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Improving Career Education Pathways into California's Workforce

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SUMMARY

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Technical appendices to this report are available on the PPIC website.

The current economic crisis hit Californians with less education hard and brought greater attention to the role public workforce training can play in an equitable recovery. To support workforce needs and the economic success of residents, California invests heavily in access to education beyond high school. The state deployed between $6 and $7 billion annually to workforce education in the years leading up to the pandemic. By understanding how best to target these investments, California can build training programs that offer the greatest benefit to workers and employers.

The California community college system is the largest provider of publicly funded career education in the state. Community colleges are therefore critical for effective and equitable workforce training, even as the system has a governance and financing structure that creates challenges to connecting college programs to careers. Furthermore, we lack complete information about whether, how, and who completes job training programs in a timely manner and who then finds quality employment that offers economic mobility.

To fill in some of these gaps, we investigate the trajectories of nearly one million students who have pursued career education at California community colleges over the last decade. We also use stakeholder interviews to probe how employers and workforce intermediaries support these students in completing programs and gaining skills valued in the labor market. We find:

- **The vast majority of students who pursue career education in the community colleges never earn a credential.** One quarter of career education students earn a credential within six years; students who pursue health pathways are more successful—over half complete a credential within six years.
- **Students who earn an initial credential, re-enroll, and complete a second one in the same field—a stackable credential path—are even more rare.** About 5 percent of all career education students earn multiple credentials in the same discipline, though this includes students who earn an associate degree. Among those who first earn a certificate, the share jumps to about 25 percent.
- **Students who complete credentials take about 2.5 years to do so.** Even short-term certificates that require far fewer credits take students about two years; completing a stackable credential pathway takes over four years, on average.
- **Black and Latino students are less likely to complete a credential, as are younger students and men.** Equity gaps in completion emerge relatively early, particularly for Black and younger students.
- **Students who complete at least one full-time term have much higher completion rates.** These students also tend to earn credentials in a timely manner.

- **Stakeholders cited challenges to partnerships with employers, including funding siloes, lack of resources, and coordination needed within individual colleges.** Employer and industry partnerships with community colleges can create effective career education programs, and recent state and federal investments are supporting more strategic employer-college relationships.

After the economic disruption of COVID-19, students need better career education pathways that connect them to stable work. To better target investments around equity, the state could invest in supports that help more students access and complete career education programs—employers and colleges we interviewed cited technology, wage-replacement, and enhanced flexibility as promising areas. Furthermore, pairing supports with more flexibility—particularly for working adults—so they can take full-time course loads could go a long way to improving completion and connecting students more quickly to better jobs.

Introduction

The fallout of the current economic crisis hit some workers harder than others, often based on level of education and earnings, a bifurcation that underscores why California needs broad access to effective workforce education and training programs. Meanwhile, the pandemic may reshape near- and long-term job opportunities. In particular, analysts project that the necessary skills for employment in the recovery period will skew even more sharply towards workers with education beyond high school (Ice, Rieley, and Rinde 2021).

California invests heavily in education, and creating broad access beyond high school is the central way the state supports a skilled workforce and individual economic success. Furthermore, Californians support public funding for job training programs: according to a PPIC survey in December 2020, nearly 85 percent of adults favored more government investment in workforce training to help connect people to better jobs (Baldassare et al. 2020). As the economy reopens, policymakers are considering how to best deploy resources to get people back to work and support long-term economic goals. The recently passed state budget includes several investments to improve connections between workforce training and the community colleges.

Workforce education and job training encompass a wide range of services, institutions, and stakeholders in California. These include community-based, hands-on programs; local workforce development boards; union-based trust funds that support incumbent worker training; or career education (CE) programs available through community colleges and for-profit institutions.[1]

As the largest provider of workforce education in the state, the California Community College system is poised to play a central role in the state's economic recovery. For Californians who need to build skills to gain access to better careers or to advance in their current career, CE programs at a community college could provide the necessary training at a low cost. These publicly funded programs may be especially important for Californians whose employers do not provide training opportunities, who have limited access to education through other means, or who cannot afford the high price of many for-profit training programs.

Though in theory, employers and individuals should invest in training if the payoff is substantial—in terms of earnings, productivity, and the like—in practice, both may make suboptimal investments due to lack of information, inequitable access, and market failures, among other reasons (Holzer 2021). In these cases, when the state invests in training, it may help to produce better outcomes and address concerns like efficiency and equity.

California's community colleges have articulated goals in a similar vein. The Chancellor's Office Vision for Success focuses on the student, with goals to improve completion and address equity gaps. It also recognizes that many students balance school with jobs and other responsibilities. In the wake of COVID-19, the Chancellor's office has called for strengthening this vision so community colleges can play a key role in the economic recovery and beyond by improving on-ramps to workforce training and off-ramps to employment for students of all ages.

At the same time, colleges may find it more challenging to deliver effective pathways for career education after the pandemic. While workforce needs had already begun shifting due to technology like automation and artificial intelligence, the pandemic may have fast-forwarded those changes (California Future of Work Commission 2021). Employment in sectors like leisure, hospitality, and retail—industries that suffered high COVID job losses—may be permanently dampened as the pandemic reshapes business models (Ice, Rieley, and Rinde 2021;

[1] For-profit institutions provide workforce training, though enrollments have declined substantially nationally and in California since 2010, in the wake of the Great Recession. It will be important to monitor trends in for-profit enrollments since these programs tend to be higher cost and lower value compared to their community college counterparts (Cellini and Turner 2018). A rise in for-profit enrollment post-COVID may also raise concerns as for-profit institutions have been cited in the past for predatory practices and tend to target disadvantaged student groups. These concerns and others are driving legislative efforts to overhaul the state agency tasked with monitoring for-profit institutions in California.

Muro and You 2021). In this environment, community college programs can provide skills that help students weather job market shifts—by building foundational skills or by providing training on the latest skill needs.

Assessing the skills students need to prepare for an evolving workforce and then adjusting curriculum, pathways, and information is no small feat. A constellation of actors have a stake and a role in making this work: college administrators and faculty members, workforce development agencies, employers and industry groups, and most importantly, the people pursuing training to advance their economic opportunities.

In recent years, state and federal agencies have targeted investments at community college career education programs. To make the most of these investments, we need more information about how students progress through available pathways and how progress differs across student groups such as older students and students of color. Equally important is how long students take to complete CE pathways given the opportunity costs of college enrollment—including foregone earnings and the time commitment to complete college coursework. These concerns may be more acute for certain students and have implications for addressing equity gaps.

To inform ongoing efforts around public job training, we examine how community colleges can create more effective and equitable CE pathways. First, we describe the role of the community college system in providing career education. Then, we map out the trajectories of students who pursued career education over the past decade, examining credential completion and the time it takes students to progress towards credentials, with a focus on understanding differences across demographic groups and enrollment patterns. We then discuss how colleges can support more students to complete CE pathways and connect with good jobs, with a focus on the role of employer engagement. These latter sections are informed primarily by interviews with community college practitioners, workforce intermediaries, and employers.

Community Colleges are Major Providers of Career Education

In recent years before the pandemic, California spent around $7 billion annually to support nearly 30 workforce training programs administered by eight state agencies (LAO 2018; LAO 2016). State general funds make up about two-thirds of these investments, with federal funds from sources like the Workforce Innovation and Opportunity Act (WIOA) and Perkins Career and Technical Education comprising the other third. The Legislative Analyst's Office estimates that the California Community College system is responsible, in all or in part, for about half of total public workforce education spending in the state (LAO 2016).[2]

Students Can Choose from a Range of Programs

California's community colleges offer a wide range of career education programs for students to develop skills that could lead to careers in key sectors of the California economy, like information technology, health care, and advanced manufacturing. The 116 colleges in the system are located across all regions of the state, have low tuition and fees with many students receiving waivers to cover enrollment costs, and serve a more racially diverse group of students compared to California's other public higher education systems.

[2] The remaining one-third of workforce investments come from primarily federal dollars through the CalWORKs program and the Workforce Investment and Opportunity Act (WIOA). According to the LAO estimates, the community college system receives about 36 percent of public workforce education funding and shares another 14 percent with the California Department of Education. The LAO bases their estimate for the community college share of workforce training by assuming that the community college system spends about one-third of their apportionment on core adult education activities.

We examine the trajectories of students enrolled in CE programs over the past decade as a baseline for two goals: to understand how these programs might address workforce training in the wake of COVID-19 and to identify key challenges around ensuring that training is effective and equitable. We focus on coursework and credential completion in the six largest CE disciplines offered though the community colleges: business, information technology (IT), health, family and consumer sciences, engineering, and public and protective services. In these broad fields of study, students can choose from programs that confer several types of credentials. While the community colleges offer other career education in areas like agriculture, environmental technology, and digital media, the largest six account for more than 80 percent of CE course enrollments and about 90 percent of all CE credentials.

In the past decade, nearly one million students have pursued career education training in one of these six areas at the community colleges; many more complete at least one course in these fields. Students travel a variety of paths, and which path they pursue could influence their future careers, earnings, and time invested in college. Our prior work has documented the economic returns for students completing CE credentials in these fields. We found that while, overall, the largest CE programs afford strong wage gains, the choice of program and credential is critical (Bohn, Jackson, McConville 2019; see Technical Appendix Table B5 for an overview of program wage returns.)

Career education programs at the community colleges serve a diverse student group who more closely reflect California's population than the state's other public higher education institutions. Latino students comprise about 39 percent of students pursuing CE programs, followed by White students (35%), Asian students (14%), and Black students (7%); Native American, Pacific Islander, and multi-race students comprise about 1 percent each. Men and women are equally represented in CE programs although there are large gender differences across disciplines. And nearly 50 percent of students are age 25 or older when they begin pursuing a career education pathway.

Our quantitative analysis focuses on how often students who earn substantial credits in career education come away with a credential in that field, whether an associate degree or a certificate. We exclude students who transfer to a four-year college as we cannot follow them in our data and we are interested in how career education programs can support students without a four-year degree. Still, transferring is an important component of career education pathways given the large economic returns from bachelor's degrees (Johnson and Cuellar Mejia 2020; Kazis and Leasor 2021). Beyond looking at whether students complete credentials, we also describe how long it takes students to complete programs. For students seeking skills to help them enter or advance in the labor market, the time it takes to earn credentials is a critical consideration.

Students who enroll in community college may forgo employment or work fewer hours to instead dedicate time to their coursework. These opportunity costs may be particularly difficult to overcome for certain groups including students of color, low-income adults, and student parents who are unable to forgo full-time employment and must balance the demands of training and work. Programs where students complete credentials in a relatively short time (at least based on the number of units required) could help these students advance if the credentials are aligned with available career opportunities.

As in our past work, we are also interested in how stackable credential pathways can improve economic mobility—particularly for students who earn short-term certificates, which confer lower value in the labor market on average. A pathway in career education, according to the US Department of Labor, includes multiple entry and exit points where students can complete training according to their level and accumulate skill sets over a relatively short time (US DOLETA 2016). Entry and exit points are important for career education students, many of whom work while attending college and may be trying to advance in their current career by doing so. Stackable

credential pathways—for example, earning a short-term certificate and then stacking a related certificate or degree—are one way to implement a career pathway and can improve student's economic mobility (Bohn, Jackson, and McConville 2019; Meyer et al. 2020). For these programs and pathways to pay off, students must gain skills valued by employers and connect to jobs.

How well do community college career education programs align with the state's workforce needs and provide students with skills valued by employers? A large survey of CE students at California's community colleges hints at opportunities for improvement. Although more than 90 percent of recent CE students indicated they were satisfied or very satisfied with the career training they received at the community colleges, nearly 30 percent report their current job was not closely related to the area of their training (Santa Rosa Junior College 2019). Students who said their current job was closely related to their recent training programs reported wage gains three times larger compared to students whose job was not related to their training.

Recent Investments Target Community College Training for In-Demand Jobs

While the community college system has made ongoing efforts to improve completion and reduce equity gaps, including the Guided Pathways initiative and remedial education reforms, external factors may contribute to student progress and success.[3] In career education, that may be particularly true because programs are geared towards preparing students for workforce opportunities, which vary regionally and change over time.

