school districts than the previous count, there are fewer credential options per state. For example, large states such as New York decreased their graduation options by six, and Texas decreased its graduation options by four.

Suggestions for Future Research

- For the states that offer more than one diploma option, examine ways to better measure the proportion of districts that do not offer each diploma option. This will improve the accuracy of this count.
- Previous reports utilized Achieve.org as a source of graduation options by state. Search for a comprehensive list of graduation options by state that can be used in the same manner.

SECONDARY SCHOOL DIPLOMAS AND EQUIVALENCIES

Public Secondary School Alternative Certificates

The Credential

A public secondary school *alternative certificate* is a North American academic school-leaving qualification awarded upon high school graduation. Sometimes described as a Certificate of Attendance or Certificate of Completion, this credential is awarded to those students who did not meet the minimum requirements for a standard diploma but who fulfilled other requirements set by the state.⁵² All states are required by federal law to offer an alternative path to graduation for students with disabilities.⁵³ In some states, this requirement may be met by a waiver to standard graduation requirements (resulting in a diploma, excluded from this count), or by an alternative certificate, counted here. Some states have more than one type of alternative certificate.

The Credential Provider

Every public school district that offers 12th grade is required to offer the state's designated alternative path to graduation. Every school district in a state that offers an alternative certificate is a provider of this credential. All public school districts are regulated by their state departments of education.

Credential Count Source and Method

The U.S. Department of Education's Common Core of Data (CCD)⁵⁴ reports the number of public school districts offering Grade 12. That number was 13,742 in 2019-20. The number of Certificates of Attendance and Completion was obtained from each state's department of education website. The alternative certificates by state were summed (including states with zero certificates), multiplied by their respective state's number of public school districts, and then aggregated to obtain an estimation of 10,062.

Discussion

This is the first year the alternative certificate has been included in the credential count. This count is deemed an estimate given the assumption that all school districts offers all alternative certificate options allowed in their states.

Previous counts did not include alternative certificates. A new investigation into secondary credentials led to the inclusion of these alternative certificates of completion because they represent satisfactory completion of secondary school, similarly to a diploma. They represent an alternative path to high school graduation, as required by federal law, and warrant inclusion in the count of secondary credentials.

Suggestions for Future Research

Researchers should determine if there is a centralized database for these credentials, as this count relied on individual state department of education websites for information.

⁵² Under the Individuals with Disabilities Education Act (IDEA), "certificates of completion are used for students with Individualized Education Plans (IEPs) who have not met state graduation requirements but still want to participate in graduation ceremonies with their class." Statute Chapter 33. U.S. Department of Education. 2019. <https://sites.ed.gov/idea/statuteregulations/>

⁵³ *Individuals with Disabilities Education Act (IDEA)*. 20 U.S.C. 1400. U.S. Department of Education. 2019. <https://sites.ed.gov/idea/statuteregulations/#statute>

⁵⁴ National Center for Education Statistics. *Common Core of Data: America's Public Schools*. U.S. Department of Education. <https://nces.ed.gov/ccd/>.

SECONDARY SCHOOL DIPLOMAS AND EQUIVALENCIES

Private Secondary School Diplomas

The Credential

This category covers private secondary school diplomas offered by private secondary schools. A diploma is a North American academic school-leaving qualification awarded upon high school graduation, typically after a course of study over four years, from Grade 9 to Grade 12. Schools that offer 12th grade may be described as a secondary school or a high school. The research team utilizes these terms interchangeably and regards a diploma from a high school or a secondary school as one type of credential.

The Credential Provider

Private secondary school diplomas are provided by private institutions offering a school level of secondary or at least 12th grade. These schools may or may not be accredited by an independent organization.

Credential Count Source and Method

The U.S. Department of Education reports that in 2019-20 there were 11,603 private schools with secondary grades.⁵⁵ The research team assumed that each private school offers one type of diploma. The estimated count of credential programs is the same as the number of schools.

Discussion

The number reported here (11,603) includes both stand-alone secondary schools (3,479) and combined primary-secondary schools (8,124). The count is considered an estimate given the assumption that each private school offers one type of credential.

Suggestions for Future Research

In the future, researchers may seek to ascertain the extent to which private secondary schools issue more than one type of diploma.

⁵⁵ National Center for Education Statistics. (2019-20). *Private School University Survey, Table 1*. U.S. Department of Education. <https://nces.ed.gov/surveys/pss/tables/TABLE01f1920.asp>.

SECONDARY SCHOOL DIPLOMAS AND EQUIVALENCIES

High School Equivalency Diplomas

The Credential

A high school equivalency diploma is a North American academic school-leaving qualification awarded upon completing one of two national tests, the General Educational Development Test (GED) or the High School Equivalency Test (HiSET). This credential is determined by each state, territory, and protectorate and recognizes competencies equivalent to those resulting from a typical secondary school program. The credential name frequently varies between states but are known collectively as high school equivalencies.

