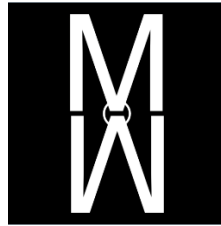


Aligning Certificates, Diplomas, Degrees, and Emerging Forms of Credentials: Macro, Micro, and Maintenance Credentials.

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Executive Summary

This paper addresses structures put in place over decades that necessarily reflect the inherent policy context and considerations of their time. If I were to look at only our current situation to envision the future, I'd miss the root causes of how we wound up with the disjointed system we currently have, which is a siloed data ecosystem that does not accurately account for the full range of ways people perceive, participate, succeed, and benefit from education and training that occur both within postsecondary education institutions and by providers outside of it. While it is not one federal statistical agency's responsibility to collect every credential, it is incumbent upon federal agencies to align their own data systems to validate, honor, and reflect the lived experiences of today's students pursuing tomorrow's credentials.

This paper seeks to envision a path forward, where the various types of credentials—certificates, degrees, diplomas, and emerging credentials—acknowledged and supported across federal agencies are aligned.

The report makes six recommendations to not only improve upon the existing IPEDS Completion Survey and related materials but also align with and meaningfully engage with institutions, federal statistical agencies, innovators, and vested stakeholders.

Recommendation 1. I recommend NCES conduct a legal review to affirm that IPEDS is a data collection system for both Title IV and non-Title IV institutions.

Recommendation 2. I recommend that NCES adopt an organizational framework of credentials that includes the credentials IPEDS has collects and those it does not to allow for greater clarity to the public.

Recommendation 3. I recommend that NCES convene a cross statistical agency workgroup to share research and agree on common terminology for credentials.

Recommendation 4. I recommend NCES create the Program Characteristics Survey to complement the current Institutional Characteristics Survey of IPEDS.

Recommendation 5. I recommend NCES replicate its 1977/78 survey measuring noncredit activity to understand how noncredit has changed over time while adding a few questions relevant to current practice and new knowledge.

Recommendation 6. I recommend NCES play a consultative role to federal governmental agencies and departments funding apprenticeships, workforce training, and career and technical education (CTE) when they revisit their performance metrics to ensure providers confer a credential upon completion.

Part 1: Introduction

An initial review of statistical reports and data collection instruments from the NCES and its predecessors dating to the beginning of the twentieth century adds context to recent debates and reports (Sykes, 2012; Miller et al., 2016; Aliyeva et al., 2018) seeking to situate credentials other than degrees, such as educational certificates and emergent credentials offered after high school (Sykes, 2011; Okahana, 2018; Credential Engine, 2022).

Detangling the different types of awards conferred by institutions of higher education beyond high school that are not a degree is a study of history. In fact, a 1955 report of the U.S. Department of Health, Education, and Welfare summed up the issue we face today when they wrote: "...there is difficulty in defining educational program about which this study was designed to gather information. Not only do they vary in length and content but also in purpose." (Scates, p.10).

Given the evolution of credentials that continues to occur and a future where learning activities are being defined as the most miniscule of experiences, the question before us is this:

How can we revise current data collection practice to align existing and emergent credentials with degrees? The purpose of this report, therefore, is to reimagine how certificates, diplomas, and emerging forms of credentials align with existing degree level structures. If accomplished, and adopted, the collective enterprise can move toward a common vocabulary that supports learner ambitions, employer needs, and collaboration across entities conferring each credential so that each credential becomes interoperable, transferrable, and additive rather than disjointed.

This report is structured in five parts: First is the introduction, which provides the reader with an orientation to the report and its structure. The second, third, and fourth parts of the report are guided by three research questions, which include:

- 1) When and why were undergraduate and graduate certificates and other credentials included in the data collection efforts of NCES and its predecessor agencies?
- 2) How do current definitions of certificates, degrees, and diplomas align with each other, within IPEDS, and across of other federal agency data collection efforts?
- 3) How are current definitions of certificates, degrees, diplomas, and emerging credentials reported on by non-governmental agencies?

In addition to the research question, each part includes an overview of the methodology utilized to answer the question, what was found, and a discussion of the findings. The report concludes with a final section that builds upon the earlier sections to make recommendations for consideration.

Now complete, the work undertaken was expansive. The presentation contained within this paper could not, within the parameters guiding it, raise and answer every change ever made to each credential definition. What is presented herein are the primary evolution points and definitional characteristics that may inform contemporary conversations. That is a limitation

grounded in how federal statistical agencies defined, or applied, terminology for a credential in order to allow for comparability across unique operational contexts. This analytical limitation is also an operational strength and serves as the foundation for the recommendations presented in this paper.

For purposes of this study, the term “credential” is defined as: a writ conferred by an entity that reflects the culmination of a learning experience under its direction. This overly broad definition is intentional to allow for the inclusion of emergent credentials, such as badges, and will be discussed in much greater detail in the last section of this paper.

Part 2: Postsecondary Credentials Collected by NCES

The first research question guiding this report explores the origin of undergraduate and graduate certificates and other formal awards included in the data collection efforts of NCES and its predecessor agencies. A mixed methods approach relying on primary document analysis and then interviews to calibrate initial findings was undertaken. I close this section with a discussion of the findings.

Methodology

A mixed-methods approach was deployed to answer the questions being posed. Trends and the emergence of degree and non-degree credentials were first traced to their origin in data collections by federal education agencies. Once assembled, the data and knowledge gathered from the inquiry led to conversations with experts who could further elaborate on trends observed to triangulate knowledge gathered and presented herein.

A search for earliest existing data collected on colleges and universities in the United States resulted in the identification of the *Report of the Commissioner of Education for the Year 1872*; the third annual report and earliest accessible at the time of this study (United States

Bureau of Education, 1873). From this origin point, future statistical reports from the federal entity that assumed the responsibility to publish statistics on education—irrespective of its changing name—were accessed to trace the evolution of how our nation accounted for its postsecondary enterprise. These reports went from the name “Report of the Commissioner” to “Biennial Survey of Education in the United States” to the currently published “Digest of Education Statistics.”

As the comprehensiveness of these reports grew, institutional data originally contained within them were removed. Starting in 1948, the federal government began a postsecondary data collection system independent from, yet complementary to, annual published reports. These early surveys set the foundation for today’s comprehensive data collection system by NCES in the form of IPEDS.

Findings

Office of Education Circular Number 247, titled *Earned Degrees Conferred by Higher Educational Institutions 1947-48*, serves as the analytical starting point of this study. Aside from serving as the first independent survey, changes from historical precedent were also introduced in this year, including the shift from reporting degrees by department to reporting them by major, disaggregated recipients by sex, and removal of honorary degrees; hence the use of the phrase “earned degrees” (Story, 1948).

Between 1947/48 and the launch of IPEDS in 1986, there were a few other surveys deployed by the U.S. Department of Education to understand the nation’s workforce supply that include credentials other than degrees, such as the Vocational Education Data System (VEDS), the Survey of Non-Collegiate Postsecondary Institutions, and the Adult and Continuing Education Survey series of the 1970s (Orr, 1982). It was, therefore, necessary to trace the origin

of today's credentials collected in IPEDS to their roots to understand the expansiveness of what is being collected, how it came to be, and how it may be improved moving forward. One important consideration is that IPEDS was created to not only integrate the data from various collections that were previously separate but also address existing technical problems as well as meet a range of requirements set out in federal statutes (Peng et al., 1999).

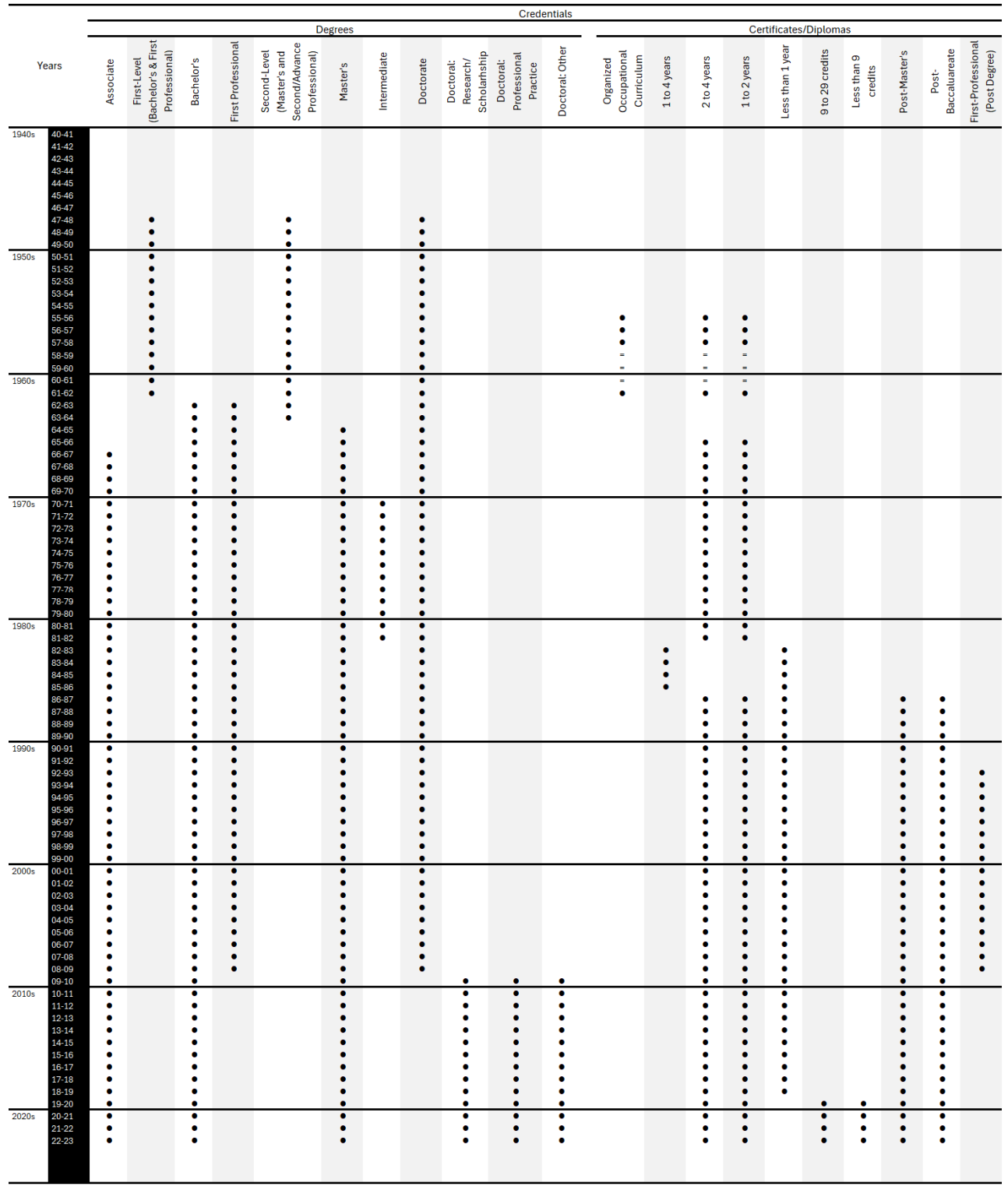
Figure 1 is presented to serve as a visual guide for the type of credentials collected in annual surveys of NCES examined in this section.¹ It lists each credential type by name and years collected from 1947/48 to current day.

