RESEARCH REPORT

May 10, 2019

GUIDING STUDENTS TO AND THROUGH PROFESSIONAL-TECHNICAL WORKFORCE PATHWAYS

Introduction

This research brief describes college attainment for students pursuing professional-technical education. We begin with a cohort of 36,700 first-time in college (FTIC) students who started college between 2010 and 2012. Our analysis is based upon students whose goal in their final year was a professional-technical education. We give our cohort four years (twice the time to earn a two-year degree) to account for part-time status and stopping out. At the end of the four-year period we measure students for their highest attainment.

We are also interested in what happens to students after they leave college. 25,000 students in our cohort are measured for employment one year after leaving the college. We divide them into "completers" (defined as having completed a certificate or an associate degree) and non-completers and track field of study and levels of attainment leading up to their post-college employment. We use our analysis to describe the individual labor market returns for the credentials we award. We juxtapose two practices that can bear on professional-technical degree attainment- stacking short certificates and completing college math.

Throughout the brief we disaggregate our analyses by sex and race/ethnicity.

Key findings:

- Completers are more likely to be employed and earn more than non-completers.
- Employment prospects after college determined by the returns for full-time employment and earnings vary by program area. Historically underserved students of color (HU-SOC) are underrepresented among completers of higher labor market return programs and overrepresented in lower return programs.
- Returns to associate degrees are higher than certificates. This is especially true for women.
- About 30 percent of students in our starting cohort earned an associate degree or certificate within four years. Another 10 percent have not earned any credentials within four years, but are still enrolled in the same or another college in a fifth-year snapshot. Almost 60 percent of all professional-technical students in our starting cohort exited with no credential after 4 years.
- HU-SOC and women in general are more overrepresented among certificate awardees and underrepresented among degree completers. HU-SOC are overrepresented in the group that exited no award as well.
- The short certificate has long been viewed as a way to engage students who may not have strong academic backgrounds by offering steps towards the two-year degree while also meeting their

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immediate employment needs. However, short certificates do not often lead to a degree. The vast majority of short certificate awardees stop out and do not return.

- Completing college math substantially raises the percentage of professional-technical students who earned their degree. It has more bearing on earning a degree than completing a short certificate. However, only a small fraction of professional-technical students complete college math. Historically underserved students of color (HU-SOC) and women are less likely to complete college math.
- We conclude our brief with a discussion of the implications of these findings for planning Guided Pathways.

Credential completion

Earning a credential matters for full-time employment and earnings. The value of a credential depends on career area and level of attainment.

25,000 professional-technical students who started college between 2010 and 2012 were measured for employment. None of these students went on for further education anywhere in the period afterwards. We looked at their participation in the workforce in the first year after they left college. 15,800 (63 percent) were employed either full or part-time in the first year after college with median earnings of $24,500.

In our analysis, we are interested in measuring the employment prospects for students after they leave college to identify credentials with strong labor market value. We base our determination on the percentage of students that enter full-time employment and their earnings. 10,700 of our students (42 percent or two-thirds of all those employed) started out full-time with median earnings of $31,500. A limitation to this figure is we do not know how many who are employed part-time would have liked full-time work but could not get it.

Figure 1 displays total completers and non-completers, the percentages (%) of each group that was employed full-time, and their full-time earnings. Our first observation is that completion enhances full-time employment and earnings. About half of all completers are employed full-time and had annualized full-time earnings estimated at $35,300. Completers are 17 percentage points more likely than non-completers to be employed full time and their annualized full-time earnings are $6,100 per year more. Thus, the very fact of completion enhances overall employment prospects. Put another way, the vast majority of students who stop out before they complete typically find jobs with weaker prospects for full-time employment and higher earnings.

Figure 1.