To align training programs and workforce needs, public institutions, private entities such as employers and industry groups, and workforce intermediaries must coordinate. Recognizing the challenges of doing this, recent federal and state investments have provided funding to bring these stakeholders together to improve employer engagement with community college career education programs.

The Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant program was a $2 billion federal workforce investment aimed at helping community colleges throughout the country increase their capacity to provide training programs for in-demand jobs (Mikelson et al. 2017). More than 40 community colleges in California received funding through the program, with 7 colleges serving as primary grant leads.

The TAACCCT program, which ran from 2011 to 2018, also addressed other key issues including changing education and workforce systems to be better connected and integrated, more effectively addressing employer needs for skilled workers, and transforming how community colleges deliver education and training to adult learners (Kuehn & Eyster 2020). We discuss evaluations of these programs and take a closer look at one of California's funded projects later in this report.

The state has invested over $1 billion in the community college and K–12 system the last several years, such as through the Career Pathways Trust and Career Technical Education Incentive grants to improve career education programs. The Strong Workforce Program, created in 2017 to provide ongoing support for career education in the community colleges, receives about $250 million annually in state funds.[4] The High Road Training Partnerships (HRTP) program, run by the California Workforce Development Board, is another state investment that seeks to bring together colleges and employers (UC Berkeley Labor Center 2019). In the final section of the report, we

[3] The Guided Pathways framework is a Chancellor's Office initiative being implemented across the community college system to provide students with a "set of clear course-taking patterns to promote better enrollment decisions and prepare students for future success." For more information on remedial education reforms and their impact on student outcomes, see the recent PPIC report *A New Era of Student Access and California's Community Colleges*.

[4] The product of a nine-month taskforce, the Strong Workforce Program provides both local and regional funding allocations to support collaboration with local stakeholders including industry and local workforce development boards.

examine one of the HRTP programs partnering with community colleges to provide health care workers with career pathways.

In light of these large and varied investments, what do we know about students who pursue career education and about their trajectories through programs?

Data and methodology

Our analysis relies on detailed student records from the management information system (MIS) for the California Community Colleges Chancellor's Office, which allows us to track course-taking patterns and credential completion for career education students between 2007 and 2019.

The student-level records are critical because we can conduct more rigorous, longitudinal analyses but also because California's community colleges are open-access institutions where anyone can enroll. Students need not declare a major or, in most cases, apply to a given program (nursing programs being an exception). Therefore, we rely on observed course-taking to indicate students' intention to complete career education programs and credentials. This approach is in line with Chancellor's Office metrics for student success and other research to identify students pursuing career education pathways.

In this report, we identify students as career-education intending if they complete at least eight units in a single career education discipline within three years of completing their first CE course. For our main analyses, we exclude the students who transfer to a four-year college after they were identified as career-education intending. This is out of necessity, as we cannot follow students into four-year institutions. We also exclude students who earned a credential in a different field. See Technical Appendices B and C for more information.

Student Trajectories through Career Education Pathways Vary

Our objective is to understand four key milestones along a career education pathway: when students accumulate substantial course credits for career education, whether they earn a credential, whether students return to community college to pursue additional training, and whether they earn a second credential. In this section, we follow students who have achieved the first milestone—what we refer to as "pursuing a career education program" or as "career-education (CE) intending."

Because students do not declare a major in California community colleges or enter a program in most cases, we use the courses they take to infer the career pathway they intend to pursue. This approach is used in other research and by the Chancellor's office to understand student intentions.[5]

[5] The Chancellor Office's Student Success Metrics use a cutoff of 9 completed units in career education to identify students who are pursuing short-term career education goals. Studies that examine wage returns to career education credentials in the California Community Colleges have used the same strategy as we do (8 units completed within three years) to identify students that serve as a comparison group for estimating labor market value of credentials (Huff-Stevens, Kurealander, Grosz 2019; Bohn, McConville and Gibson 2016).

In career education programs, students can earn many different credentials that range from short-term certificates requiring 6 to 29 units, long-term certificates that require 30 to 59 units to complete, or associate degrees requiring 60+ units. Completing one of these credentials is the first outcome we examine.

Because career education credentials may be short-term and designed as part of a pathway, we examine returning to college and pursuing a second credential next. The final outcome we investigate is completing a second credential in the same career field, what we call a "stackable credential pathway" (Bohn and McConville 2018). This full pathway, though uncommon, can be an important way for gaining additional skills that pay off in the labor market, particularly among students who initially earn short-term credentials (Bohn, Jackson, and McConville 2019).

We include all students who become CE-intending in at least one of our six focal career education disciplines and do not transfer to a four-year college. Depending on the outcome of interest, we follow different cohorts of students based on when they started a career education program. Our analysis of completion of a first CE credential includes students who started programs between 2010 and 2016. This allows us to focus on a more recent group of students, but also allows us to observe award completion for a minimum of three years after starting a program. When we examine completion of a stackable credential pathway, we focus on students who started their programs between 2007 and 2013 so we can follow them for six years to allow time to observe completion of a second credential. (See Technical Appendix B for information about how this affects our samples and completion rates.)

Most Career Education Students Never Earn a Credential

Relatively few students who are CE intending—that is, who earned substantial credits in a particular field—complete a program by earning a credential: overall only about 25 percent earn an award despite completing at least 8 units in that field of study (Figure 1).[6] An even smaller share, about 5 percent, complete a stackable credential pathway.[7] This is despite many students returning to community colleges for additional coursework after they earn their first credential.

That is, out of every 100 students who reach CE-intending status in a field, only about 25 students go on to earn a certificate or associate degree in that area within six years; 14 return to community college after completing their first credential; and only about 5 stack a credential by earning a second award in the same field. The drop-off is steepest at the first step, when students have accumulated at least 8 credits in a field but do not ever complete a career education credential.[8]

Students in health programs stand out as an exception. Over half of health-intending students earn a health credential. Only about 6 percent complete a stackable pathway, similar to other disciplines. The strong economic returns on health credentials may be both an incentive to complete and a sign of good news for the success of students in these programs. Students who earn an associate degree in health more than double their wages, on average, as a result of completing their career education program, and those completing long-term certificates also see substantial wage gains (Bohn, Jackson, and McConville 2019).

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[6] Specifically, we flag an 'intending' student in a career education discipline (defined by 2-digit TOP codes) if they complete 8 units in the career education discipline within three years of completing their first unit in that discipline, which is when we flag the student as 'starting' the program. On average, most students become intending within less than one year. See Technical Appendix B for more details.

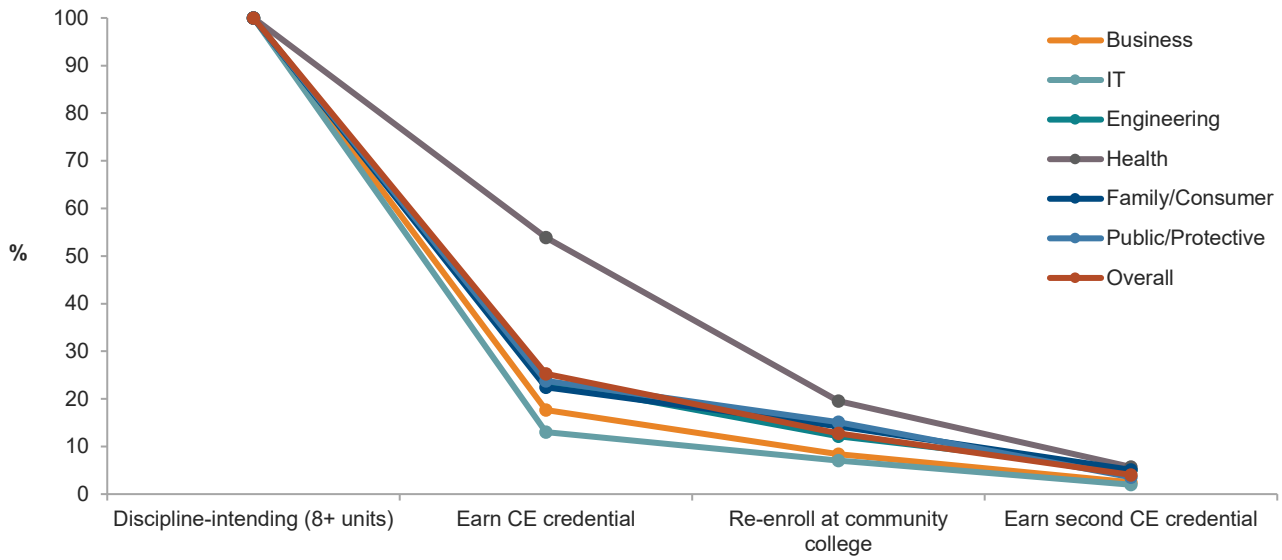
[7] This result is consistent with national evidence (Bailey and Belfield 2017) and evidence from Ohio on low rates of completing stackable credentials (Daugherty et al. 2020).

[8] Some CE-intending students complete a credential outside of the career education program (roughly 15%); we exclude students who earn a credential in another area from these completion rates. Other students some may not intend to earn a credential; rather they may be just looking to build skills or have other goals.

However, as we discuss later in the report, some stakeholders felt that despite the high quality and low cost of community college health programs, the programs were not large or flexible enough to meet employer workforce needs alone. For-profit programs in California also meet health workforce needs, even though these programs sacrifice affordability and, in some cases, quality. Nursing programs in community colleges have admissions criteria, unlike other career education programs. Recent research suggests admissions criteria in nursing programs may reduce the time between prerequisite coursework and beginning a program, and may have increased diversity in programs by a small margin (Grosz 2021).[9]

FIGURE 1

Most students enrolled in career education programs do not earn a credential; health students are the exception



SOURCE: Authors' calculations from MIS data.

NOTE: Includes students who earned their first career education course credits at a community college between 2007 and 2013 and became CE intending in a discipline within three years. Students are flagged as re-enrolling in community college regardless of whether they completed additional units or if those units were in the same discipline. We follow students' course-taking and award completion through fall 2019. Completion rates for both the first and second credentials are based on a six-year window from the first CE course. Excludes students who transferred after becoming intending and students who earned a first credential, but in a program other than the one in which they became intending. The trajectories Overall and for Engineering, Family/Consumer, and Public/Protective programs largely overlap.

Other career education programs may not be able to easily replicate the stronger success rates we see in health student trajectories. The fact that many health programs lead to occupations like nursing that require students to pass a licensing test improves alignment with industry and employer standards. Health care occupations by far have the highest share of workers reporting that they have a professional license or certificate—and in most cases, that it is a government-issued license (Bohn et al. 2019).

Students in other career education fields have much lower completion rates. About one-quarter of students in family and consumer sciences, engineering, and public and protective services complete a credential within six years of earning their first credits in career education. For business and IT students, completion rates are even lower, 18 percent and 13 percent, respectively.

[9] Interestingly, this research also finds that admissions criteria—as opposed to waitlists and lotteries—did not change the likelihood of completion.

Again, it is important to note that we do not have detailed information on what students are hoping to accomplish from their time at the community colleges.[10] The course-taking of non-transfer students who are CE-intending reveals that many are earning units outside of their career education programs, including transfer units.[11] This is particularly true among students in business and IT programs, suggesting they may have been "intending" to transfer rather than earn a business or IT credential at the community colleges, which may partially explain low completion rates.