Understanding Degrees

Starting with the first survey (1947/48), how to define and classify bachelor's degrees remained a challenge. In the survey instructions, respondents were told, "First professional degrees, whether or not the bachelor's degree is a prerequisite, should be reported in the column headed 'Bachelor's'" (Story, 1948, p. XII). Master's degrees were collected with second professional degrees, and doctorates were in a category of their own. When institutions reported associate degrees, diplomas, or certificates, they were removed. (Story, 1948). This section focuses on the evolution of what a "degree" is.

¹ I refer to data collections by NCES even though the name of this entity has changed over the time period studied. This is done to enhance readability.

FIGURE 1. Credentials Collected in Annual Surveys of NCES: 1947/48 to 2022/23



Note: (=) indicates the data were suggested to be reported but the actual surveys were not found to verify this finding. From the report on 1961/62 data, “A condensed report of the fourth survey appeared in Higher Education, April 1961. Brief summary tables of information from the fifth and sixth surveys have appeared in the three issues of Digest of Educational Statistics” (Brunner, 1965, p.iii).

Bachelor's Degrees. From 1947/48 through the 1961/62 academic years, data for bachelor's degrees and first professional degrees were reported together. Mostly, but not always, this category of combined degree types was referred to as first-level degrees. This classification makes a historical count difficult in that the jointly collected data does not allow for one to understand the magnitude of change in terms of the number of each degree type being awarded. Then in 1962/63, the two degree-types were split and collected separately as instructed in that year's survey, which asked respondents to "report ALL 4-year bachelor's degrees in columns 2-3 of the report form" (Wright, 1965, p. 271). Thus, the use of time as an upper and lower limit (at least 4 but no more than 5 years) was first applied to the definition of a degree. Prior to that, first-level degrees (bachelor's and first professional) were not to be counted unless they were at least 4 years in duration. Now, starting in 1962/63, a bachelor's degree was to take between 4 and 5 years and a first professional was to take at least 5 years.

The bachelor's degree continues forward with much the same definition since that time. For the first professional, the evolution was quite different. In fact, it went from the equivalent of a bachelor's degree in 1947/48 to being classified as a type of doctoral degree in 2009/10.

First-Professional Degrees. Upon becoming its own degree-type in 1962/63, the first-professional degree initially remained a degree of more than 5 years in duration. Then in 1965/66, the survey instructions identified eight specific degrees to be counted. They included Dentistry (D.D.S. or D.M.D.), Law (LL.B. or J.D.), Medicine (M.D.), Theology (B.D), Veterinary Medicine (D.V.M.), Chiropody or Podiatry (D.S.C. or D.P.), Optometry (O.D.), and Osteopathy (D.O.). Then, in 1975/76, the instructions become much more directive. It listed ten degrees, adding Chiropractic and Pharmacy, each connected to a profession and meeting three

criteria, which were to be reported (NCES, 1977).² These ten first-professional degrees were consistently collected until 2009/10, when the classification was changed from first-professional degree to “Doctoral – Professional Practice.” The definition allowed institutions to add others designated by institutions.³ And with this change, the transition from being a bachelor’s degree equivalent to a type of doctoral degree was complete.

Doctoral Degrees. Starting with the 1948 survey, doctoral degrees were positioned as the highest degree level. Clarifications regarding the distinction between doctoral and first-professional degrees that may include the title ‘doctor’ as in Doctor of Veterinarian Medicine were provided in the 1965/66 survey, where the definition of the doctoral degree explicitly requested certain degrees with the title of “doctor” be reported elsewhere in the survey.

Through the years, the doctoral degree was described as what is known today as a research degree, so much so that in 2009/10, the label and instructions for the single doctoral degree were abandoned and replaced with the “Doctor – Professional Practice” mentioned earlier, the “Doctorate – Research/Scholarship,” and a “Doctorate – Other” for degrees that did not fit in the other two classifications.

With the bachelor’s, first-professional degree/professional practice, and doctoral degree being set, one would believe that the master’s degree would fit neatly into the graduate-level hierarchy as something that fit between the bachelor’s and doctoral degrees. Yet it turned out to be a little more complicated.

² The criteria included “(1) it signifies completion of the academic requirements to begin practice in the profession; (2) it is based on a program which requires at least 2 years of college work prior to entrance; and (3) a total of at least 6 academic years of college work is required to complete the degree program, including prior required college work plus the length of the professional curriculum itself.” (NCES, 1977)

³ See the summary of IPEDS Technical Review Pane #7 (Weber, 2004) for a discussion of proposed alterations to the first-professional classification and IPEDS Technical Review Panel #15 (Miller, 2005) which proposed changes to take place in 2008-09 academic year.

Master's Degrees. The master's degree was first seen as equivalent to the doctoral degree (Eells & Haswell, 1960). This parallel structure portended a bleak future, so much so that the Commissioner of Education for the United States predicted, in 1895, that the number of master's degrees would decrease "due to the fact that many of the institutions which formerly granted the master's degree *in course* three years after attaining the bachelor's degree, are withdrawing this privilege, and are requiring one' years resident study, or its equivalent, together with an examination and, in some cases, a thesis" (Harris, 1895, p.83).

In fact, by the 1947/48 survey, master's degrees held the unique distinction of being classified as both master's degrees and second professionals and reported to the federal government as both under the title of a "second-level degree." The use of "second-level degree" was ended in the 1963/64 academic year while the collection of the master's degree and the definition for survey respondents continued to include lingering elements of the second professional classification. It wasn't until the 1982/83 years that the definition for the master's degree included a floor of 1 year of coursework after the bachelor's degree but not more than 2 years after the bachelor's degree, though the definitions still included reference to reporting the Master of Divinity degree elsewhere. Then, with the creation of IPEDS for the 1986/87 academic year, the definition for the master's degree was simplified to read, "An award that requires the successful completion of a program of study of at least the full-time-equivalent of 1 but not more than 2 academic years of work beyond the bachelor's degree" (NCES, 1987). This definition stayed essentially the same until 2009/10 when survey respondents were asked to include master's degrees—like the Master of Divinity, which was listed in first professional previously—with master's degrees even though they may take longer than two-years.

Intermediate Degrees or Certificates. Despite their best efforts, there are students who start a doctoral degree and do not finish. In their review of degrees for the U. S. Department of Education, Eells and Haswell (1960) noted that “[f]ormerly the degree of Licentiate was common, representing achievement between the level of the master’s and doctor’s degree” (p.30). Despite this observation, the collection of a formal award between the master’s and doctoral degrees was not a part of the 1947/48 survey.

However, starting in 1970/71 year and culminating in the 1981/82 academic year, instructions for the Higher Education General Information Survey (HEGIS) form acknowledged awards between doctoral and master’s degrees by requesting they be listed by name and the number of credentials conferred by each responding institution. In the 1971/72 reporting year, the form was left blank for respondents to provide the names of the credentials being awarded. The following year, the form was open-ended to allow for more entries but also provided the credential names of “Candidate in Philosophy, Professional Diploma, and Masters of Philosophy” (NCES, 1973). The name associated with this section of the survey was “intermediate degrees” (NCES, 1971). In essence, this degree type was for those who failed to complete their doctoral studies.

With the revision to the 1982/83 completions form in HEGIS to include certificates alongside degrees, the intermediate degree or certificate appears to disappear. Then in 1986/87, post-master’s certificates were introduced, this time in a new IPEDS Completions Survey. This definition ended the idea of an intermediate degree but kept the intent as the definition noted that a post-master’s certificate was “[A]n award that requires completion of an organized program of study of 60 credit hours beyond the master's degree but does not meet the requirements of academic degrees at the doctor's level” (NCES, 1987). Then, two years later (1988/89), the

minimum credit requirements dropped to 24 credit hours and included a recognition that completers of the certificate did not meet the academic requirement for a doctoral degree.

In 2009/10, with the restructuring of the doctoral degree, the first-professional certificate, which had been in existence since 1992/93, was merged with the post-master's certificate. More recently, in 2013/14, the definition was again changed for institutional research professionals required to submit data to IPEDS to read that the student only need complete an “[o]rganized program beyond the master's degree” (NCES, 2015).