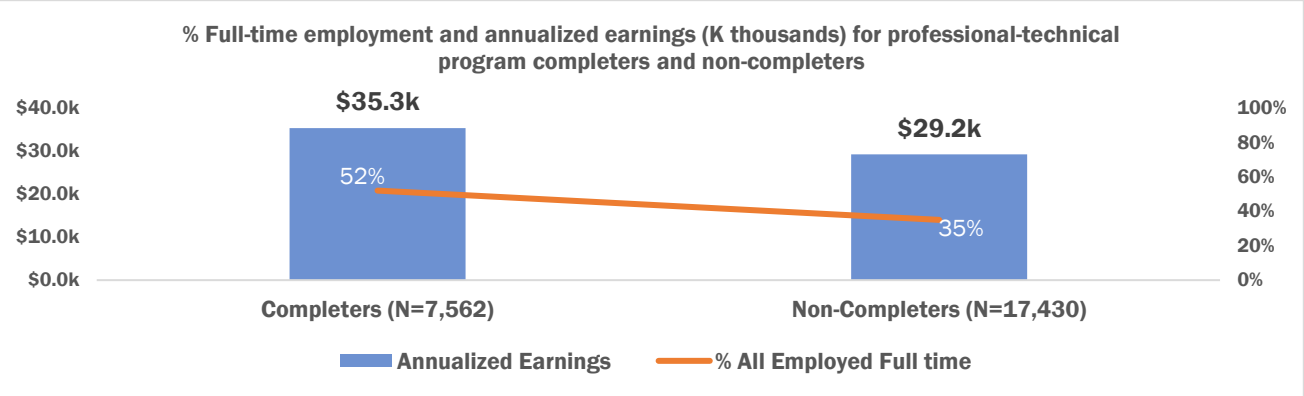
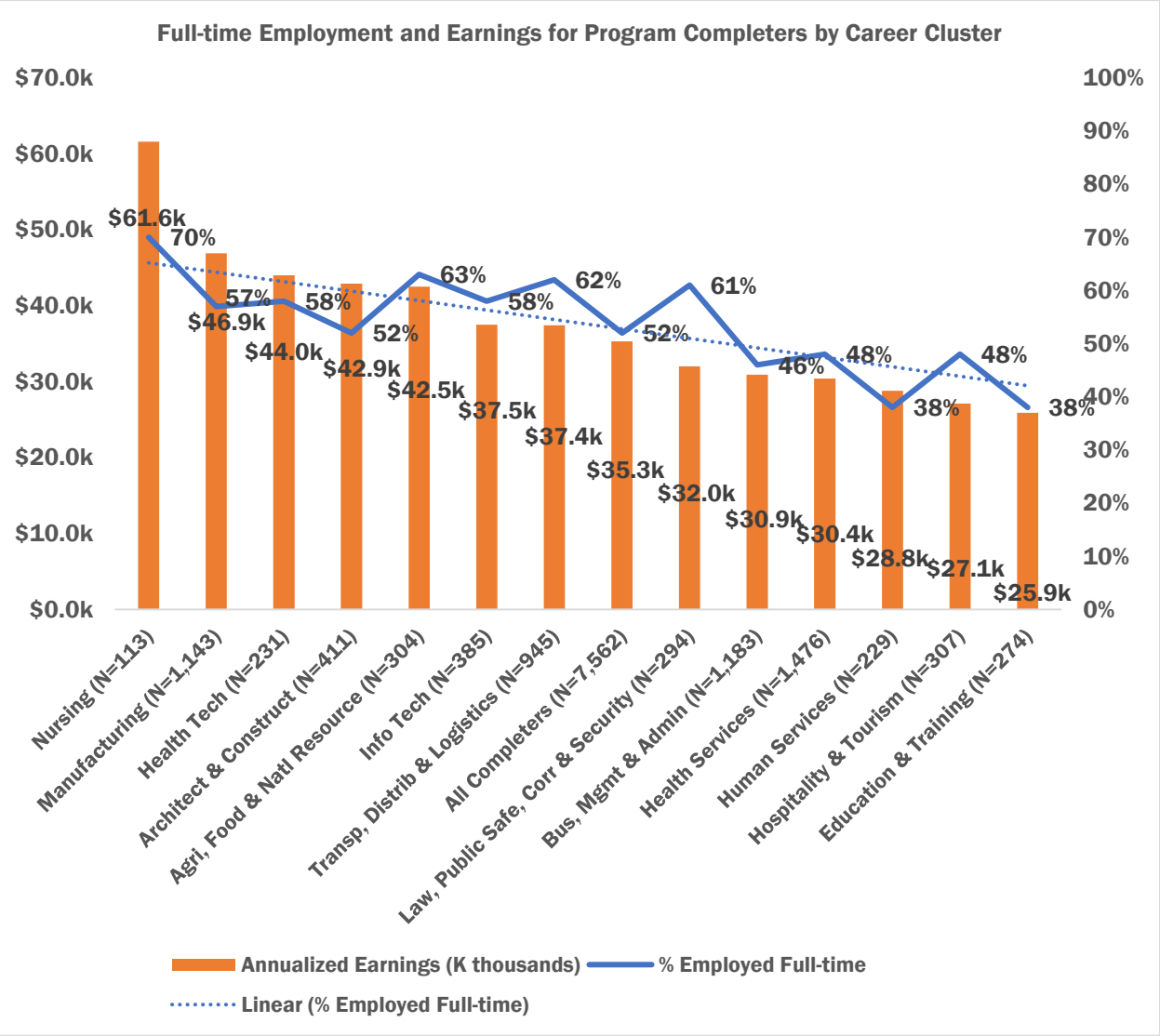