The Credential Provider

The credential is provided by and is unique to the state. Every U.S. state, territory, and protectorate offers its own high school equivalency diploma. The tests to obtain this credential differ in requirements by state, and the resulting credential is awarded based on the state in which the test was taken.

Credential Count Source and Method

Each U.S. state, territory, and protectorate offers one high school equivalency credential, regardless of the exam used (i.e., GED or HiSET).⁵⁶ Thus, the research team determined the number of high school equivalency diplomas (57) by counting the number of U.S. states, territories, and protectorates.

Discussion

Previous counts did not include high school equivalency diplomas. This year, the research team conducted a new investigation into these secondary credentials. In the same way traditional high school diplomas indicate attainment of state academic standards, so does an equivalency diploma.

There are currently two national tests, the General Educational Development Test (GED) and the High School Equivalency Test (HiSET). Although they differ by state in their requirements, both tests lead to a high school equivalency diploma awarded by the state in which the test was taken.

Suggestions for Future Research

Currently, the two national tests, the GED and the HiSET, are the only national options for obtaining a High School Equivalency Diploma. Still, there may be additional tests that are unique to each state. Future research can include investigation of a sample of states to identify additional secondary completion options.

⁵⁶Dann-Messier, B. (2014). *Recognized Equivalent of a High School Diploma*. GEN-14-06. U.S. Department of Education. Office of Postsecondary Education. 11 April.

Appendices

The Appendices include the following:

Appendix A

Provider Counts – number of providers for select credential categories

Appendix B

State Counts – number of credentials by state

Appendix C

Occupation counts – number of credentials by occupation

Appendix D

Industry profiles – industry occupational employment is compared to the number of credentials available for each occupational group

Appendix A

Credential Provider Counts

Credential Engine defines a credential provider as “an institution or organization that owns or offers a credential.” Credential providers are distinguished from education and training providers, which may provide the resources and opportunities for instruction that supports credentialing but do not have the authority to assign the credential or do not control the requirements for credentialing. Credential providers are also distinguished from regulators or accreditors that set rules and norms guiding credential design and offering.

This is the first time credential provider counts have been published with the Counting Credentials report. Though these critical actors shape the credentialing landscape, a comprehensive inventory of credential providers has never been created. The research team identified **59,692 credential providers**. The largest category of credential providers offer digital badges—14,921 credential providers were counted.

The landscape of credential providers is complex and warrants further research to fully understand how these providers design and offer credentials and how the landscape is changing. Online education and training delivery platforms are expanding in the public and private sectors and many have a unique niche, offering, and set of partners that may change over time. We suspect that some credential providers (e.g., universities) are participating in multiple credential provider categories (e.g., offering degrees, microcredentials, and badges) and we make an effort to avoid double counting where possible. In some cases, it is difficult to distinguish the credential provider from the platform offering the credential and related training. For these reasons and because we could not validate the credential provider counts, we omitted the counts for providers for microcredentials, academic

course completion certificates, and non-academic online course completion certificates. A count of the providers of badges is included despite potential overlap with other categories because the research team has a high level of confidence in the badge provider count. Future research efforts should aim to identify where badge providers are included in other provider categories and to validate web-based information on count providers in related categories.

The count of credential providers and data sources are described in the following tables for each credential type. To read these tables, it is important to understand where providers are unique to the credential offered and where providers might be double counted because the organization provides multiple types of credentials. **Note the asterisk in the table where careful interpretation is encouraged.**

In several cases, we found organizations that provide only one credential type: license providers (primarily state licensing agencies) do not provide certifications (primarily provided by private organizations), and vice versa. In other cases, providers are counted in multiple subcategories, and the overlap can be identified. For example, postsecondary educational institutions (Table A1) often

provide credentials in more than one subcategory (i.e., Title IV Degrees, Non-Title IV Degrees, Title IV Certificates, Non-Title IV Certificates). In this case, the numbers for the subcategories are not summed because that would double count some providers; instead, the research team is able to distinguish between providers and count “unique providers”. This is also true for Secondary School Diploma and Equivalency Providers (Table A4) – there is double counting across the subcategories that can be identified; the total is not the sum because that would double count providers.

Providers of credentials in the MOOCs category (Table A2) and for online course completion certificates may include the web-based platforms that deliver the credentials or the organizations that use the platforms and create the content and credentials and verify satisfactory completion of the credential earned. Counts of providers are not included for microcredentials and course completion certificates (Table A2) or online course completion certificates (see Table A4) because further research on this landscape needs to be conducted.

The total number of credential providers for Non-Academic Organizations (Table A3) is a sum of the counts provided for each subcategory.