Post-bachelor's certificates. Historical records suggest that certificates awarded after the bachelor's degree were in existence long before being first collected in 1986/87. For example, in the 1955/56 academic year, survey respondents were instructed, “Do NOT report certificates for coursework beyond the bachelor's but below the master's degree (such intermediate accomplishment falls outside the scope of the present survey)” (Rice, 1957, p.173).

The collection of data on certificates awarded after a student earned a bachelor's degree started in 1986/87, like many other certificate types. The definition, providing guidance to institutional research professionals, at that time read, “POSTBACCALAUREATE CERTIFICATE - An award that requires completion of an organized program of study requiring 30 credit hours beyond the bachelor's; designed for persons who have completed a baccalaureate degree, but does not meet the requirements of academic degrees carrying the title of master” (NCES, 1987).

In the 1990/91 academic year, the definition reduced the minimum number of credit hours from 30 to 18 and stayed that way until 2013/14, just like the post-master's certificate definition where the credit minimum was removed. The definition has not substantively changed

since 2013/14, where the new definition requires completion of an organized program of study beyond the bachelor's degree.

Undergraduate Degrees, Certificates, and Diplomas

While initial federal data collection efforts were aware that postsecondary institutions were conferring credentials other than degrees, they chose to focus on collecting data only about degrees. That is until 1956, when a new data collection occurred focused on “Organized Occupational Curriculums;” which put parameters around what it was exactly they wanted to count (Figure 2).

FIGURE 2: Organized Occupational Curriculum Criteria: 1955/56

For the present study, the term “Organized Occupational Curriculum” has adopted, defined in the questionnaire circulated to all institutions of higher education, as follows:

“Criteria. For purposes of this survey, an organized occupational curriculum is one which meets all four of the following criteria:

- “a. High-school graduation (or equivalent, including maturity) is required for admission to the curriculum.
- “b. The curriculum is designed to prepare students for immediate employment in an occupation or cluster of occupations, rather than for further, advanced study leading to a bachelor’s or higher degree.
- “c. Completion of the curriculum requires at least 1 but less than 4 years of full-time (or equivalent) attendance. A ‘year’ means an academic year of approximately 9 months.
- “d. The curriculum leads to a certificate, diploma, associate degree, or other formal award, signifying that the students has completed an organized curriculum in an occupational area.”

Each of these four factors is important. Some curriculums which were reported by institutions have been eliminated before summarization of the data because one or more of the four criteria were not satisfied, especially the fourth.

Note: The figure above was reproduced verbatim, including underlining, to ensure readability.
Source: Armsby, Eells, & Martorana, 1958, p.6–7

This series of surveys was deployed annually from 1955/56 until 1961/62, though only reports for the first three and last years were published by NCES (Brunner, 1965). From a definitional perspective, the fourth criteria suggests that an important component of an organized curriculum is that it ended with a credential being conferred. The criteria also introduced a term of art—“formal award”—that causes confusion to this day. Specifically, the instructions for the 1955/56 survey asked respondents to include a code for this type of credential, which included “CD” for certificate or diploma and “Oth” for other award and provided eight different codes for different types of associate degrees (Armsby, Eells, & Martorana, 1958, p. 32).

Table 9 of the published report listed each responding institution and the type of credentials it conferred. Three observations are worthy of note to this line of inquiry: First, certificates and diplomas were collected together, suggesting they were one and the same. Second, the use of the “Oth” code, reflecting the “formal award” language, was observed just one time, which was for Tool and Die Design at Santa Monica City College. Third, program length was the defining characteristic utilized in the report, which broke graduates and enrollments out by curriculums of “1 to 2 years” and “2 to 4 years” in duration.

Associate Degrees. While the associate degree can trace its origin to the turn of the twentieth century, entities have long considered its purpose (Eells, 1942; Falcone & Mundhenk, 1994; Gaston & Van Noy, 2022; Kisker, Cohen, & Brawer, 2023).⁴ A national collection⁵ of the associate degree as an independent writ by a federal education statistical agency did not start

⁴ Within associate degree definitions is a tension as to whether it was an academic degree that included general education core allowing for it to serve as a pathway to the bachelor’s degree or it was an occupationally focused degree that was terminal in nature. This philosophical difference around its purpose embedded within any definition of the associate degree is beyond the scope of this study but worth mentioning for the interested reader.

⁵ In addition to annual statistical reports reviewed for this study, there were special topic studies published by the name “Bulletin” that may have focused on a distinctive aspect of education beyond the high school. Since the focus of this study is on the systemic collection of data, those studies are not central to this study.

until the 1965/66 data collection survey for HEGIS (NCES, 1966). It continues virtually unchanged through current times.

Organized Occupational Curriculums. In 1965/66, the HEGIS Degrees and Other Formal Awards Survey that collected completions of organized occupational curriculums of “1 to 2 years” and “2 to 4 years” restarted, with a few changes that evolved as the collection continued until 1981/82. Primary observations embedded in this new data collection form include the following.

First, institutional respondents were instructed to report “whole curriculums, NOT individual courses” (p. 19).⁶ This focus on an organized curriculum continued through to 1982, where the instructions changed slightly to state, “[A] group of courses, even when all of them are in a given subject area, do not necessarily constitute an organized program” (NCES, 1982, p.87).

Second, the evidence signifying that the student completed an organized curriculum expanded from the categories in the 1955/56 survey to include (a) certificate, (b) associate degree, (c) diploma, (d) a transcript recording successful completion, (e) a statement of completion from an administrator at your institution, (f) other formal recognition, or (g) the state grants a license or other formal recognition upon examination, to all graduates of the curricula (NCES, 1966). The addition of outputs conferred by postsecondary institutions articulated in (a) through (f) above and the outcome conferred by non-institutional entities in (g) expanded what was considered a completion.

Then, in 1982/83, a fundamental shift occurred. Institutional respondents to the Degrees and Other Formal Awards Survey were instructed to only report postsecondary certificates or

⁶ The page number is three, however the PDF provided a collection of multiple documents scanned to create a single PDF. See page 19 of the 50 page, combined PDF document.

diplomas for programs that were “less than 1 year” or “1 but less than 4 years.” The other outputs and outcomes detailed above were removed.

Certificates and Diplomas of Less than One Year. With a focus on organized occupational curriculums being replaced in 1982/83, the requirement on programs being at least one year was changed. Thus, postsecondary certificates and diplomas of “less than 1 year” were added to the HEGIS data collection. This classification would remain unchanged until a 2017 technical review panel recommended that they be split in two: those of less than 9 credit hours or the equivalent and those between 9 and 29 credit hours or their equivalent (RTI, 2017). These changes were implemented in the 2019/20 academic year.

Certificates More than 1 Year in Duration. From 1982/83 until 1985/86, the previously collected organized occupational curriculums were recast as certificates and diplomas of “1 but less than 4 years” in duration. This larger classification was again split in two to reflect those programs leading to certificates or diplomas of “1 to 2 years” or “2 to 4 years” in the 1986/87 academic year and have continued until present day.

Periodic and Related NCES Completion Surveys

The early Earned Degree Surveys (1947/48 to 1964/65) and those of HEGIS were focused primarily on the outputs of institutions of higher education. In parallel to HEGIS, NCES undertook periodic surveys to better understand the activities of the broader postsecondary education ecosystem. The three primary foci were vocational/career technical education, adult and continuing education/noncredit activity, and postsecondary institutions not included in the HEGIS universe of colleges. With the creation of IPEDS (noting that “Integrated” is a key word) in the mid-1980s, elements of these surveys were embedded within one data collection

framework. For this reason, each is given a brief overview as they inform changes and existing tensions within IPEDS.

Vocational Education/CTE. Efforts to collect data on CTE have historically experienced substantial difficulties. A review of the data quality, collected in aggregate from states then reported to federal agencies, revealed that the data suffered from inconsistencies in accuracy, comparability, and completeness. To resolve the issue, the Vocational Education Amendments of 1976 called for the creation of VEDS and situated the data collection within NCES (Orr, 1982). This new system continued to collect data from states rather than the institutions themselves, placing the quality of the data at the discretion of the states who collected it. A lack of uniformity perpetuated and, as Hudson (2001) recounts, “continuing problems led the Office of Management and Budget (OMB) to deny approval for the collection of VEDS data after 1983 - making VEDS the only NCES data collection to have this ignoble distinction.”

The Carl D. Perkins Vocational Education Act of 1984 directed NCES to develop a data system for CTE that was uniform. Rather than create a new data collection specifically for CTE, in 1987, NCES developed the Data on Vocational Education plan that focused on leveraging and augmenting existing data collection instruments—including IPEDS—to answer key questions about CTE students, faculty, and institutions (Hoachlander et al., 1992).

Adult and Continuing Education & Noncredit Activities. NCES developed and deployed sample surveys of higher education institutions in 1967/68, 1975/76 and 1977/78.⁷ The surveys were geared to better understand adult and continuing education, though the title of the resulting reports included the phrase “noncredit activities in institutions of higher education” (Kemp, 1970; Kemp, 1978; Calvert, 1980).

⁷ Orr (1982) referenced reports from other years, though a search for them was unsuccessful. Calvert (1980) cites only two prior studies by NCES of noncredit.