Figure 2 presents the percentages of completers who enter full-time employment and their estimated annualized earnings within 13 broad career areas. The areas are displayed from left to right in order of highest to lowest post-college earnings for completers. For each program group of 100 completers, we take the number who would enter full-time employment and multiply that by median value for a completer to determine positioning in our chart.

Nursing affords the strongest employment prospects with 70 percent of graduates starting full-time employment at an annualized full-time salary $61,600 a year. Employment in agriculture, manufacturing, health tech, transportation, and construction follow nursing for the best employment prospects. On the right side of the chart, education, human services, hospitality, business management, and health services have the weakest comparative employment prospects.

Figure 2.

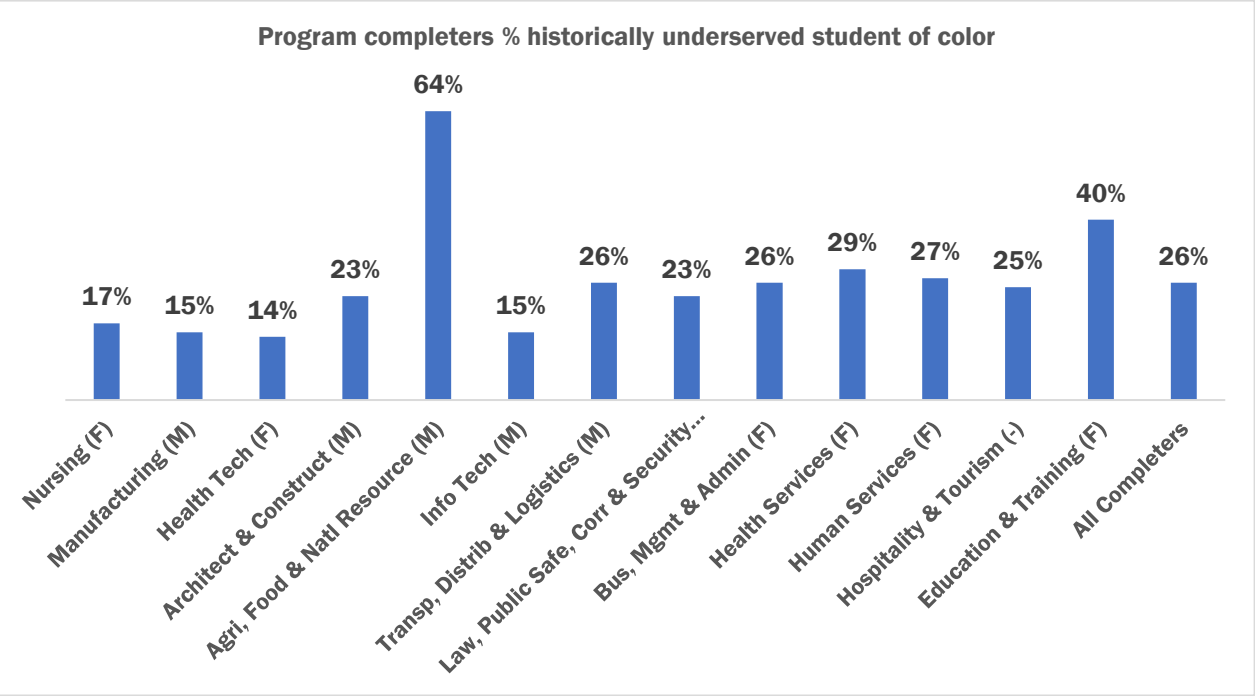


Outcomes by sex and race/ethnicity