TOTAL CREDENTIAL PROVIDER COUNT

59,692

TABLE A1

POSTSECONDARY EDUCATIONAL UNIQUE PROVIDERS: 10,654*

Credential Provider Type	Credential Providers	Primary Data Sources	Primary Method
Title IV Degrees	4,293	NCES IPEDS, WIOA ETPL	Enumeration
Non-Title IV Degrees	526	NCES IPEDS, WIOA ETPL	Partial Enumeration
Title IV Certificates	4,744	NCES IPEDS, WIOA ETPL	Enumeration
Non-Title IV Certificates	6,166	NCES IPEDS, WIOA ETPL	Partial Enumeration

TABLE A2

MOOC PROVIDERS: —

Credential Provider Type	Credential Providers	Primary Data Sources	Primary Method
Microcredentials**	—	Coursera, edX, FutureLearn, Kadenze, Swayam, and Udacity	—
Degrees from Foreign Universities**	—	Coursera, edX, FutureLearn	—
Course Completion Certificates**	—	Coursera, edX, FutureLearn, Kadenze, and Swayam	—

TABLE A3

NON-ACADEMIC ORGANIZATION PROVIDERS: 23,588			
Credential Provider Type	Credential Providers	Primary Data Sources	Primary Method
Occupational Licenses	1,400	ETA COS License Finder	Partial Enumeration
Occupational Certifications	1,586	ETA COS Certification Finder, ANSI, ICAC, NCCA, Military COOL, industry-specific research	Partial Enumeration
Registered Apprenticeships	4,618***	OA RAPIDS	Enumeration
Unregistered Apprenticeships	448****	Job posting sample	Partial Enumeration
Coding Bootcamp Course Completion Certificates	615	Course Report	Enumeration
Online Course Completion Certificates**	—	Udemy, LinkedIn Learning, SkillSuccess, Alison, Skillshare, PluralSight	Partial Enumeration
Digital Badges	14,921*****	Certif-ID, Edalex, Idaho Division of Career Technical Education, Instructure, Participate, Pearson	Partial Enumeration

TABLE A4

SECONDARY SCHOOL DIPLOMA AND EQUIVALENCY UNIQUE PROVIDERS: 25,402*			
Credential Provider Type	Credential Providers	Primary Data Sources	Primary Method
Public School Districts – Diplomas	13,742	NCES	Enumeration
Public School Districts – Alternative Certificates	9,035	NCES	Enumeration
Private Schools – Diplomas	11,603	Private School Universe Survey	Enumeration
High School Equivalency Diplomas	57	GED and HiSET	Enumeration

*The unique provider counts for postsecondary educational institutions and secondary school diplomas and equivalencies are not the sum of the providers counted in the subcategories, as it is for non-academic organizations. We deduplicate across subcategories for the count of “unique providers”.

** Provider counts are omitted for all Microcredentials, Foreign Degrees, Course Completion Certificates, and Online Course Completion Certificates due to a lack of data.

***For registered apprenticeships, the Office of Apprenticeship controls the standards and regulations and awards the certificate of completion. State Apprenticeship Agencies serve as OA proxies in 25 states with the authority to set standards, regulate, and award certificates of completion. Apprenticeship programs are hosted by 4,618 employers or their representatives who are responsible for providing training and providing validation of experience and skills gained. The latter number (4,618) is included here.

****Unregistered apprenticeship programs are hosted by employers or their representatives. The number included here (448) is an estimate based on a limited sample of job postings.

*****Counts of providers can be provided for badges because major badge providers participate in a national survey that identifies the number of unique organizations utilizing these platforms. The number of providers of badges is included here, though the research team cannot identify the types of providers or their overlap with other categories, such as postsecondary schools.

Appendix B

State Counts

Table B provides a state-by-state breakdown of the number of credentials available across nine of the credential categories described in this report:

- | | | |
|--------------------------|---|-------------------------------------|
| 1. Degrees | 4. Registered Apprenticeships | 7. High School Equivalency Diplomas |
| 2. Certificates | 5. High School Diplomas | |
| 3. Occupational Licenses | 6. High School Alternative Certificates | |

The counts were determined by identifying the location of the credential providers including secondary and postsecondary institutions, employers, state agencies, and other non-academic organizations. The results are provided in Table B by credential type and state.

TABLE B

State	Degrees	Certificates	Licenses	Registered Apprenticeship	High School Diplomas	High School Alternative Certificates	High School Equivalency Diplomas	Total
Alabama	2564	1385	150	132	616	154	1	5002
Alaska	356	525	138	288	162	54	1	1524
Arizona	2943	3384	117	144	1086	362	1	8037
Arkansas	2275	1846	338	284	1088	272	1	6104
California	17240	12971	355	866	5500	1100	1	38033
Colorado	2616	1988	171	260	1309	187	1	6532
Connecticut	2281	993	241	1,662	292	0	1	5470
Delaware	784	214	255	439	87	29	1	1809
District of Columbia	1308	312	75	367	60	20	1	2143
Florida	6128	6098	391	262	380	76	1	13336
Georgia	4510	4907	180	178	1164	388	1	11328
Hawaii	636	232	83	98	7	1	1	1058
Idaho	1351	776	160	225	564	0	1	3077
Illinois	8169	5246	408	526	2304	576	1	17230