In the 1975/76 report (Kemp, 1978), NCES collected data on registrations and a new measure—the Continuing Education Unit (CEU)—collected by colleges and universities to understand its use by institutions of higher education. CEU was the result of a 6-year collaborative effort by 34 partnering organizations starting in 1968 to examine how to develop a measure of continuing education offered by postsecondary institutions, business, industry, professions, and government (The National Taskforce, 1970, p. 13). The organizations included:

1. Adult Education Association of the U.S.A.
2. American Association of Collegiate Registrars and Admissions Officers
3. American Association of Junior Colleges
4. American Association of State Colleges and Universities
5. American Council on Education
6. American Society of Engineers
7. American Society of Personnel Administrators
8. AFL-CIO
9. American Hospital Association
10. American Medical Association
11. American Society for Engineering Education
12. American Society for Public Administration
13. Association of University Evening Colleges
14. Cambridge Institute for Management Education
15. Civil Service Commission
16. Commission on Engineering Education
17. Department of Commerce
18. Department of Defense
19. Department of Health, Education, and Welfare
20. Department of the Air Force
21. DuPont Company
22. Engineers Council for Professional Development
23. Engineers Joint Council
24. General Learning Corporation
25. McGraw Hill, Inc.
26. National Academy of Engineers
27. National Home Study Council
28. National Society of Professional Engineers
29. National University Extension Association
30. Office of Emergency Planning
31. Science Research Associates
32. United Auto Workers
33. United States Armed Forces Institute
34. U.S. Office of Education

The agreement of the national taskforce required that each CEU represent 10 contact hours of participation in an organized continuing education experience 1) under responsible sponsorship, 2) capable direction, and 3) qualified instruction. Varied reasons for the creation of CEU included the espoused need for a more realistic base than registrations for resource allocation, such as budgeting and staffing, along with providing a more accurate scope of adult education programs (Kemp, 1978). The 1976 survey by NCES found 35.8% of institutions used CEU, with the greatest percent of public universities using it to report noncredit adult and continuing education activities (70.7%) and the smallest percentage of private two-year colleges using it (19.0%).

Noncredit activity in postsecondary education continued as a topic of conversation and consideration. Technical Review Panels⁸ convened to advise NCES in 2008 (TRP #22), 2009 (TRP #29), 2017 (TRP #52), 2020 (TRP #62), and 2022 (TRP #67), and all made mention of noncredit. NCES proposed to collect enrollment data for noncredit after the guidance it received from TRP #62.⁹ The Office of Management and Budget denied its request, instead allowing for the collection of information asking if institutions offered noncredit activity as part of the Institutional Characteristics Survey of IPEDS.

Survey of Non-Collegiate Postsecondary Institutions (SNPI). As HEGIS evolved to define and document the outputs of colleges and universities, a parallel evolution of the noncollegiate postsecondary education was also occurring. To capture this parallel segment, NCES created a series of surveys to better define and understand it. First was a survey to define the universe of schools offering postsecondary training; common types of schools offering

⁸ Reports resulting from Technical Review Panels provide NCES with recommendations from the field and do not necessarily change IPEDS.

⁹ Technical Review Panel reports are available from <https://ipedstrp.rti.org/>

training were cosmetology /barber schools, business schools, flight schools, and hospital-run schools. From that universe, NCES developed a data collection survey focused on enrollment, programs, and eventually completion. This first survey for the 1973/74 academic year did not collect data on conferred credentials but did offer a definition of an occupational program, which was “a planned sequence of courses leading to a specific objective.” (Kay, 1976, p.48). The 1975/76 report was similar in structure (Kay, 1978). The next report located for this study reported on enrollment, programs, and completions for the 1980/81 academic year. While the term “completion” was not defined, it was provided alongside other program outputs in a table that included 1) left with a job skill, 2) left without a job skill, and 3) continued in the program (Litkowski, 1984, Table 4).

While the SNPI was ultimately integrated within IPEDS, these skill-based outcomes continue in federal legislation focused on training. A focus on skill attainment is currently experiencing a rebirth, largely from non-governmental entities as examined later in this paper, as recent technological developments allow for an easier way to capture and communicate the acquisition of discrete skills digitally—albeit outside of the purview of NCES.

Discussion

In conducting the research for this section of the study, a few observations have become clear. They include the importance of the “I” in IPEDS, the lack of an organizing framework for credentials, and the identification of historical data on noncredit activity.

The Importance of the “I” in IPEDS.

For 15 years, I have been a part of federal, national, and state-centered conversations about the data we have and the data we need. In all of those meetings, workgroups, workshops, presentations, technical review panels, and research presentations, the weight of what the “I” in

IPEDS means failed to be understood. Not once did I, or those I learned from, interrogate what each letter of the acronym really meant. So, allow me to spell it out here. The “I” reflects the integration of data from higher education institutions (HEGIS), postsecondary CTE providers (VEDS), and noncollegiate colleges (SNPI). This integration took place in the 1980s and serves as the philosophical foundation of what it strives to achieve. The “PE” is for postsecondary education—that which occurs after high school across a range of providers and not solely higher education institutions. And “DS” refers to a data system, or a collection of information deemed necessary for NCES to meet its Congressional mandate “to collect, collate, analyze, and report complete statistics on the condition of American education; conduct and publish reports; and review and report on education activities internationally.”¹⁰ The key takeaway is that *IPEDS is NOT a data collection solely about Title IV programs*. We need to make one understanding clear and ubiquitous: NCES is expected to collect data in IPEDS from non-Title IV institutions reflective of tomorrow’s credentials.

Seventy-Five Years of Inconsistent Criteria and a Missing Classification Framework

I found it interesting that in reviewing the historical record, one finds a continual shifting nature of postsecondary credential definitions and, moreover, how federal education statistical agencies have adapted to collect data on credentials as the world changed around it. These collections were necessarily exploratory. It is time, however, to learn from 75 years of exploration and innovation.

The first- and second-level degree aggregations of mid-century were really in response to requests from outside the academy for an accounting of available “manpower.” This expressed need to signify when a student had learned enough to have a particular job distorted the

¹⁰ For more information about NCES, see <https://nces.ed.gov/about/>.

educational underpinnings of what was being provided and, for some time, confused the public. We see in the mid-1970s an attempt to honor the learning occurring after the bachelor's degree by the awarding of "intermediate degrees" for those who did not finish their doctorates. These too, overtime, changed while the world around the postsecondary enterprise began to push less on time to acknowledge learning. Now we sit, degrees and certificates nestled within a time hierarchy, being dissected into the smallest measurable parts to acknowledge each discrete skill. So the question before society is how we honor the life experiences of others captured as bite-size skills while having some type of complementary classification system that aggregates an amount of learning that signifies a learning sequence (program of study) that is more than the sum of its parts.

Certificates started with the criteria for what constituted an organized occupational criterion, which were then loosened when IPEDS integrated data across three different sources and was expanded to include requirements from other federal laws, while credit hour categorizations took effect. Then, interestingly, with graduate certificates we see the opposite when the minimum credit hours required for a graduate certificate are lessened until they are non-existent, and the resulting definitions refer to an organized program of study—terminology reminiscent of the 1955 "organized occupational curriculum," though without the accompanying criteria. This inverse evolution of criteria for certificates leading to a bachelor's degree compared to certificates after a bachelor's degree is certainly adding to today's confusion.

A related observation-turned-concern is that there is not a floor/minimum number of credits or equivalent for either undergraduate- or graduate-level certificates. This begs the question: How does one define an "organized program of study," and what do we do with learning that occurs prior to an established, minimum cut-off?

It is abundantly clear: we need an organizational framework that organizes credentials while honoring and validating the lived experiences of learners who earn the various credentials postsecondary institutions confer.

Noncredit, Uncovered

I found the existence of a continuing education/noncredit sample survey of the 1960s and 1970s fascinating, in part because it served as a conduit to learning more about the origination of CEU that emerged in parallel as an “answer” to existing questions but also because nearly the same questions that gave rise to the CEU have once again come to the forefront. A report of the Office of Career, Technical, and Adult Education (Sykes et al., 2014) identified four outcomes of noncredit, which I reclassify as two outputs: a certificate and CEU (credentials conferred by institutions) and a certification and wage increases (conferred by entities external to postsecondary institutions).

It is important to understand noncredit activity in colleges and universities because often the responses to enrollment decreases centering the economy as the primary cause and related conversations focus on administrative “fixes” to budgetary woes. Less identified in the literature is the shifting of enrollment to providers that are not colleges and universities. In 2021, I posited if the enrollment decline was really an enrollment-shift.¹¹ Little did I know, that in 1974, Kaplan and Veri made a similar observation:

“As the rapid obsolescence of knowledge becomes a serious problem across an increasingly broad spectrum of vocational fields, the demand for retraining has nearly surpassed the demand for basic training. No longer a peripheral area in education, post-degree and non-degree course work has proliferated to such an extent that some

¹¹ See https://www.linkedin.com/posts/cmullin_education-data-workforcedevelopment-activity-6953342471909068800-h5TY?utm_source=share&utm_medium=member_desktop.

institutions now experience more growth on this front than at their supposed centers of degree work” (p.1).

Acknowledging existing efforts taking place as noncredit activities at campuses by noting offerings on the Institutional Characteristic Survey or registrations as was collected in the 1970s is not enough. We need to leverage what is known and what has previously been developed to help understand when enrollment shifts occur. Furthermore, it would behoove policymakers, employers, and the public to know when learners complete what they started outside of credit-bearing activities at postsecondary institutions.

Part 3: Credentials Across Federal Entities

The second research question guiding this report seeks to understand how current definitions of certificates, degrees, and diplomas align within IPEDS and other federal statistical agency data collections. This question was answered by a review of existing data collections across federal statistical agencies as described in this section. Experts with knowledge of particular federal collections were then engaged to answer specific questions. Lastly, I will share findings and conclude with a brief discussion.

