Workforce-Aligned Certificate Programs

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Introduction

Postsecondary certificate programs have become more prominent thanks to state and federal efforts to raise overall postsecondary attainment and align education with locally available employment. Certificate programs differ from job training programs because they often confer a credit-bearing academic credential that is sometimes transferable toward higher levels of education. Some programs provide academic foundations that could hold value across employers and industries and over time. Certificates differ from degree programs in that they are typically shorter and often tied to a specific occupation. Evidence increasingly shows that some certificate programs from public institutions can improve earnings and employment. In this chapter, we provide background on major investments in workforce-aligned certificate programs and review the literature on the differential returns of various credentialing programs.

Certificate programs cover numerous areas of study and are offered across institutional sectors. Here, we focus on workforce-aligned credit-bearing certificates, most of which are at the sub-associate's degree level and can be completed in less than two years. There is less evidence on the outcomes of other kinds of emerging credentials, such as non-credit-bearing certificates, boot camps, and basic skills credentials.

Short-term certificate programs have grown considerably due to major federal and state investments over the past decade. As earnings premiums for many postsecondary credentials continue to be substantial,[1] policymakers have looked to postsecondary institutions, and community colleges in particular, to develop accelerated programs with both academic and labor market value. For example, the Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant was a $2.1 billion federal investment that established over 2,000 certificate programs at community colleges starting in 2011. Many states have also invested heavily in establishing new certificate programs and financing short-term programs.[2] State policy related to workforce-aligned certificate programs is often connected to broader workforce development efforts to promote skilled workers in high-demand fields.

Certificates often require less time to complete than traditional associate's degrees[3] and could be more attainable for students seeking accelerated programs with multiple labor market entry and exit points, such those entering college as adults or pursuing work and study. Additionally, some certificate programs can be combined to stack toward higher-level credentials. Therefore, community college and state policy leaders often leverage workforce-aligned certificate programs to support higher completion rates.

Key Findings

Key finding #1: *Some certificate programs in high-demand fields confer labor market returns for a relatively small investment of time and tuition.*

Plausibly causal studies examining the returns to short-term certificate programs of less than two years find that certificates in high-demand fields, such as health, information technology, and skilled trades, increase annual earnings by 0–20%. Even certificate programs as short as 6 units, or approximately two classes, in health fields increase the likelihood that graduates find employment in an aligned industry and increase earnings, although there is evidence that benefits fade over time. Non-credit certificate programs, especially those conferring industry-recognized credentials, can also improve earnings and likelihood of employment.

Key finding #2: *There is significant variation in returns to workforce credentials by field of study and geography.*

Earnings and employment returns to certificates vary substantially by field of study, with the highest-return credentials being observed in industries such as health, business, information technology, and the skilled trades. Geography and local economic context also play a large role in certificate program outcomes.

Key finding #3: *There are considerable differences in certificate returns by gender, and future studies should focus on potential disparities across demographic characteristics, such as race/ethnicity and age.*

Occupational segregation by gender and race/ethnicity are barriers to enrollment in high-value programs, and students often select by gender and race/ethnicity into programs yielding systematically lower earnings.[4] In addition, the benefit of certificate programs as on-ramps into postsecondary education could be offset by diversion effects if students are tracked into certificate programs in place of more lucrative degree pathways, which is why monitoring durability and transferability of credentials is an equity imperative.[5]

Key finding #4: *Transferability of credits is a common challenge for students seeking to translate certificates into more advanced degrees or credentials.*

Aligning postsecondary programs too closely with vocations can mean that the skills conferred through certificate programs can become obsolete or irrelevant to local labor markets as the economy evolves. Improving the transferability of credits obtained while pursuing certificates to degree programs or offering established pathways toward further technical certifications improves the benefit of certificates and mobility of graduates.[6]

Key finding #5: *Community colleges are increasingly leveraged as hubs that connect workforce development and education stakeholders through their certificate programs.*