State	Degrees	Certificates	Licenses	Registered Apprenticeship	High School Diplomas	High School Alternative Certificates	High School Equivalency Diplomas	Total
Indiana	4562	2021	260	1,182	2555	365	1	10946
Iowa	3400	1387	125	897	981	327	1	7118
Kansas	2924	1466	109	150	951	317	1	5918
Kentucky	2623	2039	270	353	516	172	1	5974
Louisiana	2330	1650	109	75	495	99	1	4759
Maine	1250	536	317	125	1024	256	1	3509
Maryland	2896	1623	163	240	75	25	1	5023
Massachusetts	5923	1986	138	1,058	1818	303	1	11227
Michigan	6901	3787	236	1,102	2880	720	1	15627
Minnesota	5903	3443	316	200	870	0	1	10733
Mississippi	2549	946	83	74	1440	0	1	5093
Missouri	5289	1999	133	471	1884	471	1	10248
Montana	1095	385	166	821	334	0	1	2802
Nebraska	2246	1055	189	108	747	249	1	4595
Nevada	911	857	174	100	120	0	1	2163
New Hampshire	1223	579	154	437	272	68	1	2734
New Jersey	3260	1461	214	1,680	1023	0	1	7639
New Mexico	1663	1355	217	121	246	0	1	3603
New York	13502	3606	157	1,148	5621	1606	1	25641
North Carolina	6441	5403	478	1,055	580	0	1	13958
North Dakota	1246	438	159	106	441	0	1	2391
Ohio	9697	4831	104	605	7890	0	1	23128
Oklahoma	2622	2022	315	129	2165	0	1	7254
Oregon	2508	1763	307	181	627	209	1	5596
Pennsylvania	10124	4180	135	880	3405	681	1	19406
Rhode Island	1147	240	175	536	144	0	1	2243

State	Degrees	Certificates	Licenses	Registered Apprenticeship	High School Diplomas	High School Alternative Certificates	High School Equivalency Diplomas	Total
South Carolina	2657	1241	192	1,199	400	0	1	5690
South Dakota	1209	340	193	135	1092	156	1	3126
Tennessee	4010	2557	203	419	524	131	1	7845
Texas	10676	5492	190	640	4356	0	1	21355
Utah	2181	4907	102	272	282	94	1	7839
Vermont	847	134	125	366	210	0	1	1683
Virginia	3788	2907	103	2,845	882	147	1	10673
Washington	5016	3920	185	239	546	0	1	9907
West Virginia	1661	661	116	146	171	57	1	2813
Wisconsin	4159	3128	302	1,122	1560	390	1	10662
Wyoming	845	447	101	88	180	0	1	1662
Samoa	29	18	2	1	-	-	1	51
Micronesia	18	19	-	1	-	-	1	39
Guam	84	28	87	125	-	-	1	325
Marianas	10	4	22	1	-	-	1	38
Puerto Rico	2173	728	111	22	-	-	1	3035
Virgin Islands	50	26	11	3	-	-	1	91

Appendix C

Occupation Counts

Many of the credentials in this report are designed to prepare students for their careers or to aid professionals in specific occupations. In this iteration of the Credential Count, the research team sought to understand which occupations were represented in the credential landscape and how the number of credential offerings varies by occupation and type.

The research team assigned credentials to occupations according to the Standard Occupational Classification (SOC) codes included in the credential databases or by using the O*NET SOC AutoCoder tool.⁵⁷ The research team assigned the most common or relevant two-digit SOC code(s) to each credential. Where multiple detailed codes were listed (six digits provided), the research team chose the most common broad occupation category (two-digit level). The research team then counted the number of credentials assigned to each two-digit SOC code to determine how many credentials were primary to each broad occupational category. The results are provided in Table C by broad occupational category and credential type.

TABLE C

SOC 2-Digit Code	Occupation Title	TIV Degrees	TIV Certificates	NTIV Degrees	NTIV Certificates	Microcredentials	Foreign Degrees	MOOC Course Certificates	Licenses	Certifications	Registered Apprenticeships	Coding Bootcamps	Non-Academic Course Completion Certificates	Totals
11	Management Occupations	128,007	52,945	23,416	29,429	1,653	53	11,222	847	844	526	226	42,892	292,060
13	Business and Financial Operations Occupations	110,555	53,536	22,401	29,444	1,600	48	10,955	1,231	637	378	302	35,107	266,194
15	Computer and Mathematical Occupations	113,524	43,785	20,850	23,311	1,621	48	10,879	15	1,358	1,233	1,189	54,132	271,945
17	Architecture and Engineering Occupations	46,518	28,777	10,653	14,501	576	6	5,591	3,630	599	1,545	76	4,207	116,679
19	Life, Physical, and Social Science Occupations	103,780	43,079	19,029	23,371	1,177	47	9,224	855	309	197	—	7,134	208,202
21	Community and Social Services Occupations	70,327	32,795	14,408	16,212	674	45	5,635	1,078	198	238	—	14,334	155,944
23	Legal Occupations	5,191	1,421	517	578	56	2	410	91	18	25	—	—	8,309
25	Educational Instruction and Library Occupations	141,112	52,826	23,894	29,498	1,678	54	11,339	2,278	236	156	38	47,716	310,825