"Stacking" Credentials Is Even Less Common

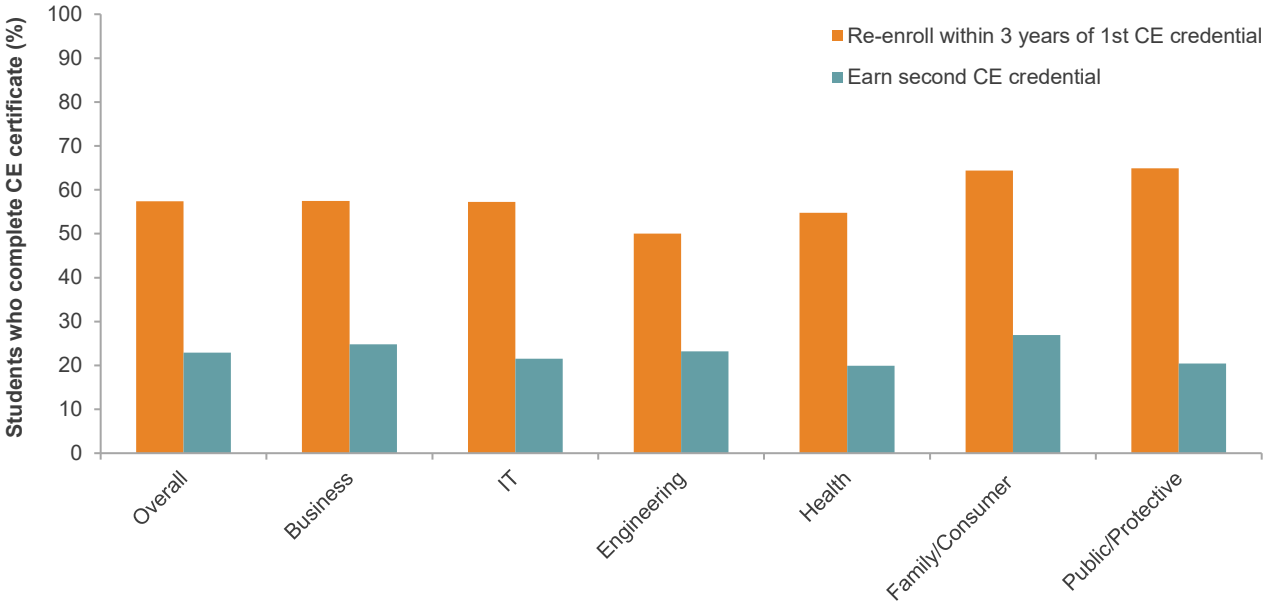
Though few students complete a stackable pathway, many students who initially earn a career education credential do re-enroll at the community colleges within three years of completing their first award. This may signal a desire to complete a stackable credential. For students who started with a certificate rather than an associate degree, this makes sense—some certificates are designed to be combined or to lead to higher-level coursework. In addition, the economic return on certificates is typically lower than for degrees, though it also varies by discipline (see Technical Appendix Table B5 for an overview of wage returns by credential type). In previous work, we estimated that students who return to stack another credential essentially double the wage returns of their first credential (Bohn, Jackson, and McConville 2019).[12]

In Figure 2, we narrow in on those students who earn a short- or long-term certificate. About 60 percent of these students re-enroll within three years of completing their first credential. Despite the high share that come back to the community colleges, few complete a second, "stacked" credential in the same field—about 23 percent overall. Though this rate is considerably higher than the 5 percent in the previous figure, again the steep drop-off between students returning to college and completing a stacked credential suggests opportunities for improvement.

[10] In recent years, the community colleges have begun collecting information on student goals, and those are included for most students in the MIS data from school year 2016 forward. Among students we identify as CE-intending in school years 2017 and 2018, more than half of non-transfer students indicate a transfer goal at some point, though much larger shares of these students are seeking a career education credential or other non-transfer goal. See Technical Appendix B for more details.
[11] Business and IT CE-intending students complete about 50–60 percent of courses outside of the career education program. This compares to students in other CE disciplines who complete about 30–40 percent of their coursework in other programs. In some cases, these may be requirements for the career education credential being pursued; however, it may also signal a desire to transfer or that students are pursuing a credential in a different field. See Technical Appendix Table B7 for more information on unit completion across disciplines and different student groups.
[12] These returns are consistent with other research that estimates wage returns on different types of career education credentials, including stackable credentials (Huff-Stevens et al. 2019; Meyer et al. 2020)

FIGURE 2

Of CE students who complete a certificate, almost one-quarter stack a second credential and even more re-enroll



SOURCE: Authors' calculation from MIS data.

NOTE: Includes students who earned short- or long-term certificate (not an associate degree) as their first career education credential and completed their first career education course at a community college between 2007 and 2013. Students are flagged as re-enrolling in community college regardless of whether they completed additional units. We follow students' course-taking and award completion through fall 2019. Completion rates for both the first and second credentials are based on a six-year window from the first CE course. Excludes students who transferred after becoming intending and students who earned a first credential in a program other than the one in which they became intending.

Across disciplines, we do not observe major differences in re-enrollment or completion of a stacked credential pathway. There is limited research focused on stackable credentials, though a recent study using similar data from Virginia found wage returns on stacking community college credentials consistent with our findings (Meyer, Bird, and Castleman 2020). In addition, entry and exit points along training pathways may also be problematic for some students, or other factors may contribute, like the time it takes to complete or the relevance and connections to available job opportunities. We examine these factors in later sections of this report.

Most Students Take 2–3 Years to Complete Credentials

Students seeking stronger skills in the labor market, including for retraining or for moving up a career ladder, must consider the length of time to earn credentials. In this section, we examine the time it takes students to achieve the four pathway milestones highlighted earlier.

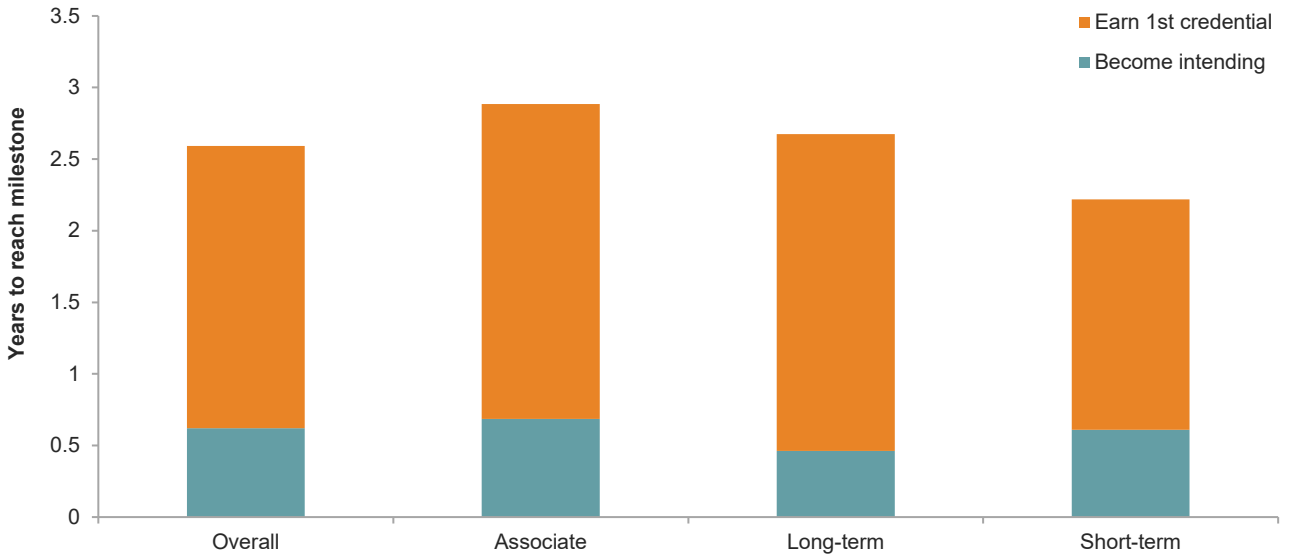
On average, students take about 0.6 years (or between two to three terms) from completing their first credits in a career education discipline to earning 8 credit units, equivalent to our first milestone of CE-intending. From there, it takes on average another two years to complete their first credential—that is, on average students spend just over two and a half years from the time they complete their first career education course to earning a credential (Figure 3).

The time it takes students to complete their first credential does vary somewhat depending on the type of credential earned, though not as much given the different unit requirements. Students who complete an associate

degree take almost 3 years from completing their first career education course to degree completion; those who earn a long-term certificate take slightly less, at about 2.7 years, while short-term certificates take about 2.2 years.

FIGURE 3

Career education students take just over 2.5 years to complete their first credential, regardless of length



SOURCE: Authors' calculations from MIS data.

NOTE: Includes students who took their first career education course between school years 2010 and 2016 and completed a credential in the same field in which they were identified as CE-intending. Years to completion is calculated from the term a student completed their first career education course to the date of their first credential. In the case where students earn multiple awards in a term, we select the highest-level award. Excludes students who transfer and those who earn a credential in a different field.

While it makes sense that associate degrees take upwards of three years to complete given the units required (60+), many certificates require far fewer units. About 35 percent of career education students who complete a credential earn a short-term certificate that requires fewer than 30 credits to complete. And though it's relatively straightforward to describe the time students take to finish career education credentials and pathways, a more difficult question to answer is how long it *should* take students to complete different programs.

The number of units required to complete different credentials may not accurately reflect the realities of finishing the required courses to earn a particular award. Several factors may impact the time it takes for students to complete awards including course offerings, degree requirements, and/or maintaining eligibility for financial aid.[13]

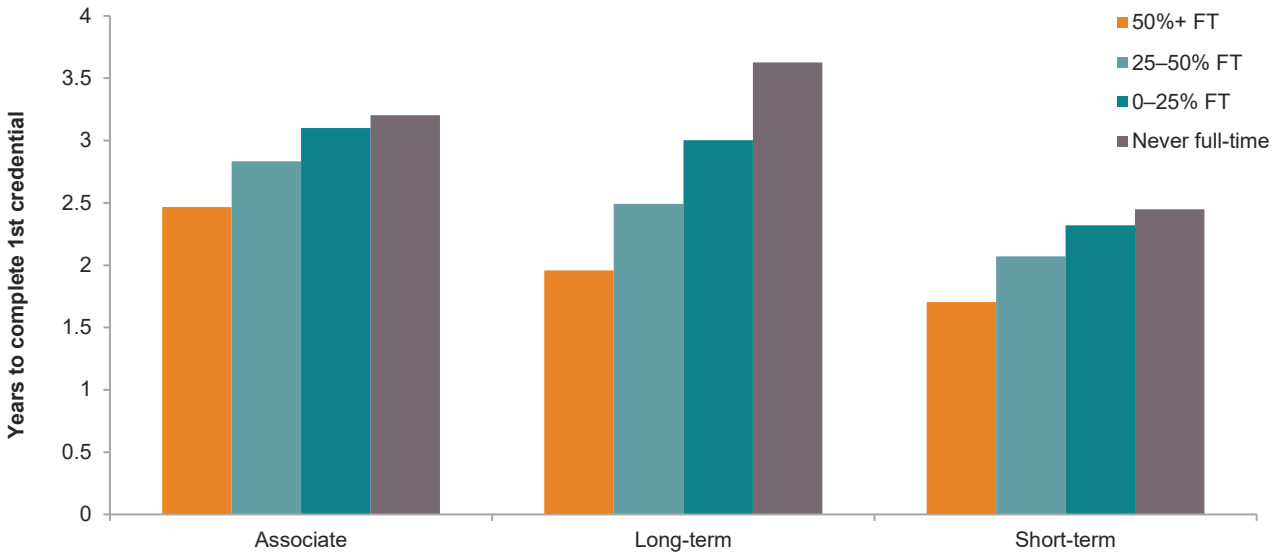
Because many career education students are balancing school, employment, and sometimes family responsibilities, they are unable to attend college full-time, which undoubtedly impacts both the time it takes and the likelihood of credential completion. Figure 4 shows the time it takes students to earn credentials based on the share of full-time terms they complete within three years of earning their first career education credit. Not surprisingly, the ability to attend school and be successful on a full-time basis is related to the time it takes to complete, particularly for students who earn long-term certificates.

[13] Some students may meet requirements to earn a career education credential, but do not have it conferred in order to maintain their financial aid eligibility because they are pursuing a higher-level credential or hoping to transfer.

Regardless of the credential type, students who take full-time course loads complete credentials more quickly. On average, those who are full-time at least half of the time finish about half a year quicker—or a year and a half faster for long-term certificates. In the next section, we look more explicitly at how full-time enrollment is associated with completing a credential.

FIGURE 4

Students able to take full-time course loads complete credentials more quickly



SOURCE: Author's calculations from MIS.

NOTE: Includes CE-intending students who took their first career education course between school years 2010 and 2016 and completed a credential in the same field. There are no time restrictions placed on how long it can take, though we only observe credential completion through the fall 2019 term, meaning that some groups of students have longer time windows to complete. A term is considered full-time if a student attempts and completes a course load of 12 units or more.