Federal and state funding for workforce certificate programs[7] often includes additional incentives to connect institutions with one another, workforce development agencies, and local employers. Many community college administrators also work across the boundaries of

these systems.[8]

Evidence

This review focuses on institutional practices for and individual returns to participation in sub-associate-level workforce credentialing programs at postsecondary institutions participating in Title IV federal financial aid programs. This area has been the focus of most of the literature. There is more limited evidence on the value of proprietary credentialing programs, such as coding bootcamps, proprietary training (e.g., Google Information Technology Support certificates), or digital badges.[9] We offer at most limited evidence on non-credit programs[10] and the role of federal and state funding programs in this market (e.g., Workforce Innovation and Opportunity Act (WIOA), Pell Grant).[11]

Key finding #1: *Some certificate programs in high-demand fields confer labor market returns for a relatively small investment of time and tuition*

The returns to earnings and employment of credit-bearing short-term certificate programs at community colleges are generally positive but modest and generally lower than those of associate and bachelor's degrees. Studies have examined various certificates ranging from very short (6 or fewer units) to long-term certificates (up to 59 units) by comparing wages before and after certificate program enrollment. On average, certificates improve earnings by 10–20%. Certificates can also increase the likelihood of employment, and importantly, employment in an aligned industry, by up to 10%.[12] Relative to their costs, longer-term certificates may not necessarily confer higher earnings gains than shorter certificates but may hold their value for longer. For example, very short certificate programs requiring 6 or fewer units raised earnings by 12–16%, which was comparable to returns to earnings and employment from longer-term certificates in Kentucky, but were more likely to fade in value over time.[13] In Washington, only longer-term certificates in Allied Health, Nursing, and Transportation increased annual earnings by 16%, or $3,000–$6,000, while shorter term certificates did not improve earnings.[14]

Short-term certificate programs have also been found to increase the likelihood that completers find work in a new industry, which can mean greater pay and stability. A Tennessee-based study found that short-term certificates facilitated industry transitions, such as movement from retail to health industries, that contributed to observed earnings returns.[15] The launch pad mechanism was also likely responsible for the returns to very short certificates in Kentucky, where completers in health and business were most likely to transition to employment within these industries.

Non-credit programs, occupational licenses, and industry-recognized credentials

Non-credit programs serve an estimated 5-million students per year, or 42% of students at community colleges, but are rarely tracked in common administrative data systems.[16] Non-credit degree programs can be used to prepare students for occupational licensure programs and/or industry-recognized certificates and to contract workforce training for specific employers. Because non-credit certificate programs are typically exempt from state accreditation processes, community colleges can establish them quickly and potentially tailor them tightly to occupations or even specific employers.[17] However, this also means that data collected on program outcomes are more limited and difficult to research.

Occupational licenses are required for a range of occupations, from massage therapy and nursing to plumbing and electrical, across several industries. Typically, occupational licensure requirements are set by states in partnership with industry to ensure baseline

professional standards. Many community college non-credit programs provide the training needed to pass an occupational licensure exam, which, upon obtaining a license can increase earnings,[18] although it is difficult to disentangle whether the increased barriers to employment in licensed occupations are a net benefit to workers or consumers. Recent research has found that similar licensure programs in states with more instructional hours do not necessarily pay more and leave students with higher student loan debt.[19]

Industry-recognized credentials are awarded by third parties through non-credit programs at community colleges. Industry-recognized certificates are designed to signal student skillsets and in some cases have overlap with occupational licenses, but they typically signal specific competencies (e.g., a competency certificate in gas metal arc welding that can be awarded as a part of a broader welding training program).[20] Non-credit, industry-recognized credentials are among the most commonly funded programs through WIOA and include certificates in medical assisting, computer and information sciences, and the skilled trades.[21] Robust studies on the returns to industry-recognized certificates are limited. However, a recent study using administrative data from Virginia found that 6–12-week non-credit programs raised earnings by $1,000 per quarter. In this study, the most popular certificate program, Commercial Driver's License, was also an occupational license, but some of the skill-based industry credentials such as Carpentry Level I also conferred labor market value without conferring an industry-recognized occupational license. [22]

In addition, non-credit programs can be used to contract training for regional employers.[23] In this case, community colleges may maintain a separate entity that allows for companies to hire out employee trainings within the college. However, these programs are not yet systematically tracked in administrative data, limiting empirical evidence on student outcomes.