⁵⁷ O*NET-SOC AutoCoder (2021). <https://www.onetsocautocoder.com/plus/onetmatch>

SOC 2-Digit Code	Occupation Title	TIV Degrees	TIV Certificates	NTIV Degrees	NTIV Certificates	Microcredentials	Foreign Degrees	MOOC Course Certificates	Licenses	Certifications	Registered Apprenticeships	Coding Bootcamps	Non-Academic Course Iction Certificates	Totals
27	Arts, Design, Entertainment, Sports, and Media Occupations	102,495	43,852	19,124	23,535	1,446	45	9,858	533	194	214	57	57,745	259,098
29	Healthcare Practitioners and Technical Occupations	34,183	18,433	6,606	8,550	167	6	2,460	6,962	1,231	1,125	—	10,093	89,816
31	Healthcare Support Occupations	20,681	16,253	5,453	7,201	96	4	1,866	560	146	725	—	3,953	56,938
33	Protective Service Occupations	6,547	5,973	1,936	4,684	24	2	193	311	172	626	—	4	20,472
35	Food Preparation and Serving Related Occupations	2,500	4,927	691	3,572	18	—	194	78	47	385	—	379	12,791
37	Building and Grounds Cleaning and Maintenance Occupations	5,602	3,397	1,270	2,263	7	—	28	160	57	465	—	116	13,365
39	Personal Care and Service Occupations	80,047	36,928	14,575	19,179	987	39	7,278	1,345	244	2,198	—	5,788	168,608
41	Sales and Related Occupations	20,423	9,879	5,712	7,325	472	34	2,720	743	128	110	170	3,367	51,083
43	Office and Administrative Support Occupations	56,238	40,656	15,872	22,510	1,193	48	7,520	249	196	533	38	30,287	175,340
45	Farming, Fishing, and Forestry Occupations	4,574	1,517	943	1,687	19	—	193	218	14	52	—	—	9,217
47	Construction and Extraction Occupations	8,090	13,133	3,719	8,112	135	—	1,403	1,762	447	19,134	—	768	56,703
49	Installation, Maintenance, and Repair Occupations	29,803	20,112	9,134	13,301	602	34	4,124	400	614	10,421	—	3,392	91,937
51	Production Occupations	57,713	41,983	15,223	24,303	770	38	6,048	305	445	6,879	—	4,117	157,824
53	Transportation and Material Moving Occupations	25,178	19,401	7,028	9,567	231	24	3,269	696	299	409	—	12	66,114
55	Military Specific Occupations	3,823	1,605	1,219	1,644	—	—	—	7	—	28	—	—	8,326
99	Not Classified	116,686	60,813	24,479	34,131	1,495	52	10,117	44	11	2,674	19	—	250,521

Appendix D

Industry Profiles

The research team sought to determine how credential offerings vary by industry. Assigning credentials to specific occupation groups helps us to understand which credentials might be associated with various industries. In the following tables, industry occupational employment distribution is compared to the number of credentials available for each occupational group.

To produce unique profiles for each industry, we provide occupational employment for each industry group, assigning codes according to the North American Industry Classification System (NAICS).⁵⁸ We used the credentials associated with the occupational (SOC) codes in Appendix C to identify the number of credentials most relevant to industries.⁵⁹ For comparison, each industry-specific table below provides information on the industry's occupational employment distribution by occupational group. Only occupations that comprise more than one percent of the jobs in that industry are shown.

The number of associated credentials is the same for each occupational group regardless of industry. For example, management occupations are associated with 292,060 credentials, no matter the industry. Each instance of "Management Occupations" in an industry will represent a different percentage of an industry's jobs but describe the same number of credentials. The value of these tables is in comparing the credential numbers to the employment numbers to observe varying trends in each industry group. See Appendix C for more detail on the types of credentials associated with each occupation.

Agriculture, Forestry, Fishing, and Hunting

NAICS Code 11

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
45	Farming, Fishing, and Forestry Occupations	54.4	9,217
11	Management Occupations	22	292,060
53	Transportation and Material Moving Occupations	5.8	66,114
43	Office and Administrative Support Occupations	4.5	175,340
49	Installation, Maintenance, and Repair Occupations	2.1	91,937
51	Production Occupations	1.8	157,824
13	Business and Financial Operations Occupations	1.4	266,194
19	Life, Physical, and Social Science Occupations	1.2	208,202
37	Building and Grounds Cleaning and Maintenance Occupations	1.2	13,365

⁵⁸ U.S. Census. North American Industry Classification System. <https://www.census.gov/naics/>

⁵⁹ Bureau of Labor Statistics. National Employment Matrix. *Employment by industry, occupation, and percent distribution, 2020 and projected 2030*. (2021). <https://data.bls.gov/projections/nationalMatrix>