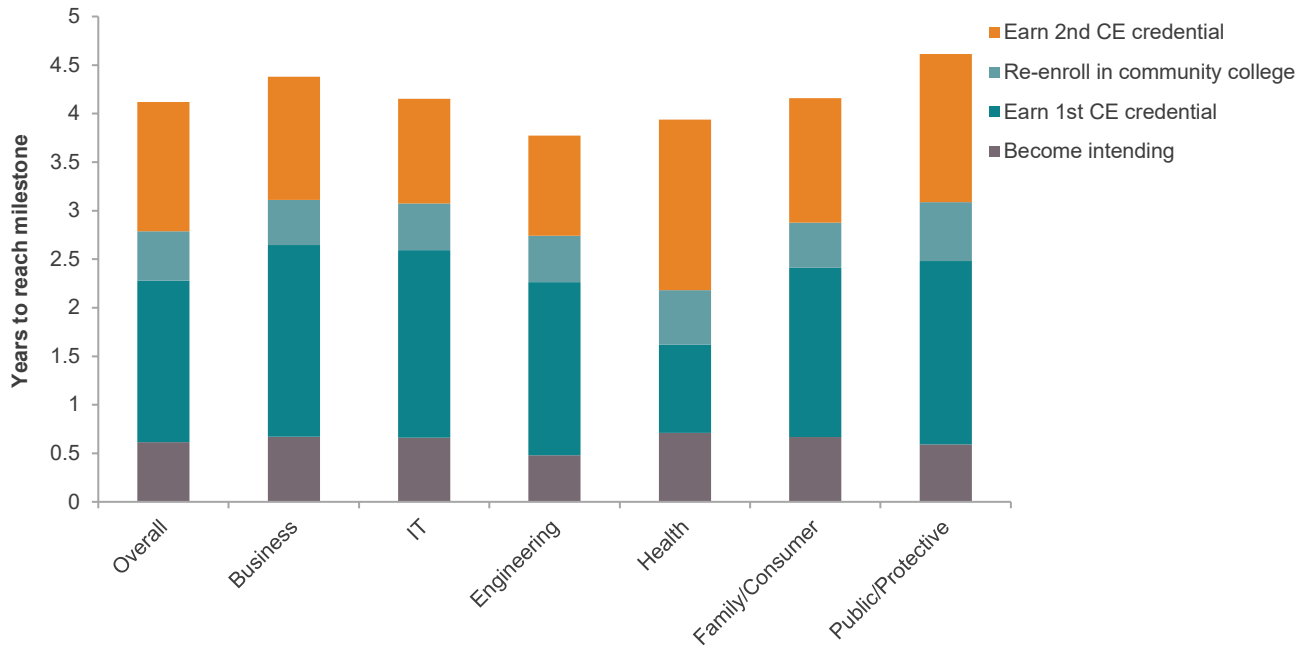
Only about half of the students in our CE-intending sample ever complete a full-time course load (12+ units in a term), and there are few differences in full-time enrollments across program discipline, racial/ethnic groups, or age groups.[14] However, many more students—about 65 percent—attempt a full-time course load. That percentage indicates a fair number of students try to attend full-time, but may need more support to successfully complete their courses. Furthermore, the gap between attempting and completing full-time course loads is larger for Black and Latino students, which suggests room to improve equity gaps. (See Technical Appendix Table B7 for more information.)

Students who do stack credentials will take on average more than four years to finish. Students who first earned a career education certificate—not an associate degree—complete this first credential in two to three years. They will then re-enroll at the community college within about half a year. From there, the time to complete a stacked credential is shorter—about 1.3 years to earn another credential in the same discipline (Figure 5). They earn multiple credentials along the way, but may be foregoing full employment or other activities for a longer period of time (e.g., as compared to earning a longer-term, higher-value credential in the first place).

[14] According to Chancellor's Office estimates, about 70 percent of all community college students attended on a part-time basis, defined as enrolling in fewer than 12 units in a term based on fall and spring enrollments 2017 through 2019.

FIGURE 5

Stackable credential pathways take over four years to complete even though students return to college soon after their first credential



SOURCE: Authors' calculation from MIS data.

NOTE: Includes students who took their first CE course between 2007 and 2013 and did not transfer to a four-year college. Only students who earn a short-term or long-term certificate as their first credential and go on to earn a second credential in the same discipline are included. Years to completion is calculated from the term a student starts the milestone to the time they complete the first or second credential. The time to become intending is measured from the term the student earned their first career education credits.

Student Groups Fare Differently in Career Education

How long a student takes to complete career education credentials may be linked to student characteristics such as race/ethnicity, age, and socioeconomic status and to differences across colleges, time, and course-taking behavior (like attending full-time or not). In this section, we use statistical techniques to disentangle some of the factors that might relate to successful outcomes.[15] We aim to shed light on for whom CE pathways work best and if some student groups might need more targeted services better tailored to support completion. To that end, a recent report from the governor's office also focuses on how the state might support equity in the post-pandemic recovery and address long-standing issues across California (California Governor's Council for Post-Secondary Education 2021).

[15] Specifically, we use static and dynamic models of completion that consider student demographic characteristics (gender, race/ethnicity, and age), socio-economic status (low-income and prior education level), CE program, college, and year of enrollment. We also include measures of term enrollments, including the share of terms a student completes full-time (12+ units) course loads. We aim to isolate characteristics associated with successful outcomes overall and to narrow in on when disparities across groups emerge. See Technical Appendix C for more details.

Which Students Are Most Successful at Earning a First Credential

Overall, about 18 percent of CE-intending students complete a credential within three years of starting a career education program.[16] Students age 25 or older, female students, and Asian or white students are more likely to complete a credential than their counterparts (Figure 6). Students who received Pell grant funding—a marker of low family income but also receipt of financial aid—as well as students who completed at least one full-time term were also slightly more likely to complete a credential.

The completion rates in Figure 6 account for all of these characteristics as well as program of study, college attended, and year of enrollment—and the dotted line shows the average across all students (see Technical Appendix C for details). Within three years, nearly 20 percent of Asian and white students in career education complete a credential compared to about 17 percent among Latino and multi-racial students.[17] About 14 percent of Black students complete a credential in this timeframe. These estimates account for the fact that students are not evenly split across CE disciplines, colleges, and other factors. For example, a larger proportion of health students—a discipline with higher completion overall—are Asian or white.[18]

By far, the largest differences in completion relate to whether students ever complete a full-time course load within the three-year period after they start a career education program. Students who complete full-time terms in more than half of their enrollments have completion rates that are three times higher than those who do not. Even students who complete at least one full-time term have significantly higher completion rates—and this is controlling for student-level characteristics and program choice.

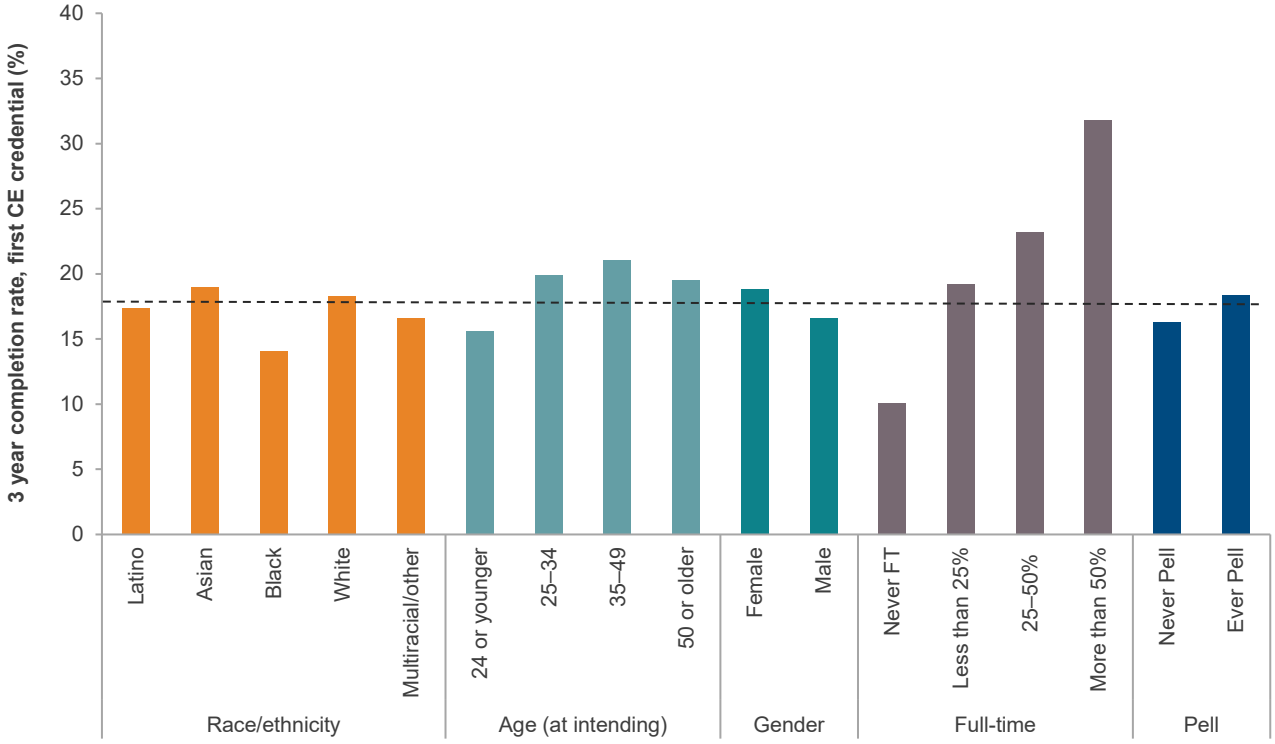
[16] As throughout, students who transfer are excluded from this analysis. In this section, we limit completion to within three years of starting career education coursework. This allows us to examine trajectories of more recent students, since we have data through 2019. However, the general findings do not change if we shift the years of our analysis or the window of time in which students can complete. See Technical Appendix C for details.

[17] Completion includes an associate degree or certificate in the career education discipline that the student became "intending" in. That is, if they accrued 8 units in health, then their completion must be in health. This is measured within three years of the first term a student earned units in a career education discipline. We follow all students who started in career education programs between 2010 and 2016, and we exclude any student who transfers after starting the program.

[18] Note that models excluding health students from the analysis (given their much higher completion rate and different process for entering programs) yield similar results by demographic group. See Technical Appendix C for details.

FIGURE 6

Black students, younger students, and those who never attend full-time are less likely to earn a credential within three years



SOURCE: Authors' calculation from MIS data

NOTE: Predicted completion rates come from a logistic model that includes all CE-intending students who took their first career education course between school years 2010 and 2016. The model estimates the odds of completion of the first career education credential within three years of the first career education course; the credential must be in the same discipline as that in which the student becomes "intending." In addition to the covariates shown above, the model includes year, discipline, prior education level, and college fixed effects. Students who transfer to a four-year college after they become intending are excluded regardless of whether they earned a credential. Within each category, all estimates are statistically different from each other, even when they are relatively small; one exception is Latino and multiracial/other race students; their predicted completion rates are statistically indistinguishable. The dotted line shows the completion rate, unadjusted for any covariates. See Technical Appendix C for details.

Similarly, we find that students age 24 or less are less likely to complete a credential, and students age 25–49 have higher completion rates.[19] This result holds even when we include students who transfer, who are predominantly from the youngest age group.[20] Though student success certainly includes transfer, we are interested in completion of career education credentials, specifically, as foundations for career pathways that do not require a four-year degree. Younger students in career education are less likely to earn a credential in that discipline regardless of whether they transfer or not.

These differences across groups emerge relatively early in student trajectories. As early as the third term after becoming intending, Black students are less likely to finish a credential than other students, according to race/ethnicity (Figure 7), independent of the other factors associated with completion.[21] These term-by-term differences accumulate and result in lower completion overall for Black students in career education.

[19] Age is measured at the time when a student becomes "intending," or accumulates 8 units in a single career education field.

[20] See Technical Appendix C. In our sample of CE-intending students, 80 percent of those who transfer at some point are in the age 24 or younger group. We exclude transfer students from the baseline analysis because of this connection between transferring and not obtaining a career education credential. We also exclude transfer students in order to be consistent with our prior work (and that of others) examining wage returns on career education credentials.