Digital badging and privately administered certificates

Major platforms for freelance work, such as Fiverr and Upwork, and professional social media, sites such as LinkedIn, display digital badges that workers often earn through online tests of competency, rather than through classroom instruction.[24] Badging programs conferred through corporate or other private organizations have been used to allow contract, or gig, workers to signal skills in increasingly common online hiring marketplaces.[25] Gig work mediated through online platforms[26] connects workers with task-based employment and offers potential for privately administered skill certificates to signal value to employers.[27]

The academic literature on the efficacy of digital badges and similar types of skill-based microcredentials is limited. Recent research has found that digital badges could reduce employer uncertainty and allow contract workers to secure projects with 9% higher value than those secured in the 14 days prior to earning a digital badge.[28] The effects were concentrated among workers with relatively little experience and few skills overall. While evidence on the value of digital badging is still emerging, this form of credentialling will likely continue to capture attention from employers and policymakers, due to their increasing popularity and potential utility in gig-based labor markets.

Key finding #2: *There is significant variation in returns to workforce credentials by field of study and geography.*

Returns to certificate programs vary by field of study and geography.[29] Field of study drives most of the variation in outcomes. High-return certificate programs of short to moderate length (6–30 units) cover fields such as health, business, information technology, and skilled trades. Health and business certificates in California, for example, raised earnings by 11 and 19 percentage points (or $1,200 and $2,000 annually), respectively.[30] However, other short-

to mid-length certificates in certain construction, allied health, and protective services specialties had null or negative earnings returns.[31] Variance in returns by field of study could be driven in part by local economic contexts and the presence of job opportunities in aligned industries.

The returns to short-term certificates vary by geography, especially across states and within fields. For example, the same construction certificate increased earnings for completers in North Carolina but had null or negative returns for completers in Virginia.[32] Further research is needed to determine whether geographic differences in outcomes are driven by program quality, local economic conditions, or the degree of alignment with local industry. The popularity or adoption of certificate programs also varies by geography. Certificate program completions outnumber associate's degree completions by almost 3 to 1 in Louisiana, Georgia, and Kentucky but make up a smaller share in New York, California, and Virginia.[33] Certificates account for a 20% greater share of completions at community colleges in rural areas than at community colleges in urban and suburban areas, which could indicate that certificate programs are particularly important for addressing rural–urban gaps in postsecondary attainment.[34]

Key finding #3: *There are considerable differences in certificate returns by gender, and future studies should focus on potential disparities across demographic characteristics, such as race/ethnicity and age.*

There are also important differences in returns to certificate programs by gender and race/ethnicity. Some of these disparities are driven by existing inequity in the labor market.[35] For example, many female-dominated industries, particularly those employing large numbers of women of color, have systematically lower pay than male-dominated industries with similar educational requirements.[36] These industries include personal care and health assisting, in which workers are typically trained through workforce certificate programs.[37] Early childhood education, another certificate-heavy field with high female participation, has both lower pay than other fields and disparities in pay by gender and race/ethnicity conditional on occupation, education, and experience.[38]

Gendered differences in earnings returns can also occur within fields of study. Returns to short-term certificate completion in health tend to be higher for female students than for male peers.[39] In Ohio, quarterly earnings for females completing short-term health certificates improved by nearly $1,000, while earnings for males completing the same certificate showed no improvement.[40] These foregone earnings returns could have occurred because just 7% of male completers pursued employment in health industries compared with 32% of female students.[41] Evidence suggests a similar trend for female students entering male-dominated industries. In California for example, women completing Information Technology certificates experienced no growth in earnings, while the earnings of men improved by 9–14 percentage points, although some imprecision in measurement could underlie this result.[42]