Methodology

The federal government deploys a range of surveys each year across all departments and agencies. For the purposes of this study, federal surveys for further study were identified and selected if they included an educational attainment variable. The universe of potential federal surveys came from an unpublished compilation of federal surveys and identifying characteristics

conducted by the Center for Regional and Economic Competitiveness.¹² The federal data collection surveys reviewed for this section include the following:

National Center for Education Statistics

Baccalaureate and Beyond (B&B), Beginning Postsecondary Students (BPS), Integrated Postsecondary Education Data System (IPEDS), National Postsecondary Student Aid Survey (NPSAS), National Household Education Survey: Adult Education Survey (AE), High School Longitudinal Study of 2009 (HSLs:09), Education Longitudinal Study of 2002 (ELS: 2002)

U.S. Department of Labor

Registered Apprenticeship Partners Information Database System (RAPIDS), Employment Projections (EP), Occupational Requirements Survey (ORS), WIOA Participant Individual Record Layout (PIRL), Consumer Expenditure Survey (CES), Occupational Information Network (O*NET)

National Science Foundation

National Survey of College Graduates (NSCG), National Training, Education and Workforce Survey (NTEWS),

U.S. Census Bureau

American Community Survey (ACS), Current Population Survey (CPS), CPS Annual Social and Economic Supplement (ASEC), Study of Income and Program Participation (SIPP), LEHD Post-Secondary Employment Outcomes (PSEO), LEHD Job-to-Job Flows (J2J), LEHD Quarterly Workforce Indicators (QWI)

For each federal data collection, survey instruments were located and reviewed. Where a survey was not available, websites and technical documentation were reviewed.

An acknowledged limitation is that there may be a federal agency that counts postsecondary credentials but is not listed in this section. In such cases, the agency staff are encouraged to contact the author to ensure inclusion in future studies and presentations.

¹² CREC, in partnership with the Labor Market Institute, made a version of this file public. See https://crecstorage.blob.core.windows.net/lmii/sites/4/2020/02/Public_and_Private_Sources_of_Education_and_Workforce_Data.pdf

Findings

In the earlier section about credentials existing in IPEDS, each credential’s origin was traced to understand how it evolved over time. For this section, time limitations required the focus to be on a snapshot in time rather than historical analyses. The results, summarized in Table 1, illustrate the varied way the public experiences and agencies define postsecondary credentials for the most recent year available.

TABLE 1. Credentials Contained in Federal Data Collections, by Type and Level

Credential		Federal Entity			
Type	Level	NCES	USDoL	NSF	Census
Degree					
	Doctoral – Research	IPEDS, B&B, AE			PSEO
	Doctoral - Professional Practice	IPEDS, B&B, AE			PSEO
	Doctoral – Other	IPEDS	O*NET		
	First Professional		O*NET, ORS, CES	NTEWS	ACS, CPS, ASEC, SIPP
	Doctoral		/EP, ORS, CES	NTEWS, NSCG	ACS, CPS, ASEC, SIPP
	Master’s	IPEDS, B&B, AE, ELS	EP, O*NET, ORS, CES	NTEWS, NSCG	ACS, CPS, ASEC, SIPP, PSEO
	Bachelor’s Degree or Advanced degree				J2J, QWI
	Bachelor’s	IPEDS, B&B, AE, BPS, ELS HSLs, NPSAS	EP, PIRL, ORS, CES	NTEWS, NSCG	ACS, CPS, ASEC, SIPP, PSEO
	Associate	IPEDS, B&B, AE, BPS ELS, HSLs, NPSAS	EP, PIRL, O*NET, ORS, CES	NTEWS, NSCG	ACS, CPS, ASEC, SIPP, PSEO
	Associate - Vocational		ORS		CPS, ASEC
	Associate or Some College				J2J, QWI
Certificate					
	Post-Master’s Certificate	IPEDS, B&B, AE, ELS	O*NET		PSEO
	Post-Baccalaureate Certificate	IPEDS, B&B, AE, ELS	O*NET		PSEO
	Undergraduate	B&B, BPS, ELS, HSLs, NPSAS			
	Postsecondary nondegree award		OOH/EP		
	Postsecondary		O*NET		
	Educational		ORS		SIPP
	Vocational			NTEWS	

Credential		Federal Entity			
Type	Level	NCES	USDoL	NSF	Census
	Occupational		PIRL		
	Certificate of 2–4 Years	IPEDS			PSEO
	Certificate of 1–2 Years	IPEDS			PSEO
	Certificate less than a year				PSEO
	Certificate of 9–29 credit hours	IPEDS			
	Certificate up to 8 credit hours	IPEDS			
	Apprenticeship	AE			
Certification			ORS		
	Professional	B&B		NTEWS, NSCG	CPS, ASEC, SIPP
	Occupational		PIRL		
License			ORS		
	State	B&B		NTEWS, NSCG	CPS ASEC SIPP
	Industry	B&B		NTEWS, NSCG	CPS ASEC SIPP
	Occupational		PIRL		
Diploma		IPEDS			
	Vocational	AE		NTEWS	SIPP
	Technical	AE			

Note: NCES data sets were accessed through the NCES DataLab website.
Sources: Bureau of Labor Statistics (2023a-d); Employment and Training Administration (2023b-c); National Center for Science and Engineering Statistics (2023a-b); United States Census Bureau (2023a-e).

Degrees

The use of degree titles across all federal agencies was fairly consistent, with only three mentionable deviations. First, the changes IPEDS made to doctoral degree classifications did not appear to be adopted by all federal survey instruments. Second, the idea of the bachelor’s degree as the line of distinction between college-or-not was reinforced in the response option of “bachelor’s degree or higher” and “associate or some college” in J2J and QWI products of the U.S. Census Bureau. Finally, the associate degree was bifurcated between an academic (transfer) degree and a vocational (terminal) degree in the ORS of the U.S. Department of Labor as well as the CPS and ASEC of the U.S. Census Bureau.

Certificates

Unlike degrees, the terminology for a certificate varies substantially. In cases where data on graduate-level certificates were collected, there seems to be alignment to IPEDS definitions. This is also the case when time is used as a defining characteristic of certificates. Yet approaches to name and capture data on certificates earned prior to a bachelor's degree vary substantially. In the three cases where the data came from surveys of individuals, one may attribute this to the extensive cognitive and field testing those survey instruments undergo prior to deployment, but in administrative data collections, the resulting variety call into question the extent to which federal agencies cooperate and collaborate on data collection efforts.

Certifications & Licenses

Certifications and licenses are awarded by entities that are not postsecondary institutions. It is a point of distinction that these credentials are positioned as outcomes of education or training rather than a direct output. Furthermore, contrary to postsecondary credentials, they tend to be time limited. There seems to be alignment on what to call these credentials across a number of federal agencies, except for the PIRL of the U.S. Department of Labor.

Diploma

Diplomas, often associated with the completion of high school, continue to be a term used in the adult education space that extends beyond high school to signify technical and vocational diplomas. NCES also utilizes the term diploma in its Adult Education Survey component of the National Household Education Survey.

Discussion

In a review of federal surveys, it becomes clear that there are both alignments of credential types and areas of misalignment. As it relates to understanding credential attainment

outside of postsecondary education as captured in federal surveys, not including IPEDS, I bring forward two topics for discussion.

Federal Agencies Fail to Require a Credential to be Conferred

While reading through source documents, I found that neither the various programs authorized under the U.S Department of Labor’s Workforce Innovation Opportunity Act, nor the federal registered apprenticeship programs, nor the Carl Perkins Act of 2016 require or include a data element in their respective data systems that allows for a clear definition of, or resulting count of, a credential conferred by the provider. For employers, taxpayers, and policymakers to understand the promise of federal workforce training programs, those programs must be required to offer a credential at the end. We need to empower training participants and validate the skills they obtained by ensuring they receive acknowledgement for completing a learning activity or sequence of learning activities through the required conferring of a credential so that the acquired knowledge, skills, and abilities can be interoperable, portable, and validated.

Inconsistent Naming Causes Confusion

A review of Table 1 illustrates how the same credential has a different name across federal agencies. This inconsistency confuses the public and limits collective impact from federal investments. We need to come together to align terminology so survey respondents, analysts, researchers, policymakers, stakeholders, and the public understand the insights gleaned when surveys are deployed and data is collected.

Part 4: Emergent Credentials

Education attainment in the United States increased substantially since the 1950s when 65% of the population over the age of 25 did not complete high school and many jobs only needed that level of education (Mullin et al., 2015). Fast-forward to today, where advancements

in our understanding driven by research within and outside of universities, advancements in technology and equipment, and advancements in global competitiveness require workers to have a greater array of knowledge, skills, and abilities than ever before. We are on the precipice of a fundamental shift in the workforce with just the latest technological advancement (i.e., ubiquitous artificial intelligence) that is encouraging individuals to embrace lifelong learning and, as importantly, to document it. To be certain, lifelong learning on the job has been around as long as humans have been working. Internal labor markets once allowed individuals to learn on the job and move up within the organization's hierarchy. But with job tenure decreasing and new technologies requiring new skills (upskilling), individuals must be responsive to shifts in demand from the workforce. And so, the emergence of new credentials, fueled by advancements in technology that allow for documenting the atomization of learning, are moving to the mainstream.

As such, the third research question guiding this report seeks to understand how current definitions of certificates, degrees, diplomas, and emerging credentials are reported on by non-governmental agencies. This question was answered by a review of existing reports by non-governmental organizations as described below. Experts with knowledge of particular reports and collections were then engaged to answer specific questions. Finally, I will then share observations and conclude with a brief discussion.

Methodology

Data on emergent credentials are collected outside of IPEDS or federal agency surveys. As a result, I deployed a snowball sample to gather relevant and contemporary reports about credentials from select non-governmental agencies. The reports identified herein are understood to encompass the primary sources that speak to multiple credentials. Studies of a single

credential, like badges for example, were not included. These reports were read and primary points of contact engaged when further detail was needed to understand the provided definition or credential.