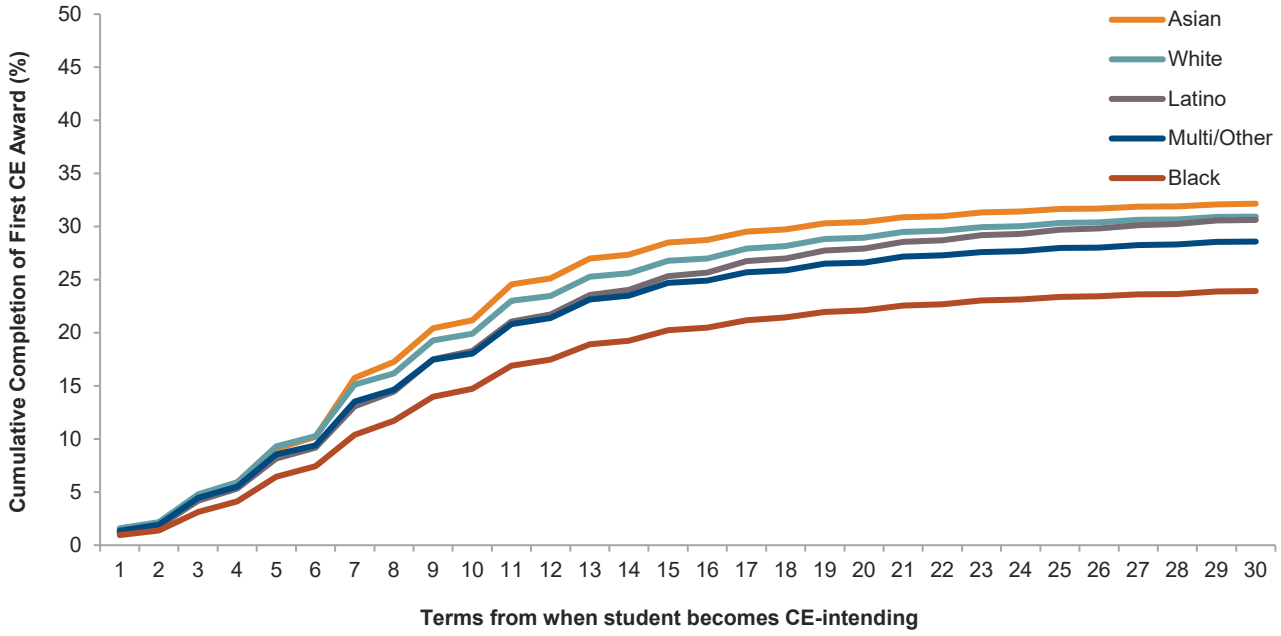
[21] This analysis closely follows Lin, Fay, and Fink (2020), who use a dynamic model for understanding other markers of community college student success.

Students from other racial/ethnic groups have similar completion rates to each other, but differences begin to emerge around the fifth term, which is the beginning of the second academic year. By the seventh term, Asian and white students have accumulated significantly higher odds of completion compared to Latino, multi-racial, and Black students.[22] At that point, 15 percent of white or Asian students complete a credential compared to 13 percent among Latino and multiracial students and 10 percent among Black students.

The steepness of the completion curve in early terms indicates that most students who will ever complete a credential do so within the first, roughly, 12 terms—that is, within about three years. Beyond that, some students do eventually complete a credential but these exceptions are relatively few. Furthermore, we do not find that student groups "catch up" in completion; those with lower odds of completion early on are the same groups with lower completion rates throughout the period. One slight exception is among Latino students, who catch up in completion to white students by the end of the period we study. However, that end point is more than six years after a student becomes CE-intending.

FIGURE 7

Differences in the likelihood of completion emerge early on for Black students



SOURCE: Authors' calculation from MIS data

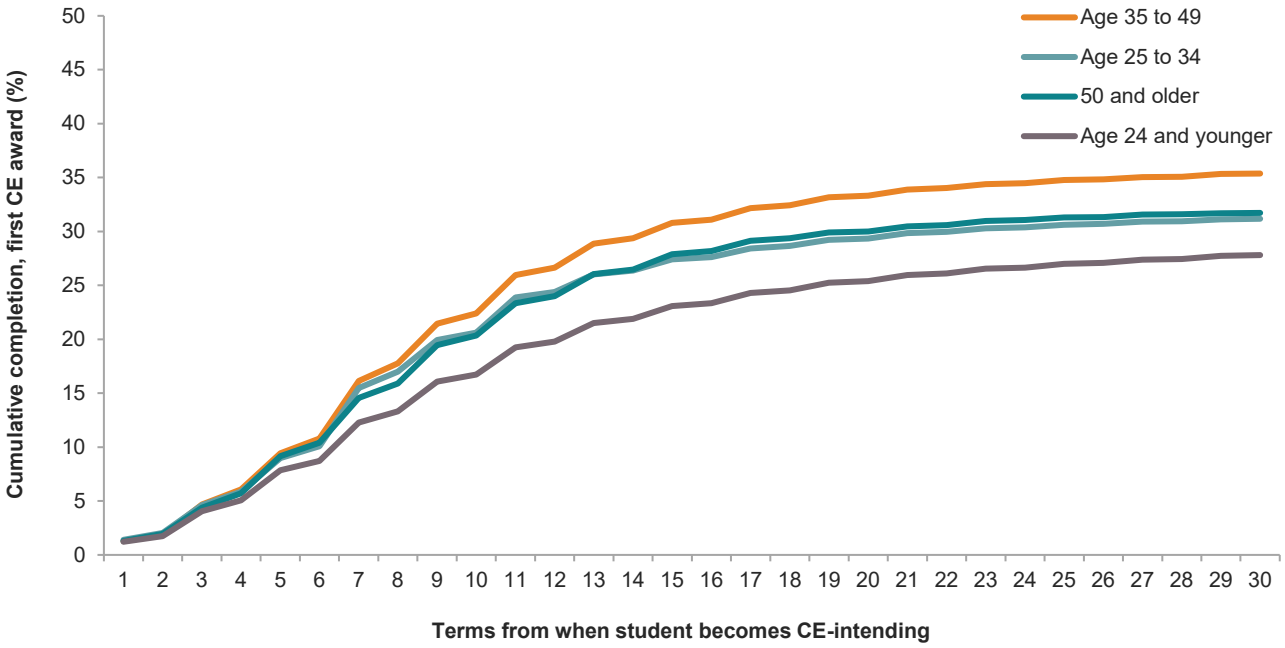
NOTE: Marginal probability estimates from a dynamic logistic model. Probability represents the likelihood that a student earns a credential in a given term, cumulatively. Model includes all CE-intending students who began career education coursework between 2010 and 2016. Model includes year, college, and program fixed effects, demographic characteristics (age, race, gender), financial aid receipt, full-time status, and prior education level. Race is interacted with term, student characteristics, and program. The term counts from when a student reaches the first milestone, being an "intending" student, regardless of what year or term (e.g., spring, fall, summer) the student reached that milestone. See Technical Appendix C for details, including figures that display confidence intervals on term-level estimates. The Technical Appendix also provides a replication of this model excluding health students and a variety of other model specification checks; results are similar.

[22] See Technical Appendix Figure C1 for more details on these patterns and statistical results. Though we have the universe of career education students to observe, we also examined the statistical significance of these term-by-term completion rates by race. We find that trajectories are almost always statistically different at the extremes: for Black and Asian students. In most primary terms (fall and spring, which are typically odd terms in this formulation), Black students' completion rate is also statistically significantly different than other groups. Differences between Asian, white, and Latino students are more difficult to discern statistically except in term 7.

Differences by age of student also emerge relatively early, but not as early as by race/ethnic group. By the fifth term, students 24 or younger fall behind older students in terms of completing a credential (Figure 8). By the ninth term, students who are 35–49 years old start to increase their completion rates compared to other students. At that point, cumulative completion for those 35–49 years old is 21 percent compared to 16 percent among those 24 or younger. As with race/ethnicity, differences in completion by age group are persistent—younger students do not outperform older students in later terms, and therefore do not "catch up." Instead, differences emerge early and remain consistent over time.

FIGURE 8

For younger students, differences in the likelihood of completion emerge later



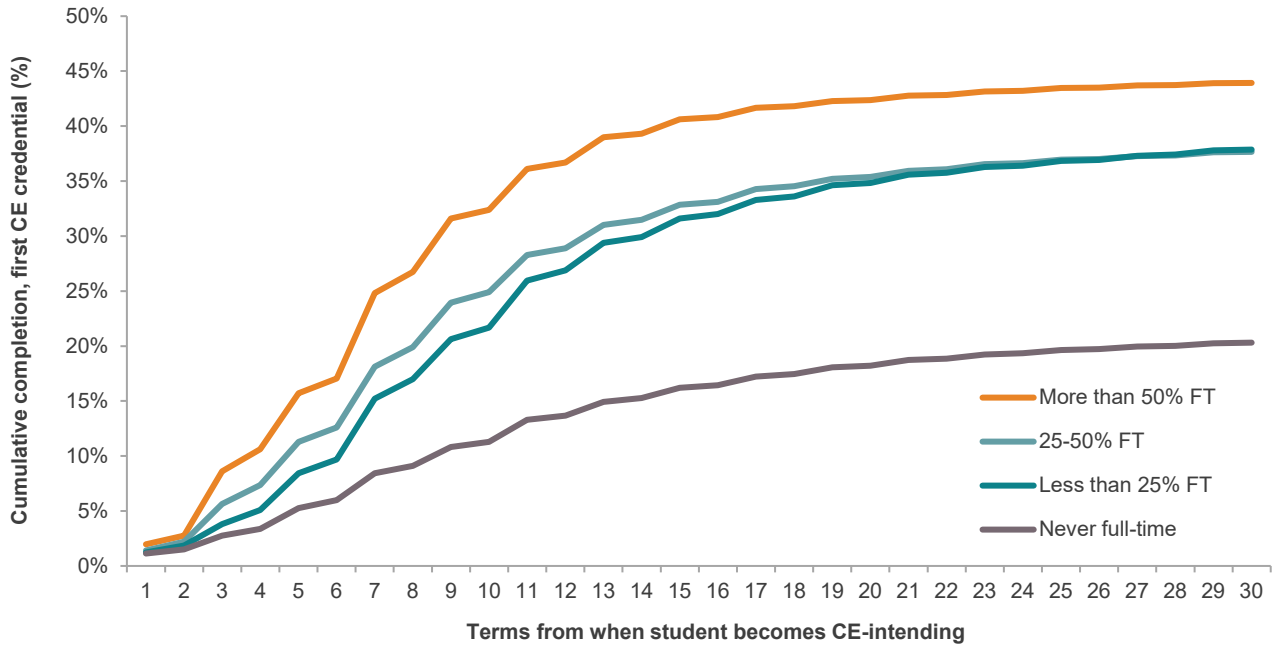
SOURCE: Authors' calculation from MIS data

NOTE: Marginal probability estimates from a dynamic logistic model. Probability represents the likelihood that a student earns a credential in a given term, cumulatively. Model includes all CE-intending students who began career education coursework between 2010 and 2016. Model includes year, college, and program fixed effects, demographic characteristics (age, race, gender), financial aid receipt, full-time status, and prior education level. Age is interacted with term, student characteristics, and program. The term counts from when a student reaches the first milestone, being an "intending" student, regardless of what year or term (e.g., spring, fall, summer) the student reached that milestone. See Technical Appendix C for details, including figures that display confidence intervals on term-level estimates. Technical Appendix C also provides a replication of this model excluding health students and a variety of other model specification checks; results are similar.

We also wanted to understand how full-time enrollment related to the timing of credential completion, given its large impact on overall completion rates. Students who complete full-time course loads in at least half of the terms they are enrolled have substantially steeper completion trajectories within the first two years (Figure 9). And these differences are much larger than any we see across racial/ethnic or age groups, suggesting that supporting more students to enroll in and successfully complete at least 12 units in a term can greatly influence their ability to earn a credential. These estimates control for demographic factors that could be related to a student's ability to attend full-time.