Mining

NAICS Code 21

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
47	Construction and Extraction Occupations	39.8	56,703
53	Transportation and Material Moving Occupations	12.3	66,114
49	Installation, Maintenance, and Repair Occupations	8.8	91,937
43	Office and Administrative Support Occupations	7.4	175,340
51	Production Occupations	6.8	157,824
11	Management Occupations	6.6	292,060
13	Business and Financial Operations Occupations	5.3	266,194
17	Architecture and Engineering Occupations	5.3	116,679
19	Life, Physical, and Social Science Occupations	2.7	208,202
15	Computer and Mathematical Occupations	2.2	271,945
41	Sales and Related Occupations	1.8	51,083

Utilities

NAICS Code 22

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
49	Installation, Maintenance, and Repair Occupations	27.4	91,937
43	Office and Administrative Support Occupations	15.2	175,340
51	Production Occupations	14.3	157,824
17	Architecture and Engineering Occupations	9.4	116,679
13	Business and Financial Operations Occupations	9.1	266,194
11	Management Occupations	7.8	292,060
47	Construction and Extraction Occupations	6	56,703
15	Computer and Mathematical Occupations	3.2	271,945
19	Life, Physical, and Social Science Occupations	1.9	208,202
53	Transportation and Material Moving Occupations	1.9	66,114
41	Sales and Related Occupations	1.5	51,083
33	Protective Service Occupations	1.1	20,472

Construction

NAICS Code 23

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
47	Construction and Extraction Occupations	60.9	56,703
43	Office and Administrative Support Occupations	9.2	175,340
49	Installation, Maintenance, and Repair Occupations	9.1	91,937
11	Management Occupations	6.9	292,060
13	Business and Financial Operations Occupations	4.3	266,194
53	Transportation and Material Moving Occupations	3.2	66,114
41	Sales and Related Occupations	2.2	51,083
51	Production Occupations	1.8	157,824
17	Architecture and Engineering Occupations	1.3	116,679

Manufacturing

NAICS Code 31–33

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
51	Production Occupations	50.2	157,824
53	Transportation and Material Moving Occupations	8.8	66,114
43	Office and Administrative Support Occupations	8	175,340
17	Architecture and Engineering Occupations	6.6	116,679
11	Management Occupations	5.7	292,060
49	Installation, Maintenance, and Repair Occupations	5.2	91,937
13	Business and Financial Operations Occupations	4.4	266,194
41	Sales and Related Occupations	3.3	51,083
15	Computer and Mathematical Occupations	2.6	271,945
47	Construction and Extraction Occupations	1.6	56,703
19	Life, Physical, and Social Science Occupations	1.2	208,202

Wholesale Trade

NAICS Code 42

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
53	Transportation and Material Moving Occupations	25	66,114
41	Sales and Related Occupations	22.9	51,083
43	Office and Administrative Support Occupations	17.2	175,340
11	Management Occupations	8	292,060
49	Installation, Maintenance, and Repair Occupations	7	91,937
13	Business and Financial Operations Occupations	5.7	266,194
51	Production Occupations	5.6	157,824
15	Computer and Mathematical Occupations	3	271,945
27	Arts, Design, Entertainment, Sports, and Media Occupations	1.4	259,098
17	Architecture and Engineering Occupations	1.1	116,679

Retail Trade

NAICS Code 44–45

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
41	Sales and Related Occupations	52.4	51,083
53	Transportation and Material Moving Occupations	16.4	66,114
43	Office and Administrative Support Occupations	8.7	175,340
49	Installation, Maintenance, and Repair Occupations	4.8	91,937
35	Food Preparation and Serving Related Occupations	3.8	12,791
29	Healthcare Practitioners and Technical Occupations	3.5	89,816
11	Management Occupations	2.9	292,060
51	Production Occupations	2.4	157,824
13	Business and Financial Operations Occupations	1.2	266,194

Transportation and Warehousing

NAICS Code 48–49

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
53	Transportation and Material Moving Occupations	69.2	66,114
43	Office and Administrative Support Occupations	14.5	175,340
49	Installation, Maintenance, and Repair Occupations	5.3	91,937
11	Management Occupations	3	292,060
13	Business and Financial Operations Occupations	2.1	266,194
41	Sales and Related Occupations	1.3	51,083
51	Production Occupations	1.3	157,824

Information

NAICS Code 51

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
15	Computer and Mathematical Occupations	22.8	271,945
27	Arts, Design, Entertainment, Sports, and Media Occupations	15.2	259,098
43	Office and Administrative Support Occupations	14	175,340
41	Sales and Related Occupations	11.1	51,083
13	Business and Financial Operations Occupations	10.2	266,194
11	Management Occupations	9.2	292,060
49	Installation, Maintenance, and Repair Occupations	9	91,937
17	Architecture and Engineering Occupations	1.6	116,679
53	Transportation and Material Moving Occupations	1.4	66,114
25	Educational Instruction and Library Occupations	1.2	310,825
39	Personal Care and Service Occupations	1.2	168,608