Findings

Similar to the last section focused on credentials within federal surveys, this section focuses on a snapshot of recent reports in order to capture emerging credentials. Table 2 summarizes the results in a similar manner to the prior section. Similarly, they illustrate the varied way the public experiences and learns of emerging credentials.

TABLE 2: Contemporary Reports About Credentials by Select Non-Governmental Entities, By Type and Level

Credential		Report Publishers				
		WorkCred	Credential Engine	National Student Clearinghouse	UNESCO	AACRAO
Type	Level					
Degree						
	Doctor – Research	X				
	Doctor - Professional Practice	X				
	Master’s	X		X		
	Bachelor’s	X		X		
	Associate	X		X		
	Title IV Degrees		X			
	Non-Title IV Degrees		X			
Certificate		X		X		
	Professional					X
	Graduate					X
	Undergraduate					X
	Certificate of Achievement	X				
	Certificate of Participation	X				
	Certificate of Completion	X				
	Assessment-based Certificate	X				
	Title IV Certificates		X			
	Non-Title IV Certificates		X			
	Course Completion Certificates		X			
	Coding Bootcamp Course Completion Certificates		X			
	Online Course Completion Certificates		X			
Certification		X				
	Occupational		X			
License		X				
	Occupational		X			
Badge		X				
	Digital		X			X

	Open					X
Credentials						
	Micro	X	X		X	X
	Macro				X	
Apprenticeships						
	Registered Apprenticeships		X			
	Unregistered Apprenticeships		X			

Note: While the National Student Clearinghouse Research Center reports on undergraduate degrees, the DegreeVerify database of the National Student Clearinghouse includes other credentials not utilized in the *Undergraduate Degree Earners* report. Similarly, Credential Engine’s *Counting Credentials* report utilizes data from the Credential Transparency Database Language. This study deferred to public-facing reports because the datafiles referenced were in flux at the time of writing this paper and because the public-facing reports are what is cited in public discussions and media outlets.

Sources: Alternative Credentials Workgroup (2022); Cardenas-Navia (2023); Credential Engine (2022); Oliver (2022); Pevitz et al. (2023).

Degrees and Certificates

The use of degrees was nearly consistent across reports. The one difference is how Credential Engine’s *Counting Credentials* (2022) report classified degrees into Title IV and non-Title IV. This approach allowed for other providers to be included but also grouped all degrees together. The count also reflects the number of programs offering the credential and not a count of actual degrees awarded.

For certificates, we see three different groupings. Each grouping comes from another non-governmental agency’s own devised approach and does not align with NCES or federal definitions in Figure 1 or Table 1. Whereas the American Association of Collegiate Registrars and Admissions Officers (AACRAO) report grouped certificates into professional, graduate, and undergraduate, WorkCred and Credential Engine placed modifiers on their credential names to elaborate on certain characteristics of the certificates (e.g., Coding Bootcamp Course Completion Certificate).

Certifications, Licenses and Diplomas

Certifications and licenses were identified by two reports, though only the Credential Engine report used the term “occupational,” which mirrors the U.S. Department of Labor terminology and was not aligned with the National Science Foundation and the U. S. Census Bureau, who used the term “professional” (Table 1). An important note about certifications and

licenses is that they are time-limited, in that they need to be renewed, and are not conferred by postsecondary institutions.

Badges

While badges have been around for centuries, their application to the world of learning is often situated as the result of a paper titled “Open badges for lifelong learning” (The Mozilla Foundation and Peer2Peer University, 2012). In that paper, they quote a definition from Dictionary.com, then in the next sentence define it as “a symbol or indicator of an accomplishment, skill, quality or interest” (p.3). Three reports identified a badge as an emerging credential, with one just using the generic name, another referring to them as digital badges, and a third using the terms “digital” and “open.” Definitionally, an open badge is defined as “a type of digital badge that is verifiable, portable, and packed with information about skills and achievements.”¹³ From this definition, one can imagine a circle with the word “open badge” inside of a large circle with the word “digital badge” so that one is a subset of the other. They can be awarded by any entity for any reason that signifies some type of activity.

Credentials

Micro-credential shows up in three of the reviewed reports. AACRAO’s report (Alternative Credentials Workgroup, 2021) helps to frame the term “micro-credential” when it states, “Badges or digital badges refer to the artifact issued to students upon successful completion of a micro-credential program or demonstrated accomplishment or skill” (p.9). Further, Oliver (2022) recognized that if there are micro-credentials, then there must also be macro-credentials. This places the idea of credentials as larger categories for types of writs conferred upon those who complete a learning experience.

¹³ See <https://openbadges.org/>

Apprenticeships

There are three apprenticeship programs supported by the federal government. One includes the 25 State Apprenticeship Agencies with another 18 states whose programs are the product of a state–federal partnership. Lastly, the U.S. Military Apprenticeship Program affords active duty servicemembers in the Navy, Coast Guard, and Marine Corps the opportunity to complete civilian apprenticeship requirements, ultimately resulting in a Certificate of Completion (Department of Labor). While there is a Registered Apprenticeship Partners Information Database System, it does not present data on completions, though the Employment and Training Administration presents data across all three apprenticeship programs and reports “completers,” which were defined as “apprentices who have completed their training during the period” (Employment and Training Administration, 2023a).

Discussion

In conducting the research for this section of the study, a few observations have become clear. They include the need to count all credentials and how credential type and delivery modality is often confused. Additionally, I have added a few credential innovations that were not named in the studies but are worthy of acknowledging.

A Need to Count Credentials

Like with federal agencies, we need consistency in how completions are named and defined by national agencies and non-governmental agencies. By adopting a consistent organizing framework, we can move toward better understanding the characteristics of credentials, and learners who earn them can have their learning validated and portable.

In addition, we can have a more informed conversation when determining which are “of quality.” It is worth naming that in conversations with vested stakeholders, I felt a palpable

tension against the idea of counting all credentials without first weeding out those that are “of quality” for fear that a program would be shown to not be effective. While I understand this fear, excluding credentials from the universe of what is known has led us to the current state of confusion—the shifting definitions in IPEDS serves as just one example. *If a student begins a skill-enhanced activity, training, or educational program, we should know if the learner finishes it by knowing which credential is conferred by the provider.* Only then can we understand its value.

Confusing Delivery with Credential Type

We cannot hide from the fact that there was a fundamental shift from a focus on institutions to a focus on programs driven largely by a series of program integrity regulations of the federal government in 2010. This inflection point created a directional shift in how the public learns about college. Now, thanks to new tools that build upon the *College Navigator*—like the *College Scorecard* of the U.S. Department of Education, *GI Bill Comparison Tool* of the U.S. Department of Veterans Affairs, *Training Provider Results* of the U.S. Department of Labor, and privately developed data tools¹⁴—a range of stakeholders have a firmer grasp about the programs they can pursue, fund, augment, or close. This focus on programs, not colleges, squarely places the focus on the type of credential a student earns at the end of a program of study or learning experience.

Further, a tension in the current dialogue and proposed definitions of emerging credentials is the confluence of the credential and how it is earned. For example, apprenticeship is a path to a credential, not a credential itself, as reported by some. The same is true for bootcamps, online courses/massively open online courses, credit for prior learning, assessment-

¹⁴ See <https://nces.ed.gov/collegenavigator/>, <https://collegescorecard.ed.gov/>, <https://www.va.gov/education/gi-bill-comparison-tool/>, <https://www.trainingproviderresults.gov/#/>

based credit, and noncredit activities, among others. These modalities are ways by which learning is gained or acknowledged; *they are not credentials in and of themselves.*

There is an understandable interest in this information as it relates to a particular credential, however. We need to understand the characteristics of credentials just as the Institutional Characteristic Survey of IPEDS allows for us to understand more about institutions.

Unnamed Innovations

Three innovations not included in the referenced reports, but known to the author, are given a brief review below in an effort to be as comprehensive as possible. They include Nexus Degrees, nanodegrees, and skill frameworks.

Nexus Degrees. Nexus Degrees were developed in the University System of Georgia and approved by the Southern Association of Colleges and Schools.¹⁵ They have a five-part structure: (1) a general education core required for any undergraduate degree, (2) a series of upper division courses aligned to an occupation, (3) 6 credits to be in an apprenticeship or clinical model, (4) an experiential learning experience, and (5) an assessment of student performance. Because of the general education requirement and the length, these degrees are reported to IPEDS as associate degrees (personal communication, November 26, 2023).

Nanodegrees. Gallagher (2016) gives brief mention of Udacity’s “nanodegree.” When visiting Udacity’s website to learn more in November of 2023, one finds that the term “nanodegree” is a registered trademark. Although business savvy, that explains why it is not used anywhere else and should not be used, referenced, or encouraged.

Skill Frameworks. Another innovation is “skill frameworks.” A focus on skills has been present in the postsecondary ecosystem for decades. They are mentioned prominently in training

¹⁵ See https://www.usg.edu/academic_programs/nexus_degree

issue spaces (CTE along with federal workforce training) and touted as training outputs under names like “measurable skill gain.” It is not possible to count the number of existing skills nor the skill frameworks within which they fit. This is because they are proliferating in number and because some are the products of private companies who consider them intellectual property. The most transparent and universal skill framework is contained in the O*NET product of the U. S. Department of Labor.¹⁶ Due to the ubiquitous nature of skills frameworks and ownership rights, and from a data collection perspective, attempts to count skill frameworks is understandably not a part of the reports reviewed nor is the collection of “skills.”

Part 5: Recommendations

In the second, third, and fourth parts of this study, I reviewed the current landscape of credentials conferred by a range of providers and collected in IPEDS, federal data collection efforts, and non-governmental entities. In each section, observations were discussed. In this fifth and final section, I will provide recommendations to meet the opportunities before us.