FIGURE 9

Students who always attend part-time have much less success at earning credentials



SOURCE: Authors' calculation from MIS data

NOTE: Marginal probability estimates from a dynamic logistic model. Probability represents the likelihood that a student earns a credential in a given term, cumulatively. Model includes all career intending students who began career education coursework between 2010 and 2016. Model includes year, college, and program fixed effects, demographic characteristics (age, race, gender), financial aid receipt, full-time status, and prior education level. Full-time status is interacted with term, student characteristics, and program. The term counts from when a student reaches the first milestone, being an "intending" student, regardless of what year or term (e.g., spring, fall, summer) the student reached that milestone. See Technical Appendix C for details, including figures that display confidence intervals on term-level estimates.

We find similar trajectories by gender and Pell grant status: differences are most notable around the seventh term—which is the end of the second academic year—and persist long-term. Women start to outpace men in completion at that point, and students with Pell financial aid outpace those without. Across career education discipline, students completing health credentials outpace those in other disciplines from the beginning and really accelerate by the seventh term. IT lags behind other fields, also from the beginning. (See Technical Appendix C for figures on gender, Pell grants, and career education discipline.)

We examine when differences in completion emerge in order to better understand when interventions to support student success might be most effective. For example, counseling students to make quick progress by enrolling full-time—and providing the necessary support to successfully complete their coursework—could substantially improve the equity gap. In the last section, we highlight insights from our stakeholder interviews.

Which Students Make Progress toward Completing Stackable Credentials

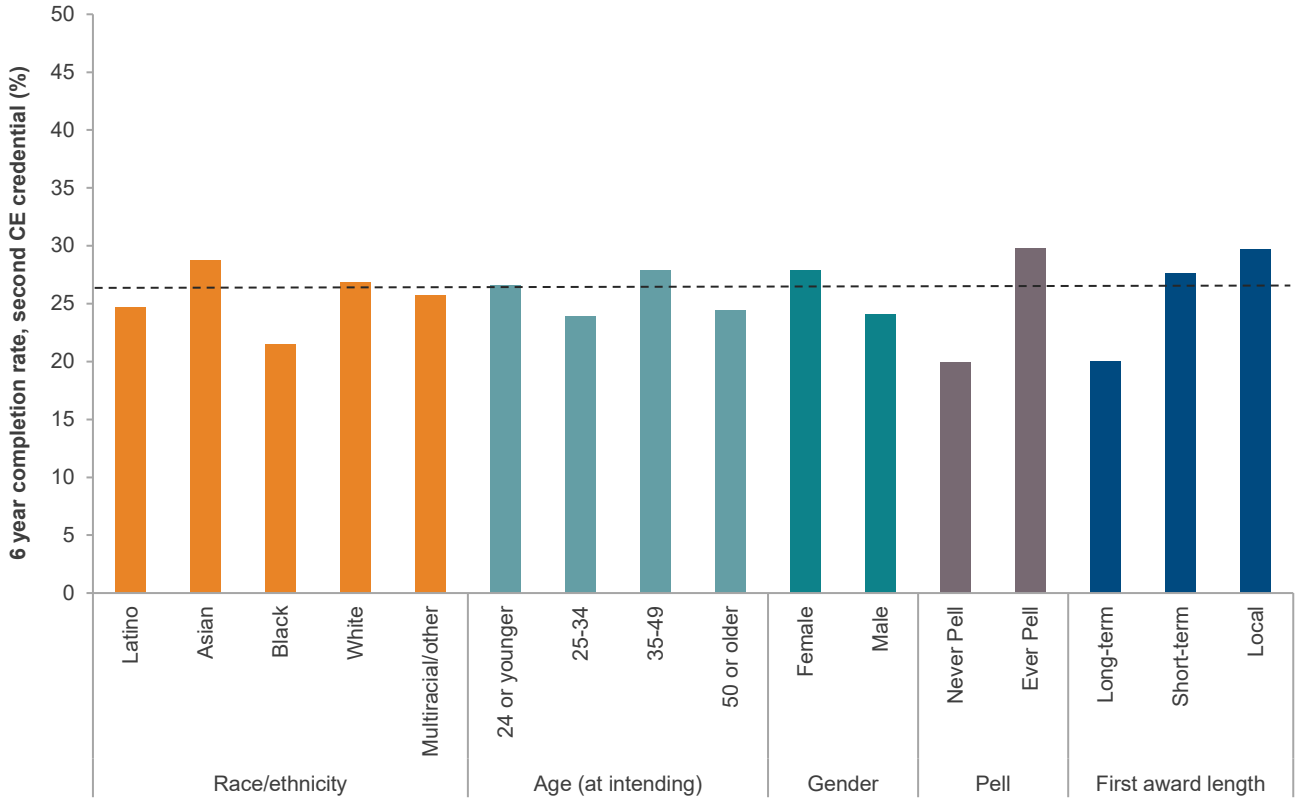
Among students who complete a certificate as their first credential, many re-enroll at community colleges shortly afterward, potentially aiming to complete a stackable credential. Using similar models as the preceding section, we examine who completes a stackable credential and when gaps emerge.

Female, and Asian or white students are the most likely to complete a second, stacked credential (Figure 10). Those who attend full-time or who receive Pell grants are also more likely to complete.[23] Note that we did not find significant differences in completion according to how many terms students take full-time, so we omit that detail from these figures.

These patterns are very similar to those for completing a first career education credential. However, the youngest students are more likely to complete a second, relative to a first, credential; note that by the time a student finished a stacked credential they may be substantially older than the age category here indicates, which is measured when they became CE-intending. Students who first earned a short-term credential are also most likely to complete a second, stacked credential. This could be driven by the economic value to stacking credentials.

FIGURE 10

Asian students, women, and those who initially earn a short-term certificate are more likely to stack credentials



SOURCE: Authors' calculation from MIS data

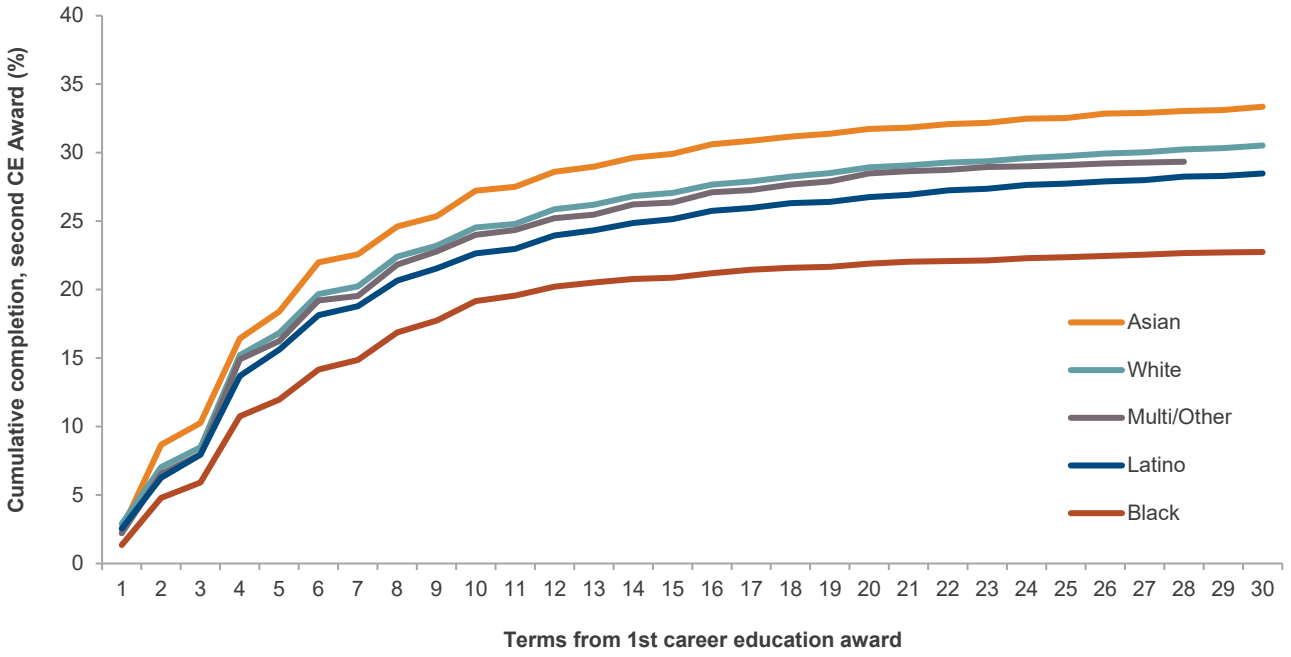
NOTE: Predicted completion rates come from a logistic model that includes all career education intending students who took their first career education course between school years 2007 and 2013 and completed a first credential within 3 years. The model estimates the odds of completion of the second career education credential within six years of the first career education course; the credential must be in the same discipline as that in which the student becomes "intending" and earned a first award. In addition to the covariates shown above, the model includes year, discipline, prior education level, and college fixed effects. Students who transfer to a four-year college after they become intending are excluded regardless of whether they earned a credential. Within each category, all estimates are statistically different from each other, even when they are relatively small; one exception is those younger than 24 and those age 35–49, whose predicted completion is statistically indistinguishable. The dotted line shows the completion rate, unadjusted for any covariates. See Technical Appendix C for details.

[23] We do not include the categorical variable that includes share of terms enrolled full-time in the models for the second credential completion.

Most students who go on to complete a second, stacked credential do so relatively quickly. The completion trajectory is quite steep, across all groups. Asian students outpace others early on, and Black students fall behind early on as well (Figure 11). Differences across age groups are smaller, even two years after completing the first credential (Figure 12).

FIGURE 11

Among racial/ethnic groups differences in the trajectory for a stacked credential emerge early

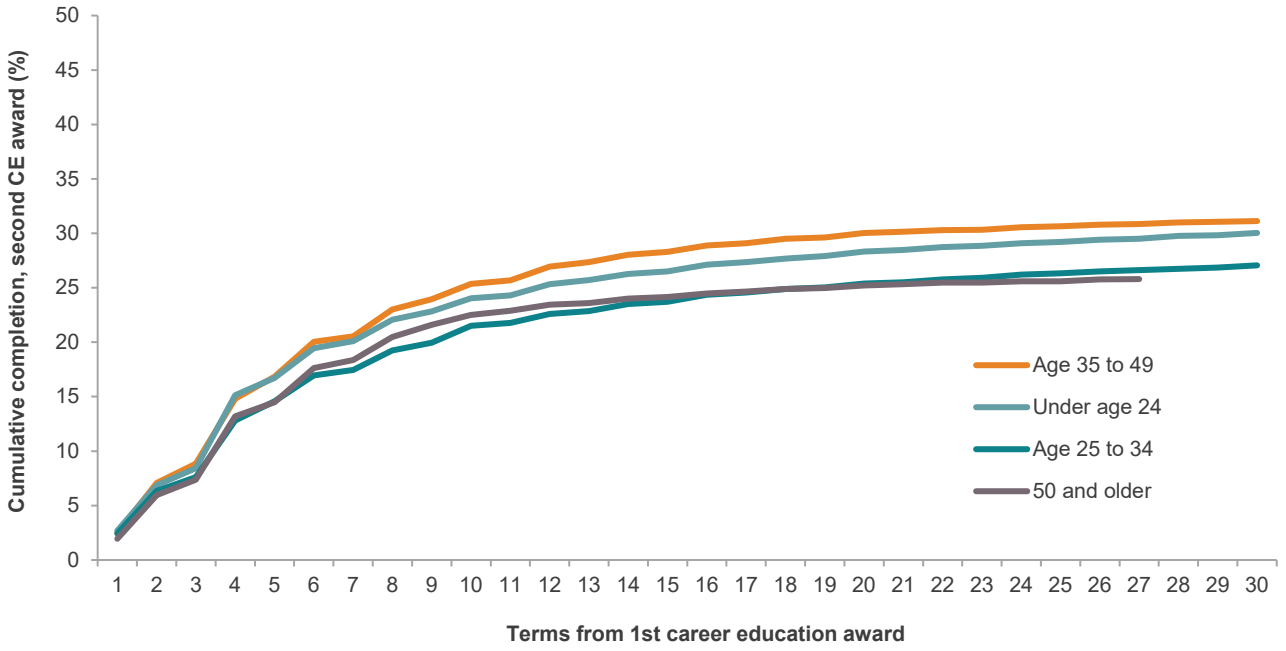


SOURCE: Authors' calculation from MIS data

NOTE: Marginal probability estimates from a dynamic logistic model. Probability represents the likelihood that a student earns a second, stacked credential in a given term, cumulatively. Model includes all CE-intending students who began career education coursework between 2007 and 2013 and earned a first award within three years. Model includes year, college, and program fixed effects, demographic characteristics (age, race, gender), financial aid receipt, full-time status, length of first award, and prior education level. Race is interacted with term, student characteristics, and program. The term counts from when a student earns the first award, regardless of what year or term (e.g., spring, fall, summer) the student reached that milestone. See Technical Appendix C for details, including figures that display confidence intervals on term-level estimates. The Technical Appendix also provides a replication of this model excluding health students and a variety of other model specification checks; results are similar.