Women in general and underrepresented women of color in particular face weaker employment prospects based upon their common program selection. The lineup of programs in figure 2 is presented again in figure 3. This time we show the overall percentage of men and women from Historically underserved students of color (HU-SOC) - Black/African American, Pacific Islander, Hispanic, and American Indian/Alaskan Native. We

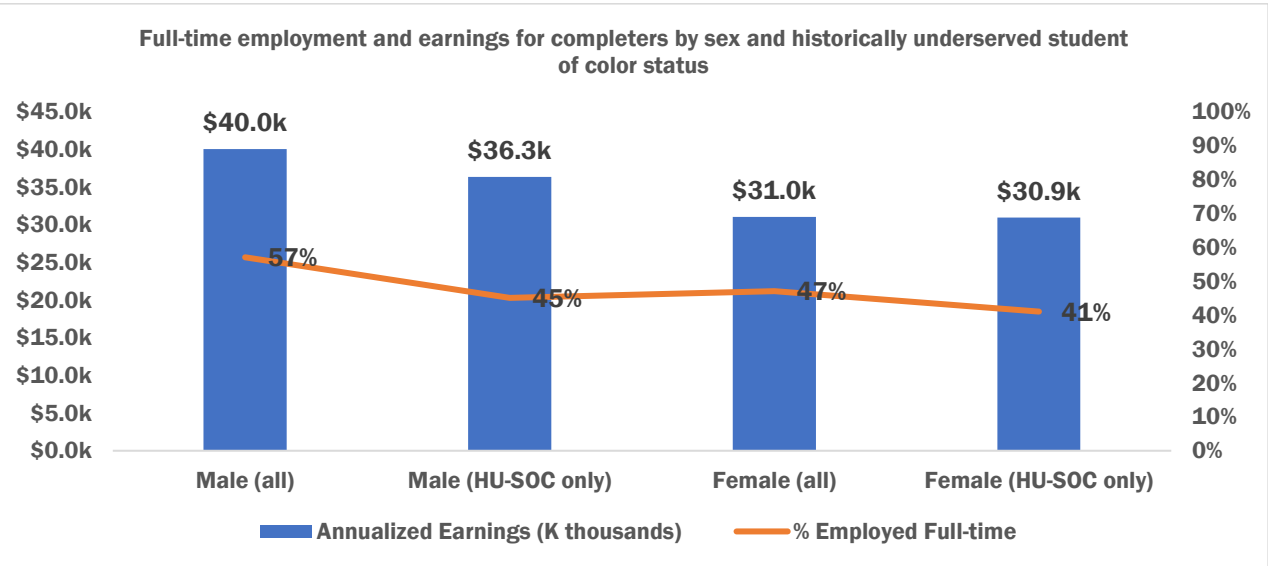
designate fields of study as either female (F) or male (M) dominant based on the overall makeup of completers. Education and training, human services, health tech, and nursing all have at least 85 percent female completers. Transportation, construction, and manufacturing are over 90 percent male. No male dominant field is under 85 percent. Female dominant fields range from 68 to 89 percent. Only hospitality is somewhat balanced, albeit slightly more male dominated. Figure 3 shows that Historically underserved students of color (HU-SOC) groups with one exception for (Hispanic) males in agriculture are skewed toward program areas with weaker employment prospects.

Figure 3.



In figure 4 below we translate program selection into completers' employment prospects for full-time employment and earnings by sex and HU-SOC.

Figure 4.