Considerable heterogeneity in earnings returns to short-term certificate programs signals a need for more evidence to develop a shared framework for understanding high-quality workforce-aligned postsecondary programs. A few qualitative studies have highlighted the importance of program alignment, strong employer partnerships, and advising support.[43] The TAACCCT grant, a major federal investment in certificate programs, established four priority areas for ensuring program quality: accelerated curriculum, industry alignment, advising support, and opportunities for online program engagement.[44] These strategies were selected based on the state of the literature on postsecondary success for adult and non-traditional learners.

Most evidence on short-term certificate programs covers public 2-year community colleges, although for-profit colleges have also had a longstanding specialization in certificate programs. For-profit colleges award over one-third of total undergraduate certificates and play a particularly large role in culinary and personal care services, awarding 79% of certificates in this area.[45] For-profit programs are typically more expensive than public sector programs, but many result in lower odds of employment and lower earnings conditional on employment.[46] In a resume audit study, researchers applied to jobs using fictitious resumes differing only by education. Resumes listed completion of a community college certificate, for-profit certificate, and high school diploma.[47] For-profit certificates did not increase the rate of employer callback compared with a high-school diploma.

Key finding #4: *Transferability of credits is a common challenge for students seeking to translate certificates into more advanced degrees or credentials.*

Education programs that are tailored too closely to the specific needs of only one or a few occupations run the risk of leaving students with credentials that are outdated or out-of-place as the economy evolves. Evidence shows that the value of shorter certificates is more likely to fade over time than that of longer-term certificates and associate's degrees, which could suggest that skills lose value over time. In Ohio, Tennessee, and Kentucky, researchers found that the returns to an associate's degree increased over time, while those of a long-term certificate remained constant.[48] Skills that are likely to be broadly applicable, such as written communication and critical thinking, may be more difficult to integrate into an accelerated, labor-market-aligned program, which could reduce the value that a certificate holds over time.[49]

Well-defined stackable credentials have the potential to help students progress toward higher levels of education or updated credentials. Some entry-level certificate programs can provide students with a core skill set that can serve as a foundation for multiple potential pathways.[50] For example, a certificate in fundamental engineering principles could be applied toward further mechanical, electrical, or manufacturing certificates and degrees. However, clearly defined stackable pathways are relatively uncommon. In a study of community college catalogs in California, just 15% of degree programs made explicit connections between credentials. Despite fewer well-defined pathways, 25% of short-term certificate completers returned to obtain an additional credential within three years.[51] Students in programs with clearly defined progressions toward more advanced credentials were more likely to stack, although even in well-defined pathways, few students ultimately obtained a bachelor's degree.[52] Early evidence suggests positive outcomes for students who can progress toward additional credential levels. Stacking a more advanced credential can improve the likelihood of employment by 4 percentage points and increase quarterly earnings by $400.[53] However, data on the availability of stackable pathways remain relatively limited.

Finally, colleges also offer smaller badges that can be earned within degree or certificate programs to signal particular competencies, such as a 3D printing badge earned as part of a larger machining certificate program.[54] Some skill badges are standardized and recognized by industry groups. The development of these shorter, more modular certificates and skill badges are meant to signal specific skills to employers. They may also offer some labor market value to non-completers, which could address issues with completion rates in longer degree programs.