FIGURE 12

Across age groups, differences in obtaining a stacked credential emerge after the first year or fifth term



SOURCE: Authors' calculation from MIS data.

NOTE: Marginal probability estimates from a dynamic logistic model. Probability represents the likelihood that a student earns a second, stacked credential in a given term, cumulatively. Model includes all CE-intending students who began career education coursework between 2007 and 2013 and earned a first award within three years. Model includes year, college, and program fixed effects, demographic characteristics (age, race, gender), financial aid receipt, full-time status, length of first award, and prior education level. In the first figure, race is interacted with term, student characteristics, and program; in the second figure, age is interacted similarly. The term counts from when a student earns the first award, regardless of what year or term (e.g., spring, fall, summer) the student reached that milestone. See Technical Appendix C for details, including figures that display confidence intervals on term-level estimates. The Technical Appendix also provides a replication of this model excluding health students and a variety of other model specification checks; results are similar.

The trajectory to complete a second, stacked credential proceeds more quickly than the first, perhaps indicating that those who pursue these pathways are more motivated, as evidenced by their successful completion of an initial career education credential. However, racial/ethnic and age differences seem to largely persist among students who completed a first credential. This suggests the factors that help students to complete CE credentials are highly correlated with demographics and are not associated with underlying motivation or propensity to complete an education pathway.

Our statistical models controlled for a variety of factors like college, demographics, financial aid, and full-time status; but other factors that might matter a lot include whether a student is working while attending school, the presence of children, economic need that is not captured in financial aid, and the like. These students may benefit from advising or more robust financial aid, from the encouragement or financial support of an employer, or from a personal or family context that allows them to attend full-time. They may also benefit from a clear stackable credential pathway, as our earlier work identified (Bohn and McConville 2018).

Supporting Students on the Career Education-to-Workforce Continuum

Overall, our analysis finds that relatively few career education students earn a credential. Those that do take nearly three years to complete, though this varies somewhat on the type of credential they earn. Moreover, some student groups are systematically less likely to finish. What could make completing a career education pathway more feasible for more students, and what could ensure that it is worth their while in terms of broadening future job opportunities? To explore these questions, we interviewed a wide range of stakeholders engaged with CE programs at community colleges.

Numerous institutions and actors shape student trajectories and have insight into the challenges students may face. In particular, we were interested in learning from stakeholders both within and outside the community college system because successful career education is tied so closely to workforce needs and outcomes.

Between December 2020 and April 2021 we interviewed experts from community colleges, workforce development agencies, and employers in advanced manufacturing and healthcare that worked with community colleges to meet their workforce needs. In the remainder of this report, we describe key takeaways gleaned from these interviews along with insights from the research literature.

Programs that Meet the Needs of Working Adults

Career education programs serve more students who are outside of what is considered traditional "college-age" than most other higher education institutions. We noted in our preceding analysis that nearly half of students are aged 25 or older when they complete enough credits to be considered "intending" in a career education field. This means they are more likely to be living on their own, working full-time, and/or have children. Part of this is by design: (a) career education often serves to meet employer needs for incumbent workers and (b) career pathways can incorporate multiple credentials that help people move up in a career.

Workforce development partners and employers identified a need for community college programs that are more flexible, especially for working adults. The semester and quarter system that dictates most coursework is a different timeline than many employers face for hiring and/or training incumbent workers. But additionally, workers who need training often have irregular schedules and multiple demands, which makes even the day-to-day timing of course offerings a major challenge.

"Students need to shift to working nights so they can attend community college programs during the day, and they are already juggling a million things. We have so many examples of people who drop out because of that. So even if we can get through all the barriers of getting into a community college health pathway, the realities of completing it are such that many working adults cannot finish." —Workforce intermediary

In this reality, the flexibility offered by for-profit institutions may be appealing even with a high price tag:

"One example was a current employee considering an LVN [licensed vocational nursing] program that cost nearly $100,000, but the bump in salary felt like it would be worth it. And the reason was her schedule—it was the only way she could make it happen. The for-profit schools know that what they can offer is scheduling." —Workforce intermediary

When California established Calbright College in 2019, a primary motivation was to provide more flexible training opportunities for working adults, and thus better compete with expensive for-profit programs. Calbright—the 115th, online-only community college—has experienced several setbacks and faces hurdles ahead, as outlined in a recent report from the California state auditor (California State Auditor 2021). Nonetheless, the

auditor's report also highlights the potential of Calbright to fulfill the need for flexible postsecondary education options for California adults who face barriers to attending traditional community colleges.

More broadly, a shift to online courses, along with investments to improve online course delivery, could create more flexibility for students. However, many career education programs require hands-on training, for which adding flexibility to course schedules and the like may take further evolution. In addition, the quality of online training, and who is able to successfully complete online coursework, are critical issues to monitor (Johnson, Cuellar Mejia, and Cook 2015).

Finally, recent research suggests that while enrollment increases at California community colleges when students have flexibility around when and how many times courses are offered, it does not necessarily increase completion or reduce the time to complete (Grosz, Kurlaender, and Stevens 2020). That is to say, flexibility alone does not ensure success but it could be paired with rapid training design and with other student supports (Kazis and Leasor 2021).

Resources that Support Student Needs

The community college and workforce development professionals we spoke with were well-attuned to the reality that students need support beyond the classroom to be successful. They also shared the belief that supports affect equitable completion across student groups. One interviewee made the point that if equity is to be a focus—and for them it was—then we must recognize that more resources and larger investments will be required to support student success. This includes things like making sure students have access to computers, broadband, and tutoring.

"Providing equitable services really translates into some groups will need more support, and that will cost more money… When we look at workers historically underrepresented in higher-level positions who want to get more training and move up, if you ask them what they need to make that happen, most often you will hear things like: childcare, I need a laptop, I need wi-fi—and these things are expensive." —Workforce intermediary

"Especially after COVID, we recognize that more needs to be done to address equity . . . " —Community college practitioner

All community colleges have programs that provide additional services and supports to low-income and other disadvantaged student groups like CalWORKs student parents. Many colleges also have resources like food pantries and computer labs available to all students (McConville, Bohn, and Brooks 2020).

One interviewee noted the availability of dedicated support specialists that their college has for each of its broad program areas (meta-majors) under the Guided Pathways framework. These specialists work with career education faculty to connect students in need to available resources at the college and beyond. Though given the depth of need—especially in the wake of the COVID pandemic—the supports and resources available may not be adequate (CCCCO 2018). Stakeholders also highlighted the value of creating peer-mentoring supports so that students and workers knew about available training along with strategies of how to be successful.

Better Collaboration across Colleges and Employers

To help create programs that connect students to in-demand jobs, several federal and state investments provide funding for community colleges to establish deeper relationships with employers and industry groups. From a workforce perspective, employers benefit from access to publicly funded education programs where students can develop the competencies and skills needed for a career in their industry. From the college and student perspective, relationships with employers can open opportunities for job placement and ensure curriculum supports successful placement. Colleges or college systems with deep, sustainable relationships with employer

partners have a better track record in aligning programs with workforce needs and placing students in jobs (Achieving the Dream 2018; Abel et al. 2015; Uhalde & Kazis 2010).

However, for long-term economic opportunity and to meet educational goals, students must also build durable skills that transcend current labor market openings. Longer-term opportunities might take students away from the local labor market and regional employers. The Chancellor's Office Vision for Success emphasizes such a student-centered approach that recognizes both near- and long-term educational and economic needs.

Nonetheless, tracking evolving labor market needs and envisioning the future is a challenge, as the current recession and restructuring has shown. Evaluations of programs developed under the federal TAACCCT investment found increased engagement between colleges and employers improved CE program offerings by better aligning them with industry needs (Eyster, Scott and Anderson 2020b; Eyster, et al. 2020a). Beyond aligning curriculum, programs that successfully developed strong partnerships with employers exposed students to more career opportunities. These work-based learning opportunities, which included on-the-job training, internships, and clinical placements (for health care), were among the most valued aspects of the program according to participants across several programs (Eyster et al. 2020a).

In recent years, apprenticeship programs have gained more attention and funding in California, though they have always been part of the workforce training landscape. The community colleges currently oversee programs for 95,000 apprenticeships and aim to increase that number considerably over the next decade through the California Apprenticeship Initiative (CCCCO 2020). Apprenticeship programs combine on-the-job training with classroom instruction and require close engagement with employers to provide the required work-based learning opportunities and to develop classroom curricula.

In this way, apprenticeship programs embed employer partnerships in their design and have been touted as a key strategy for improving career opportunities and economic mobility for people without college degrees (Parton & Prebil 2018). They also boast relatively high completion rates. According to the California Department of Industrial Relations— the state agency that oversees registered apprenticeship programs—average completion rates for most programs are well above 50 percent and have increased in recent years (California Department of Industrial Relations 2018). Nonetheless, most apprenticeship opportunities in California remain in a limited number of fields, like construction and building trades, and the state has not established a specific plan to meet its goal of large expansions to apprenticeship opportunities (Little Hoover Commission 2021).

In the longer run, close partnerships between colleges and employers can also create opportunities for students to complete additional training and stack credentials, particularly incumbent workers looking to advance. The vision of stackable credentials includes multiple entry and exit points where students can take relevant coursework and earn credentials sequentially while maintaining employment. As we showed above, many students in California engage with career education at multiple points, but completion rates are quite low, especially for stackable credentials. According to one community college expert, the potential of stackable credentials relies on effective employer partnerships because they can remove the risk for student-workers who go back to college to earn additional credentials.

"I have heard about on-ramps and off-ramps, but in reality, the only time I have seen these work for students is when colleges work with employers to design the on-ramps, and when they are highly structured, and students are paid to take the course and guaranteed a job and promotion after that . . . this way, it is risk-free for students." —Community college practitioner

Institutional Factors that Impede College-Employer Partnerships

While the benefits of engaging with workforce entities and employers may be appealing to colleges or career education programs, institutional factors in California seem to make that challenging.

First, our interviewees described current efforts at employer engagement as transactional in nature. Though federal funding (like Perkins) or other workforce funding requires community colleges to engage with employers, it often creates or incentivizes a transactional relationship between college and employers. Programs may develop advisory boards, surveys or focus groups but there are typically few requirements, if any, to be responsive to the input.

"In CTE, employer engagement happens because it is required by Perkins and other funding; so, we have an advisory and we check the boxes and maybe tweak our courses a little." —Community college practitioner

Because of this, several of the employers we spoke with expressed frustration and indicated that the time they invested to engage with community colleges often did not seem worthwhile.

Second, we heard that college efforts with employer engagement were often fragmented. Individual faculty or specific program deans approach employers, rather than a coordinated approach at either a regional or even a college level. While individual relationships can strengthen collaboration and trust, fragmentation creates problems when college faculty leave their positions, and the college may struggle to maintain existing employer relationships. In our interviews, we heard examples of colleges that had an effective program from an employer perspective until key staff left.

Though career education deans and faculty know program curriculum and needs deeply, these practitioners often have limited influence outside of their programs. However, to effectively meet employer needs, a program may need to include courses, like basic science or writing, that fall outside the control of CE deans or faculty. Further, these additional competencies may be outside faculty domains, and professional development may be insufficient to address them:

"Faculty may not know how to develop curriculum based on competencies. How are you doing that when some CTE programs are just having adjuncts? I was an adjunct for seven years… and I received no professional development, and I had to learn for myself and from the students what works." —Community college practitioner

Furthermore, this fragmented approach to employer engagement can be quite draining for career education faculty. Community college faculty and administrators alike spoke to the amount of effort that was required for every individual dean or career education faculty to reach out to employers:

"A lot of them [CTE faculty] are really devoted to their fields and to their students… so there's a lot of labor of love for that, but it's a lot to ask, and you can see the exhaustion happening." —Community college practitioner

Third, we learned few career education programs have requirements for credentials or degrees that adhere to sector- or state-wide competencies. Instead, each college may have a program in a similar field with its own curriculum and competencies. Due to this lack of consistency across colleges, employers may be uncertain what the training affords students they might hire (Beer, Bray and Calloway 2018; Heidkamp & Hilliard 2014). It also creates difficulties for students—who may pursue training at multiple colleges—to know about or transfer applicable courses they have already completed.