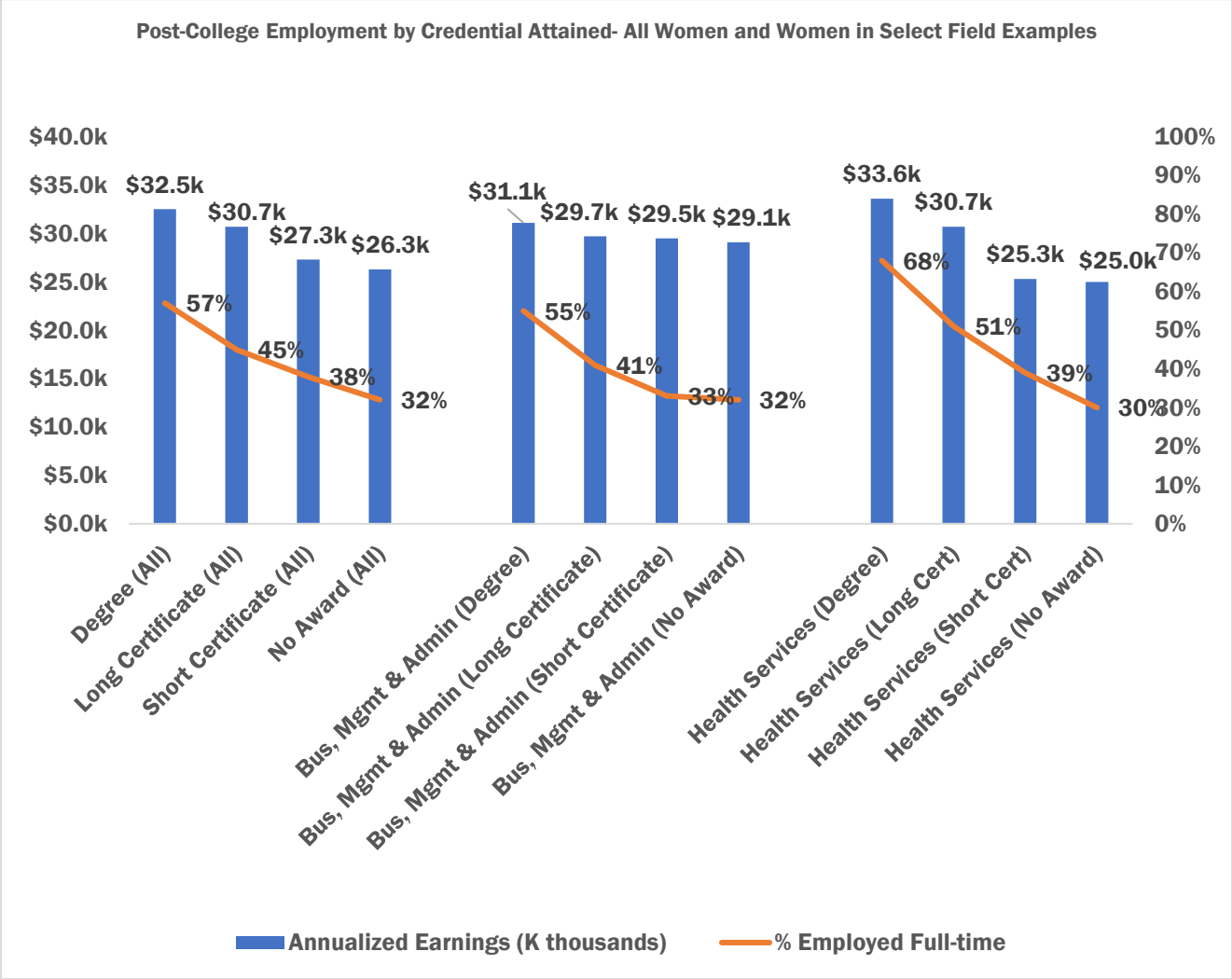


Credential level and employment prospects

Up until now, we have primarily been looking at program selection; however, level of attainment can also advance initial employment prospects. In general, degrees promote stronger prospects for full-time earnings and employment, but these results can vary. Those programs that show weaker employment prospect (and by proxy females) benefit from earning a degree.