Key finding #5: *Community colleges are increasingly leveraged as hubs that connect workforce development and education stakeholders through their certificate programs*

In recent decades, large federal and state investments in workforce-aligned certificate

programs have strengthened connections between community colleges and local labor markets. In 2018, Perkins V legislation for career and technical education was reauthorized to require institutions to align funded career pathways programs with local industries.[55] Colleges are thus required to use labor market statistics, such as employment projections, to prove that Perkins-funded programs are aligned with occupations that are projected to have growing openings. Earlier federal investments in certificate programs, including the TAACCCT grant program, required that industry and workforce development agencies were involved in the curricular design of new programs.[56] As a result of the $2.1 billion TAACCCT grant, colleges or consortia of colleges developed 2,000 new sub-associate credentialing programs that engaged thousands of employer partners.[57] While there is no one definition of alignment, resulting in some ambiguity and differential standards across the country[58], college leaders and policymakers have worked to increase connections between community colleges and workforce systems.

State-level initiatives have also focused on alignment between industry and postsecondary education. For example, the Tennessee Labor-Education Alignment Program (LEAP), Florida Strengthening Alignment between Industry and Learning (SAIL), Kentucky Works!, and ReadySC in South Carolina incentivized community colleges to create new microcredentialing programs to train workers for locally available jobs. The number and diversity of short-term credentialing programs have proliferated in the years since these investments. In general, new programs have been concentrated in regions with corresponding growth in industry,[59] although directly measuring their influence on regional economic development is difficult. A few high-quality case studies suggest that state investments in improving the connection between community colleges and labor markets can attract new employers and aid in regional economic development.[60]

These efforts stem from a wider shift in providing support for displaced workers through vocational training programs. Historically, federally funded WIA programs for displaced workers included a suite of services for job placement assistance.[61] Studies found that vocational skills training, often provided through community colleges, was the most effective WIA intervention,[62] which led to calls for increased availability of vocational skills training for displaced workers.[63] In 2014, WIA was replaced by WIOA, which can fund student tuition for vocational training programs (including short-term certificate programs) that are widely effective at increasing earnings and improving odds of employment.[64]

Practices at many community colleges have changed as a result of these policy initiatives. For example, some community colleges have increased involvement in cross-sectoral collaboration, engaging K-12 schools, four-year colleges, chambers of commerce, and employers.[65] Partners are leveraged for donating equipment, participating in advisory boards to inform curricular design, and strengthening ease of transfer across institutions.[66] States and the federal government have expanded work-based learning and/or apprenticeship programs, in which students take on paid internships with partner employers during their academic term.[67]

Community college investments come against a backdrop of a longstanding criticism that community colleges lack flexibility in aligning programs with changing labor markets.[68] Policymakers argue that the labor market relevance of certificate programs matters to both keep pace with the increasing demand for skilled labor and to support students navigating an increasingly complex labor market.[69] The literature on individual returns to certificate programs suggests that these initiatives have been successful in connecting program completers with new and/or higher paying employment. However, ongoing research is needed to continue to advance our understanding of the variability in student outcomes, particularly by geographic context, gender, and racial/ethnic identity.

Conclusion and areas for future research

This review highlights the growing importance of workforce-aligned certificate programs in the postsecondary education landscape. Evidence shows that short-term certificate programs can offer significant labor market returns, particularly in high-demand fields, in less time than traditional degree programs. Certificate programs are also an important venue for valuable occupational licenses and industry-recognized credentials that students earn as they complete a certificate program. There is evidence that the value of certificates may fade more over time than that of more traditional associate and bachelor's degrees. Some colleges have attempted to address this by grouping certificate programs into modular educational pathways that allow students to build from short-term certificates toward more advanced certificates or degrees.

There are critical areas for further research related to postsecondary workforce certificates. Researchers should delve deeper into the mechanisms driving the observed heterogeneity in returns across different geographic regions and student demographics. It remains unclear whether differences in credential value across geographic regions are due to differences in college quality or labor market context. Moreover, there is limited data on non-credit workforce programs that are known to constitute a large, yet mostly unobserved, share of students served by community colleges. Understanding what drives the value of these important and increasingly common college certificates is key for informing educational and workforce development strategies.

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