Understand the Importance of the “I” in IPEDS.

To restate, we need to make one understanding clear and ubiquitous: NCES is expected to collect data in IPEDS from non-Title IV institutions reflective of tomorrow’s credentials and refine those data long collected. Therefore, **I recommend NCES conduct a legal review to affirm IPEDS is a data collection system for both Title IV and non-Title IV institutions.** Such an affirmation would allow IPEDS to collect the data it needs to inform policymakers, researchers, analysts, stakeholders, and the public of the contributions all postsecondary institutions make while validating the knowledge, skills, and abilities of our nation’s human

¹⁶ See <https://www.onetonline.org/>

capital. Furthermore, it would allow IPEDS to meet the requirements of a myriad of laws as detailed in Peng et al. (1999).

Come to Terms with the Term “Credential”

Earlier I suggested that we, collectively, need an organizational framework that organizes credentials while honoring and validating the lived experiences of learners who earned the various credentials postsecondary institutions and other providers confer.

As the role that NCES was tasked to undertake grew, so did the scope of its data collection, from a focus on degrees, to an inspection of organized curriculums with a shorter duration than bachelor’s degrees, and then to the inclusion of the skilled technical workforce.

It is then wise, at this point, to take a moment of pause and sit with the known, to acknowledge the unknown, and to develop a framework within which greater clarity can be provided to the public about the nature of lifelong learning beyond high school.

I recommend that NCES adopt an organizational framework for credentials that includes the credentials IPEDS has the authority to collect, and those it does not, to allow for greater clarity to the public. Such a framework would include 1) those credentials conferred by postsecondary institutions and are reported to IPEDS, 2) those credentials conferred by postsecondary institutions and are not reported to IPEDS, and 3) those credentials that are not conferred by postsecondary institutions. To enact this recommendation, it may be worthwhile for NCES to work in partnership with the 12 other federal statistical agencies to align around the framework and deploy it broadly through existing communications channels. In this way, the federal government provides its citizens with clarity that is now inadvertently lacking.

Figure 3 provides one way to operationalize this recommendation. Building upon the work of UNESCO’s macro-and micro-credential framing (Oliver, 2022), I suggest adding a third

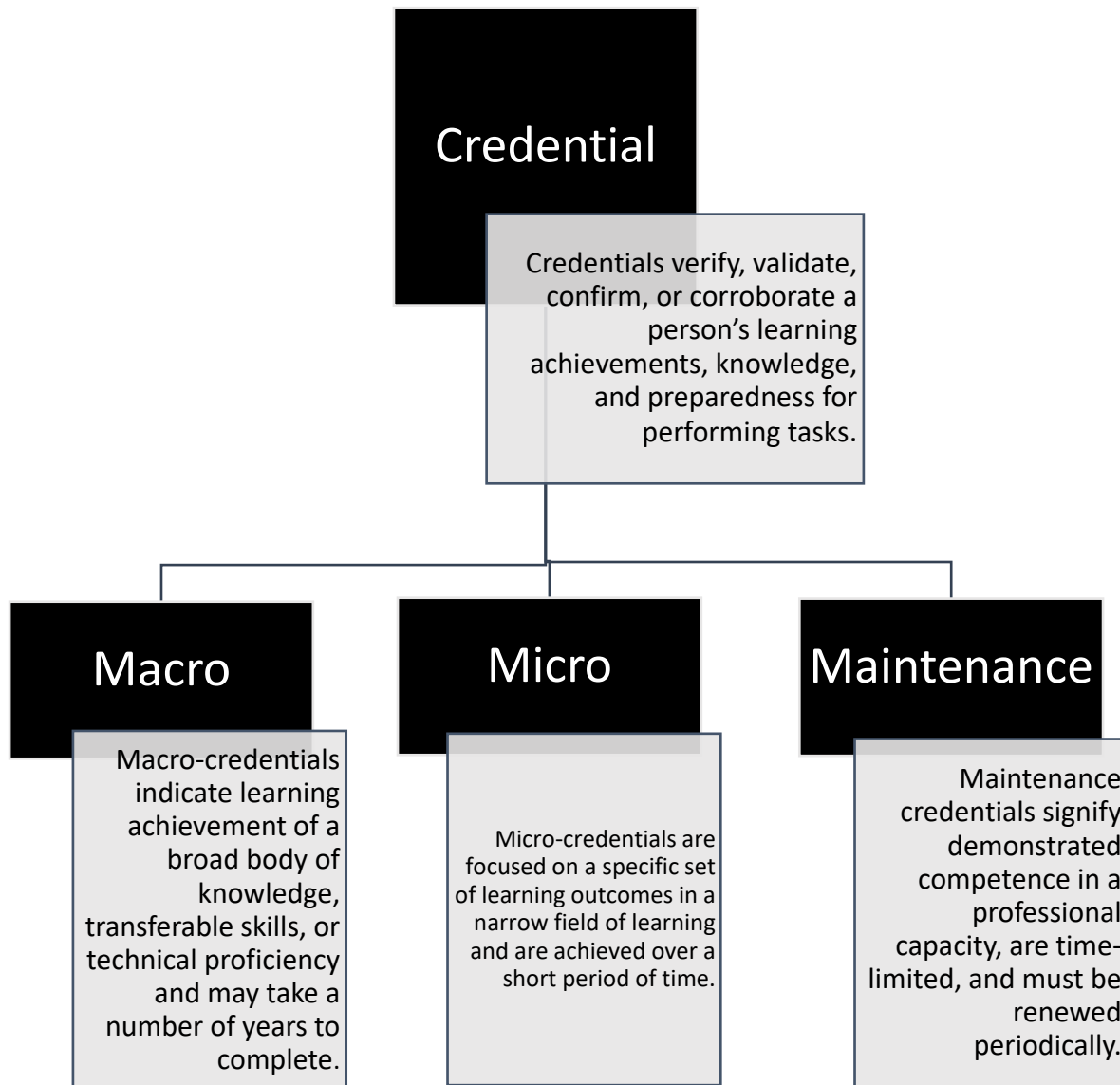
category: maintenance credentials, to be inclusive of those credentials that are time-limited or need to be renewed.

With the first-order categorization complete, specific credentials can be situated within each credential group (i.e., micro-, macro-, and maintenance). This would address the finding that confusion exists due to different names for the same credential collected and/or defined in various ways by each federal agency.

The following offers suggested definitions and naming conventions. I fully recognize that some of the naming conventions existing in federal survey instruments come from cognitive interviews and others from legislation—in such cases perhaps a hyphenated naming can be a compromise until the discrepancy is remedied through intergovernmental cooperation. One would also appreciate it if non-governmental entities that conduct public polling and the research community be included in conversations when and where appropriate.

To align terminology so survey respondents, analysts, researchers, policymakers, stakeholders, and the public understand the insights gleaned when surveys are deployed and data is collected, **I recommend that NCES convene a cross–statistical agency workgroup to share research and agree on common terminology for credentials.** Again, by credentials, I refer to those credential 1) conferred by postsecondary institutions and are reported to IPEDS, 2) conferred by postsecondary institutions and are not reported to IPEDS, and 3) that are not conferred by postsecondary institutions.

FIGURE 3. An Organizational Framework for Credentials



Note. Adapted from Oliver (2022)

To aid in operationalizing this recommendation, I offer an approach in Table 3 that includes the credentials grouped within the macro-, micro-, and maintenance credential framework. The first two columns build upon common terminology and reflect language used in surveys of individuals by providing a name and a description. Columns three and four provide a more detailed name and definition appropriate for administrative data collections such as IPEDS.

TABLE 3. Credentials, Organized by Credential Type, Name, and Detailed Name

Name	Description	Detailed Name	Definition
Macro-Credentials			
Doctor's Degree	The highest award a student can earn for graduate study.	Doctor's Degree - Professional Practice	A doctor's degree that is conferred upon completion of a program providing the knowledge and skills for the recognition, credential, or license required for professional practice. The degree is awarded after a period of study such that the total time to the degree, including both pre-professional and professional preparation, equals at least 6 full-time equivalent academic years. Some of these degrees were formerly classified as first-professional and may include Chiropractic (D.C. or D.C.M.); Dentistry (D.D.S. or D.M.D.); Law (J.D.); Medicine (M.D.); Optometry (O.D.); Osteopathic Medicine (D.O); Pharmacy (Pharm.D.); Podiatry (D.P.M., Pod.D., D.P.); Veterinary Medicine (D.V.M.); and others, as designated by the awarding institution.
		Doctor's Degree – Research/Scholarship	A Ph.D. or other doctor's degree that requires advanced work beyond the master's level, including the preparation and defense of a dissertation based on original research or the planning and execution of an original project demonstrating substantial artistic or scholarly achievement. Some examples of this type of degree may include Ed.D., D.M.A., D.B.A., D.Sc., D.A., D.M, and others, as designated by the awarding institution.
		Other Doctorate	A doctor's degree that does not meet the definition of a doctor's degree–research/scholarship or a doctor's degree–professional practice
Graduate Certificate	A certificate conferred by a postsecondary institution reflecting a purposefully organized curriculum at the graduate level.	Post-master's Certificate	A writ conferred by a college or university that requires completion of an organized program beyond the master's degree but does not meet the requirements of academic degrees at the doctor's level. It is a minimum of 12 credit hours (or equivalent) or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency in duration.
Master's Degree	A graduate degree beyond the bachelor's degree.	Master's Degree	A writ conferred by a college or university that requires the successful completion of a program of study of at