Finance and Insurance

NAICS Code 52

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
43	Office and Administrative Support Occupations	37.1	175,340
13	Business and Financial Operations Occupations	26.7	266,194
41	Sales and Related Occupations	15.2	51,083
11	Management Occupations	9.3	292,060
15	Computer and Mathematical Occupations	7.8	271,945
29	Healthcare Practitioners and Technical Occupations	1.3	89,816
23	Legal Occupations	1	8,309

Real Estate Rental and Leasing

NAICS Code 53

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
41	Sales and Related Occupations	20.4	51,083
43	Office and Administrative Support Occupations	19.6	175,340
49	Installation, Maintenance, and Repair Occupations	19.3	91,937
11	Management Occupations	14.1	292,060
13	Business and Financial Operations Occupations	6.6	266,194
53	Transportation and Material Moving Occupations	6.1	66,114
37	Building and Grounds Cleaning and Maintenance Occupations	5.7	13,365
47	Construction and Extraction Occupations	1.4	56,703
33	Protective Service Occupations	1.3	20,472
39	Personal Care and Service Occupations	1.1	168,608
35	Food Preparation and Serving Related Occupations	1	12,791

Professional, Scientific, and Technical Services

NAICS Code 54

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
15	Computer and Mathematical Occupations	17.7	271,945
13	Business and Financial Operations Occupations	17	266,194
43	Office and Administrative Support Occupations	16.6	175,340
11	Management Occupations	10.5	292,060
17	Architecture and Engineering Occupations	9.9	116,679
23	Legal Occupations	7.5	8,309
41	Sales and Related Occupations	4.3	51,083
19	Life, Physical, and Social Science Occupations	3.9	208,202
27	Arts, Design, Entertainment, Sports, and Media Occupations	3.6	259,098
29	Healthcare Practitioners and Technical Occupations	2.4	89,816
51	Production Occupations	1.4	157,824
31	Healthcare Support Occupations	1.1	56,938
53	Transportation and Material Moving Occupations	1	66,114

Management of Companies and Enterprises

NAICS Code 55

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
13	Business and Financial Operations Occupations	23.3	266,194
43	Office and Administrative Support Occupations	21.9	175,340
11	Management Occupations	19.6	292,060
15	Computer and Mathematical Occupations	12.1	271,945
41	Sales and Related Occupations	4.4	51,083
17	Architecture and Engineering Occupations	3.1	116,679
53	Transportation and Material Moving Occupations	2.2	66,114
29	Healthcare Practitioners and Technical Occupations	2.1	89,816
27	Arts, Design, Entertainment, Sports, and Media Occupations	1.8	259,098
49	Installation, Maintenance, and Repair Occupations	1.8	91,937
23	Legal Occupations	1.2	8,309
19	Life, Physical, and Social Science Occupations	1.1	208,202
51	Production Occupations	1.1	157,824
21	Community and Social Services Occupations	1	155,944

Administrative and Support and Waste Management and Remediation Services

NAICS Code 56

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
37	Building and Grounds Cleaning and Maintenance Occupations	21.9	13,365
43	Office and Administrative Support Occupations	18.2	175,340
53	Transportation and Material Moving Occupations	13.3	66,114
33	Protective Service Occupations	9.5	20,472
51	Production Occupations	7.3	157,824
13	Business and Financial Operations Occupations	5.1	266,194
41	Sales and Related Occupations	4.6	51,083
11	Management Occupations	3.8	292,060
47	Construction and Extraction Occupations	3	56,703
49	Installation, Maintenance, and Repair Occupations	2.8	91,937
15	Computer and Mathematical Occupations	2.5	271,945
29	Healthcare Practitioners and Technical Occupations	1.7	89,816
31	Healthcare Support Occupations	1.5	56,938
35	Food Preparation and Serving Related Occupations	1	12,791

Education Services

NAICS Code 61

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
25	Educational Instruction and Library Occupations	57.8	310,825
43	Office and Administrative Support Occupations	9.3	175,340
11	Management Occupations	5.5	292,060
37	Building and Grounds Cleaning and Maintenance Occupations	3.4	13,365
13	Business and Financial Operations Occupations	2.9	266,194
21	Community and Social Services Occupations	2.9	155,944
35	Food Preparation and Serving Related Occupations	2.8	12,791
29	Healthcare Practitioners and Technical Occupations	2.3	89,816
27	Arts, Design, Entertainment, Sports, and Media Occupations	2.1	259,098
15	Computer and Mathematical Occupations	1.9	271,945
53	Transportation and Material Moving Occupations	1.8	66,114
39	Personal Care and Service Occupations	1.7	168,608
19	Life, Physical, and Social Science Occupations	1.5	208,202
33	Protective Service Occupations	1.4	20,472
49	Installation, Maintenance, and Repair Occupations	1.3	91,937