"The competencies for each program should be determined at the state level to establish consistency and to increase credit portability for our students, not each college at a time . . . we are wasting so much time with local articulation agreements."—Community college practitioner

"When I was in Ohio, I was able to go to one person in the Chancellor's office, work with them to develop the competencies and skills we needed health programs to deliver, and they were able to implement state-wide curriculum. That is not how it works in California." —Employer

Finally, the governance and funding structures of community colleges were among key issues interviewees highlighted as major constraints to effective employer engagement. The community college system is designed with local control in mind. However, we heard from multiple stakeholders that more coordination and alignment at the regional or even state level could be more effective. And because of the way community college funding gets distributed across the system—based primarily on enrollment—colleges within a region often compete instead of collaborate. The evaluation of one recent effort to improve CE pathways identified a critical concern: colleges compete for both student enrollment and employer engagement. A more coordinated, regional vision had been slow to develop (McLaughlin, Groves, and Lundy-Wagner 2018).

Both the Strong Workforce program and the Guided Pathways initiative have regional structures and funding to support collaboration across colleges, employers, the Chancellor's Office, and other workforce partners that should support these efforts. In addition, federal WIOA funding requires local workforce development agencies to engage in regional planning efforts every three years. Finding strategies and incentives to coordinate these efforts could help to connect Californians with education and training to improve their futures.

College-Employer Partnerships that Promote Student Success

To better ground our understanding of how college-employer partnerships work in practice, we interviewed professionals engaged with two regional examples of career education–employer partnerships—one in advanced manufacturing and one in health care. Our goal was to explore how these programs navigated the challenges described above to draw insights on how to help more students complete CE pathways and connect to careers.

The two text boxes below provide background on these programs: Inland Empire's Chaffey College InTech Center and the Shirley Ware Education Center High-Road Training Partnership serving the Bay Area and Sacramento regions. Both programs have found ways to sustain employer engagement, support working students, and navigate institutional structures that make partnerships between community colleges and employers difficult.

Chaffey College InTech Center

About 20 years ago, Chaffey College professionals began discussing workforce needs with regional manufacturing employers to address a growing skills gap in the Inland Empire. College economic development staff secured funding through a variety of sources including the federal TAACCCT program, Strong Workforce program, local and state workforce development grants, and other philanthropic contributions to establish an advanced manufacturing program. The InTech Center began offering courses in 2016 and since then has served more than 1600 students and about 150 employers (Jobs for the Future 2019).

The InTech Center offers 12 programs and boasts high completion rates, as about 75 percent of students enrolled complete the program. They also created the first competency-based, registered apprenticeship program that was approved in California in 2017. Most students who complete the program are placed into paid internships. Job placement and retention are high; overall, InTech students have an 88 percent job placement rate. And most students find jobs that pay $20 or more per hour. An evaluation of the program reported a 25 percent decline in individuals using government assistance (Hendricks et al. 2018).

One way Chaffey College's InTech Center sustained employer engagement was through dedicated staff liaisons—rather than faculty—who regularly keep in contact with employer partners to learn about their needs and share information. The employers we spoke with emphasized that their college contacts also served as advocates for the students who completed their career education programs.

"My contact at the InTech Center touches base with me regularly and is responsive when I reach out to ask about programs and training opportunities. She also checks in to see how former students are doing." —Employer

This advocacy approach mitigated the tendency for programs to engage employers in transactional, fragmented ways. Though the Chaffey College approach requires more resources and staff time, the advanced manufacturing employers noted a substantial payoff for students, in terms of job placement, and for employers in meeting workforce needs. The manufacturing and health care employers we spoke with also agreed that having buy-in and engagement with high-level administrators within the community college system helps create more sustained and strategic partnerships with employers.

"If you don't have buy-in from the community college president or high-level administration you will not succeed. If you don't have staff at the colleges that understand employers and are willing to work with them, you won't succeed" —Employer

The Shirley Ware Center also uses an intentional approach to keeping its programs connected to the needs of employers—such as large hospital systems like Kaiser—and the incumbent workers they serve, which include members of a health care workers union. Their relationships working with community colleges as a training provider are more mixed. While the Shirley Ware Center has found some community colleges and career education deans to be responsive to the needs of their students—for example, offering online options for prerequisite courses needed for many allied health pathways—responsiveness varied considerably across different colleges.

Shirley Ware Education Center High-Road Training Partnership

The Shirley Ware Education Center (SWEC) is a nonprofit workforce intermediary that has been providing education and training to health care workers in the Northern California region for over two decades. Initially founded by Service Employees International Union – United Healthcare Workers West (SEIU – UHW West), the center is now integrated with a multi-employer benefit trust fund to provide training and education for incumbent workers in health care. The primary employer partners are Kaiser and Dignity Health systems.

In 2019, SWEC received funding from the California Workforce Development Board to expand a program that supports incumbent janitorial and food services hospital staff to pursue training for allied health care positions. The program includes a pre-apprenticeship program that takes four months to complete and provides basic skill and technology training along with individualized services and supports to participants.

The program is partnering with Merritt College in Oakland and Sierra College in the Sacramento region to provide access to allied health programs after individuals complete the pre-apprenticeship program.

Beyond immediate job placement, the partnerships through the Shirley Ware Education Center and the Chaffey College InTech Center offer features for students pursuing stackable credentials and for incumbent workers who might otherwise not engage with career education. In particular, because workers must maintain their wages and salary while completing training, these partnerships found ways to replace wages—either from the program or by employers. In the case of the health care training program for the Shirley Ware-High Road Partnership, students

received up to 16 hours per week of wage replacement while they were in school. Likewise, some advanced manufacturing employers paid workers in training programs at Chaffey College InTech Center their full-week salary even though workers attended courses two days a week and were not on the job.

While students who complete stackable credentials are uncommon, these two examples suggest that financial support from an employer or other program may be one way to support students towards completion. Furthermore, community college students—and older students specifically—may benefit from policy actions to increase available financial aid, including for non-tuition expenses like housing.

The Shirley Ware Center program also sought to address other individual needs for people pursuing training. By conducting focus groups, surveys, and one-on-one interviews with prospective participants as the center developed its training program, center staff could better understand what workers wanted, develop strategies to overcome barriers to participation, and provide delivery mechanisms that would be most effective for supporting success. Some effective strategies include offering online options for prerequisite courses, laptop lending programs, and peer mentoring.

Both InTech and the Shirley Ware Center operate somewhat outside of the typical community college career education space. The economic development staff of Chaffey College operate InTech, and the program provides not-for-credit courses and credentials in most cases. Thus it has limited interaction with the broader credit programs and course offerings at the college, nor does it receive Prop 98 funding.[24] Rather, InTech is supported through various grants and employer contributions. It will be important to see how community colleges maintain programs like those at InTech when funding streams like federal grants and philanthropic support may no longer be available.

Chaffey College's two-decade relationship with key advanced manufacturing employers in the region is a distinct strength; nonetheless, sustaining adequate funding and resources could be challenging. The Shirley Ware Education Center is a nonprofit intermediary, but relies on union trust funds for worker training to support their programs. As a result, they have more stability in funding, which allows them more flexibility in creating their training programs and partnering with the community college system.

Priorities Moving Forward

As we emerge from the current crisis, policymakers are looking to make investments that will effectively, efficiently, and equitably help more Californians connect with stable employment and careers that afford an opportunity for advancement. Indeed, the current fiscal year's budget contains several investments to support workforce development efforts, including increased funding for High Road Training Partnership programs and the Strong Workforce Program.

California's community colleges offer hundreds of low-cost career education programs located throughout the state, which makes the system well-positioned to support students and workers who are pursuing new, better careers. Though many students engage with career education, relatively few complete training pathways. Those who do complete programs take several years to do so.

[24] Proposition 98 requires that at least 40 percent of the state General Fund be spent on the public K–14 education system and governs the main appropriation to the community college system.

Overall, we find only about 25 percent of students complete a career education credential, while about 5 percent complete a stackable pathway that combines two credentials in the same field. There are notable equity gaps: Asian and white students are more likely to complete a credential or stackable pathway, while Black students are least likely. Students who do successfully complete a CE credential typically take nearly three years to do so, and equity gaps emerge there as well: starting as early as the first year, Black students appear to fall off the completion trajectory of other student groups and those differences grow over time.

Through interviews with stakeholders, we learned potential explanations for these patterns. Stakeholders indicated that students who are older, and usually working, may need support and flexibility to pursue career education. Students benefit when career education is connected to workforce needs, but challenges emerge here as well. Stakeholders described difficulties sustaining college-employer partnerships, which impacted the ability of career education programs to align curricula with workforce needs, to provide students with work-based learning opportunities, and to connect students to jobs.

Experts within and outside of the community colleges also elevated institutional issues around financing and governance of the community college system in California. These issues hindered colleges in effectively working with employers and other workforce entities. Both regional examples of successful partnerships we highlighted have elements that operate outside of the for-credit course and credential structure of most CE programs available at community colleges.

In light of these findings, we note a number of priorities for improving student success and ensuring programs meet evolving workforce needs:

- **Provide supports that help more students complete career education credentials and pathways.** Many students pursue career education, very few finish credentials, and even fewer finish stackable credential pathways. To the extent that credentials pay off for students—and our prior research suggests they do in many fields—helping more students who start career education to finish credentials is low-hanging fruit. Full-time attendance correlates strongly with greater and faster completion; but our interviews suggest this option may not be possible for many students without supports like wage replacement, child care, and flexible scheduling. Such supports and flexibility may benefit students who can take greater course loads as well as potential students who are unable to attend community college due to these barriers or who turn to higher-cost for-profit institutions.
- **Address equity gaps in student success.** If career education programs intervene early—within the first few terms of when students start programs—more students may be able to stay on a completion trajectory. Early intervention could produce important gains, especially for Black students. Most Black students go to a relatively small number of community colleges – 70% attend one of about 35 colleges – which may mean resources can be targeted more precisely. Latino students also have lower completion compared to white and Asian students, which persists for six years. Addressing barriers to completion would also speed the economic benefits that accrue to credential holders. Further research could shed more light on additional efforts that could be targeted to Black and Latino students.
- **Develop a better understanding of what career education students want to achieve.** The community college system has started tracking broad student goals and the advising students have received in recent years. However, it is not clear how those efforts inform or shape student trajectories. As more years of data on student goals become available and can be connected to outcomes like finishing a credential, it will be important to understand how these efforts can improve completion rates.

- **Improve collaboration between colleges, employers, and workforce intermediaries.** With job opportunities shifting post-COVID and beyond, it is critical that all institutions with a stake in quality career education programs work together. Deeper relationships can create a stronger pipeline of quality training that benefits employers and offers long-term job prospects for students. They can also support stackable career pathways for students who may need to enter and exit at multiple points and maintain employment while they go to school. But developing these relationships takes commitment, time, and resources from colleges and employers, which are difficult to forge one at a time, college by college, program by program.
- **Create a role for statewide coordination and goals.** The community college system is designed with local control in mind. However, there could be advantages to focusing a regional or statewide approach to align curriculum and workforce needs. Community colleges and districts could benefit, for example, from working more collaboratively with each other to find what is working in one place and replicating it in another. Additionally, finding ways to break down funding siloes—like federal Perkins funding, state Prop 98 investments, and various workforce development grants—could advance workforce development collaborations within colleges and across colleges and better sustain employer partnerships.

The current economic crisis has highlighted the role publicly funded workforce training can play in a robust and equitable recovery. California's continued investments in education beyond high school are a means to supporting both the state's workforce needs and the economic success of its residents. A clear understanding of how to target these investments for the greatest impact will help California develop stronger programs that prepare students for careers of the future.

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