Name	Description	Detailed Name	Definition
			<p>least the full-time equivalent of 1 but not more than 2 academic years of work beyond the bachelor's degree.</p> <p>Some of these degrees, such as those in Theology (M.Div., M.H.L./Rav) that were formerly classified as "first-professional," may require more than 2 full-time equivalent academic years of work.</p>
Graduate Certificate	A certificate conferred by a postsecondary institution reflecting a purposefully organized curriculum at the graduate level.	Post-bachelor's Certificate	A writ conferred by a college or university that requires completion of an organized program of study beyond the bachelor's. It is designed for persons who have completed a baccalaureate degree but do not meet the requirements of a master's degree. It is a minimum of 12 credit hours (or equivalent) or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency in duration.
Bachelor's Degree	A degree signifying completion of four years of college-level work.	Bachelor's Degree	A writ conferred by a college or university that normally requires at least 4 but not more than 5 years of full-time equivalent college-level work. This includes all bachelor's degrees conferred in a 5-year cooperative (work-study) program. A cooperative plan provides for alternate class attendance and employment in business, industry, or government; thus, it allows students to combine actual work experience with their college studies. This also includes bachelor's degrees in which the normal 4 years of work are completed in 3 years.
Associate Degree	A degree signifying completion of two years of college-level work.	Associate Degree	A writ conferred by a college or university that normally requires at least 2 but less than 4 years of full-time equivalent college work.
Undergraduate Certificate	A certificate conferred by a postsecondary institution reflecting a purposeful organized curriculum at the undergraduate level.	Long-term Certificate	A writ conferred by a college or university that requires completion of an organized program of study at the postsecondary level (below the baccalaureate degree) designed for completion in 1,800 or more clock hours, 60 or more semester/trimester credit hours, or 90 or more quarter credit hours or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency.
		Medium-term Certificate	A writ conferred by a college or university that requires completion of an organized program of study at the

Name	Description	Detailed Name	Definition
			postsecondary level (below the baccalaureate degree) designed for completion in at least 900 but less than 1,800 clock hours, in at least 30 but less than 60 semester/trimester credit hours, or in at least 45 but less than 90 quarter credit hour or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency.
		Short-term Certificate	A writ conferred by a college or university that requires completion of an organized program of study at the postsecondary level (below the baccalaureate degree) designed for completion in at least 360 but less than 900 clock hours, in at least 13 but less than 30 semester/trimester credit hours, or in at least 13 but less than 45 quarter credit hours or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency.
Micro-Credentials			
Skill-Building Certificate	A certificate conferred by a provider reflecting a series of skill-based learning activities offered at the graduate or undergraduate level between 4 credit hours (or equivalent) and 12 credit hours (or equivalent) or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency.	Skill-Building Certificate	A writ conferred by a provider reflecting a series of skill-based learning activities offered at the graduate or undergraduate level between 4 credit hours (or equivalent) and 12 credit hours (or equivalent) or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency.
Badge	A writ conferred by a provider reflecting an instance of skill-based learning activities offered at the graduate or undergraduate level of rigor less than or equal to 3 credit hours (or equivalent) or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency.	Continuing Education Unit (CEU)	A writ representing 10 contact hours of participation in an organized continuing education experience 1) under responsible sponsorship, 2) capable direction, and 3) qualified instruction.
		Course Completion Certificate	A writ conferred by a provider reflecting a series of skill-based learning activities less than 3 credit hours (or equivalent) or acknowledged by a conferring provider via a review of personal accomplishment via prior learning or demonstrated competency in duration.

Name	Description	Detailed Name	Definition
		Digital Badge	A writ conferred by a provider reflecting the acquisition of an accomplishment, skill, quality, or interest.
		Open Badge	A form of digital badge that is that is verifiable, portable, and packed with information.
Maintenance Credential			
License	A credential awarded by a licensing agency.	Professional or Occupational License	A credential awarded by a licensing agency based on predetermined criteria. Licenses are time-limited and must be renewed periodically.
Certification	A credential awarded by a certification body.	Professional or Occupational Certification	A credential awarded by a certification body based on an individual demonstrating through an examination process that he or she has acquired the designated knowledge, skills, and abilities to perform a specific job. The examination can be either written, oral, or performance based. Certification is a time-limited credential that is renewed through a recertification process.

Note: The definitions included in Table 3 were adapted from the IPEDS glossary, Ewert & Kominski (2014), OpenBadges.org, and Dictionary.com

A few points of clarification to interpret the credentials as provided in Table 3 are appropriate. Three are provided herein.

Really, Graduate and Undergraduate Skill-Building Certificates?

I propose grouping any credential between 4 credit hours (or equivalent) and 12 credit hours (or equivalent). I propose this change because my engagement with providers and the literature suggest that these offerings are targeted to either 1) improve existing skills (upskilling), 2) add new skills (retraining), or 3) acquire a brand new set of skills in a new area for the first time.

This framing is not meant to minimize the rigor of learning at the undergraduate or graduate level but to reflect the intent of these learning opportunities more accurately while also placing boundaries around what constitutes an “organized curriculum” or “program of study.” This has, and will always be, a point of debate. But at some point, a decision must be made to

draw the line between education and training. Recommending we go back to not including any less-than-1-year credential as was done in HEGIS is the most extreme option but not proposed here. In keeping with the intent of IPEDS, I opted to provide an inclusive organizational frame where all postsecondary providers and the credentials they confer are valued.

Why the Change to 4-to-12 Credit Hour Range Rather than 0-to-8 as Currently Counted?

Building upon the “organized curriculum” framing in the answer above and inherent in the history of defining credentials, I deferred to the equivalent of a semester for the top-end of the range. At present, an educational certificate can be awarded for a 1-credit-hour course. To thoughtfully close this loophole, I suggest the “floor” for a certificate be 4 credit hours or its equivalent. This allows all learning activities of 3 credit hours or its equivalent to be counted separately as a badge.

Why Are So Many Credentials Categorized as a Badge?

These offerings typically reflect very discrete knowledge. Think of a Certificate of Completion earned on LinkedIn, or a CEU earned by an accountant, or a skill acquired via a federal training provider. While different in name, they are very similar in structure and purpose. Rather than erase their name, I opted to group them under a single name and “badge,” which seemed most appropriate. For one, there are too many certificates already. Additionally, CEUs reflect a very defined outcome of 10 contact hours. I also believe the badge allows for training for programs—apprenticeships, CTE, WIOA, and others via credit or noncredit—focused on skills training to have a credential that reflects their unique contribution to our nation’s competitiveness and workforce. Lastly, a series of related learning objectives/skills does not equal a program of study (for example, those in a 3-credit-hour course as included in this definition).

Differentiate Delivery from the Credential

Just as we don't say "University Master's Degree," we should not say "Coding Bootcamp Course Completion Certificate" or "Apprenticeship Certificate." We do, however, need to find a better way to characterize the method by which a credential was earned to understand how to best serve future learners and the 40 million adults with some college but no credential to speak of (Causey et al., 2023).

The time has come for IPEDS to collect data on program characteristics in addition to institutions. For the less familiar, IPEDS Institutional Characteristics Survey collects exceptionally useful information about institutions, such as if it is public, private, or for-profit; what state it is in; if it offers programs for veterans; and many others.

A little over a decade ago, when the U.S. Department of Education introduced a series of program integrity regulations, and an inflection point in the expectations of data users began. No longer were we discussing institutional value; rather the national conversation turned to programs within institutions. This shift only continues. And no agency is better positioned to meet the needs of the public, governmental partners, and the larger research community than is the NCES. To maintain its relevance, **I recommend NCES create a Program Characteristics Survey to complement the current Institutional Characteristics Survey of the IPEDS.**

This Program Characteristics Survey should be a joint effort with the U.S Department of Labor as it already has some program characteristics in the PIRL data system, such as length of program. Such a data collection would also enable the user to understand if the certificate was competency-based, assessment-based, or completion-based. It could also suggest if it was the result of an apprenticeship, bootcamp, or another delivery approach. Half of the survey data elements may be the same for all statistical agencies while also allowing for customized

information one agency may want that the other does not want. There are many ways forward, and the important part is to start.

Revisiting Noncredit

We need to leverage existing efforts taking place as noncredit activities at campuses by noting offerings on the Institutional Characteristic Survey or in registrations as was collected in the 1970s because current efforts are not enough. To advance our collective understanding of noncredit education and training, **I recommend NCES replicate the 1977/78 survey to understand how noncredit has changed over time while adding a few questions relevant to current practice and new knowledge.**

In addition, NCES should explore convening the original 34 partner organizations to revisit the CEU to understand its use over time, consider if it signifies a credential marking completion of a learning activity, or discuss if it's intent is to mirror the full-time equivalent calculation utilized in the credit-bearing programs and if a badge is worth conferring at completion.

Credentials for Training

We need to empower training participants and validate the skills they obtained by ensuring they receive acknowledgement for completing a learning activity or sequence of learning activities through the required conferring of a credential.

Just as postsecondary education transitioned from a focus on simply “access” to both “access and success” over a decade ago, the time has come for federally funded “workforce programs” to signify completion by requiring providers to confer a credential. This would not only operationalize the market mechanism for workers as they search for employment but also

aid the nation understand the educational attainment of its population to harden its competitiveness in advance.

When federal work force agencies choose to not require the reporting of earned credentials because of the training they provide, they introduce confusion into the field about the outputs and outcomes of taxpayer investments. Furthermore, by suggesting training from one provider contributes to a degree or certificate conferred by a college, a certification conferred by a third party, or a license from a government, they are essentially pushing off accountability for their own work and placing it on other entities. This practice not only causes confusion to the public but also unfairly places stakeholder ire on the institutions who report their data to NCES. While outside of its legal purview but within its realm as a thought partner, **I recommend NCES play a consultative role to governmental agencies and departments funding apprenticeships, workforce training, and CTE when they revisit their performance metrics to ensure providers confer a credential upon completion.**

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