Health Care and Social Assistance

NAICS Code 62

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
29	Healthcare Practitioners and Technical Occupations	32.9	89,816
31	Healthcare Support Occupations	28.5	56,938
43	Office and Administrative Support Occupations	13.1	175,340
21	Community and Social Services Occupations	5.6	155,944
11	Management Occupations	3.7	292,060
39	Personal Care and Service Occupations	3	168,608
25	Educational Instruction and Library Occupations	2.5	310,825
35	Food Preparation and Serving Related Occupations	2.5	12,791
37	Building and Grounds Cleaning and Maintenance Occupations	2	13,365
13	Business and Financial Operations Occupations	1.9	266,194

Arts, Entertainment, and Recreation

NAICS Code 71

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
39	Personal Care and Service Occupations	30.5	168,608
35	Food Preparation and Serving Related Occupations	14.2	12,791
43	Office and Administrative Support Occupations	9.5	175,340
27	Arts, Design, Entertainment, Sports, and Media Occupations	8.2	259,098
37	Building and Grounds Cleaning and Maintenance Occupations	7.6	13,365
41	Sales and Related Occupations	7.3	51,083
11	Management Occupations	4.6	292,060
33	Protective Service Occupations	4	20,472
49	Installation, Maintenance, and Repair Occupations	3.7	91,937
13	Business and Financial Operations Occupations	3.5	266,194
53	Transportation and Material Moving Occupations	2.6	66,114
25	Educational Instruction and Library Occupations	2.3	310,825

Accommodation and Food Services

NAICS Code 72

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
35	Food Preparation and Serving Related Occupations	80.4	12,791
37	Building and Grounds Cleaning and Maintenance Occupations	4	13,365
41	Sales and Related Occupations	3.4	51,083
43	Office and Administrative Support Occupations	3.2	175,340
11	Management Occupations	2.7	292,060
53	Transportation and Material Moving Occupations	2.4	66,114
39	Personal Care and Service Occupations	1	168,608
49	Installation, Maintenance, and Repair Occupations	1	91,937

Other Services (except Public Administration)

NAICS Code 81

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
39	Personal Care and Service Occupations	16.7	168,608
43	Office and Administrative Support Occupations	13.9	175,340
49	Installation, Maintenance, and Repair Occupations	11.7	91,937
21	Community and Social Services Occupations	8.6	155,944
37	Building and Grounds Cleaning and Maintenance Occupations	7.6	13,365
53	Transportation and Material Moving Occupations	6.5	66,114
13	Business and Financial Operations Occupations	5.9	266,194
11	Management Occupations	5.4	292,060
25	Educational Instruction and Library Occupations	4.3	310,825
51	Production Occupations	4.1	157,824
27	Arts, Design, Entertainment, Sports, and Media Occupations	3.8	259,098
31	Healthcare Support Occupations	3.6	56,938
41	Sales and Related Occupations	3	51,083
35	Food Preparation and Serving Related Occupations	1.8	12,791
15	Computer and Mathematical Occupations	1	271,945

Public Administration

NAICS Code 90

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
43	Office and Administrative Support Occupations	19.8	175,340
33	Protective Service Occupations	18.2	20,472
13	Business and Financial Operations Occupations	10.9	266,194
11	Management Occupations	6.1	292,060
21	Community and Social Services Occupations	4.9	155,944
29	Healthcare Practitioners and Technical Occupations	4.4	89,816
47	Construction and Extraction Occupations	4.1	56,703
49	Installation, Maintenance, and Repair Occupations	4	91,937
53	Transportation and Material Moving Occupations	3.8	66,114
19	Life, Physical, and Social Science Occupations	3.2	208,202
17	Architecture and Engineering Occupations	2.9	116,679
15	Computer and Mathematical Occupations	2.7	271,945
23	Legal Occupations	2.6	8,309
39	Personal Care and Service Occupations	2.4	168,608
37	Building and Grounds Cleaning and Maintenance Occupations	2.3	13,365
25	Educational Instruction and Library Occupations	2	310,825
51	Production Occupations	1.6	157,824
31	Healthcare Support Occupations	1.3	56,938
35	Food Preparation and Serving Related Occupations	1.1	12,791

Executive, Legislative, and General Government

NAICS Code 91

2-Digit Occupation Code	Occupation Title	2020 Percent of Industry Jobs	Associated Credentials
43	Office and Administrative Support Occupations	25.7	175,340
13	Business and Financial Operations Occupations	21.1	266,194
29	Healthcare Practitioners and Technical Occupations	8.2	89,816
11	Management Occupations	7.5	292,060
19	Life, Physical, and Social Science Occupations	5.5	208,202
33	Protective Service Occupations	5.5	20,472
17	Architecture and Engineering Occupations	5.1	116,679
15	Computer and Mathematical Occupations	4	271,945
49	Installation, Maintenance, and Repair Occupations	3.5	91,937
23	Legal Occupations	2.8	8,309
53	Transportation and Material Moving Occupations	2.6	66,114
31	Healthcare Support Occupations	1.3	56,938
47	Construction and Extraction Occupations	1.2	56,703
25	Educational Instruction and Library Occupations	1.1	310,825
37	Building and Grounds Cleaning and Maintenance Occupations	1.1	13,365
51	Production Occupations	1	157,824

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