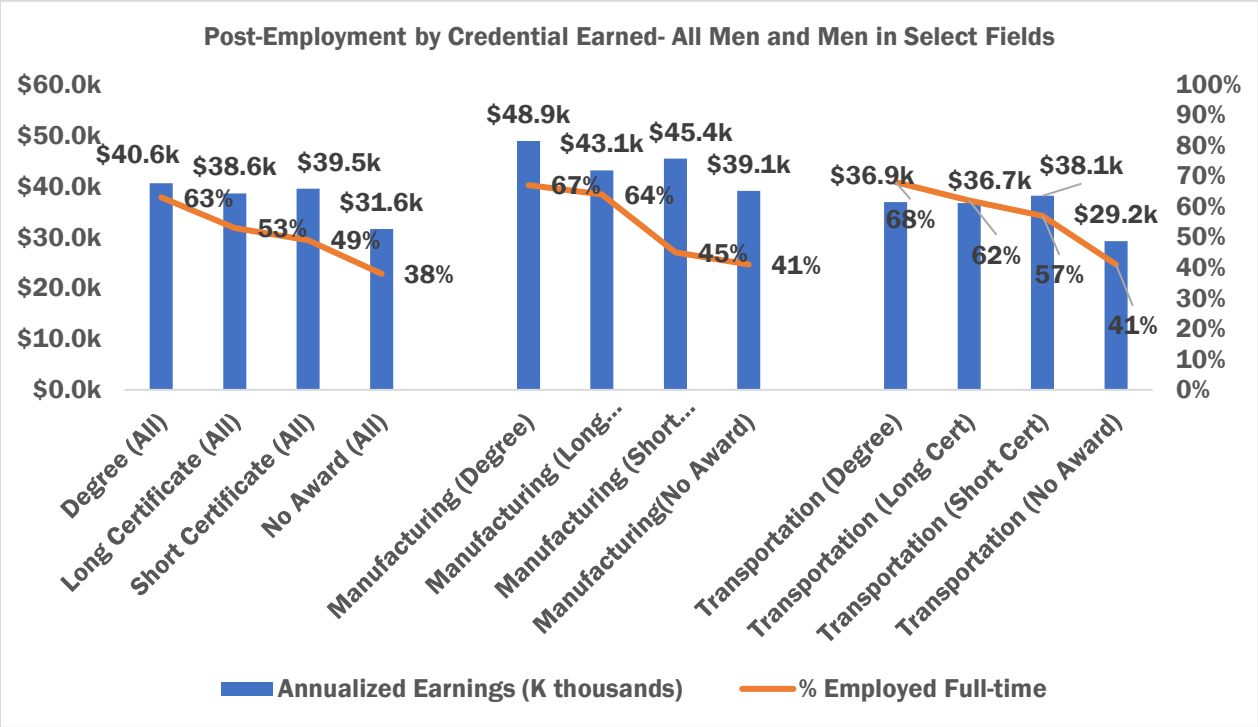
Figure 6 disaggregates employment results based upon credential earned by women overall and then in two specific fields for business and health services. The strongest employment prospects are for the two-year degree. Short certificates have only a modest advantage over no award at all.

Figure 5.



For male dominant blue-collar programs, the degree enhances overall prospects for full-time employment, but short certificates can also provide good earnings. Figure 6 disaggregates employment outcomes by credential for males overall and also employment in two male-dominant fields. The results are a little more mixed as compared to female outcomes. Degrees provide the highest full-time employment, but certificates provide comparable median earnings in fields like advanced manufacturing and in blue collar trades jobs like drivers in transportation.

Figure 6.



We now look back at the entire 36,734 students who were in our starting cohort. Figure 7 shows the status for all students four years after they first started. The vast majority (96 percent) spend the entire four-year period at their starting college. 58 percent of all students left with no credential and are not enrolled anywhere else in our system. The overall credential attainment rate for the cohort is 31 percent. 29 percent have earned an associate degree or certificate as their highest attainment at their college. Three-fourths (4,296) of certificate awardees earned short certificates, less than one year. Two percent have earned a credential from another college. 11 percent are still enrolled at the same or in another college in the system in the fifth year. A fraction of one percent (rounding to zero) earned an applied baccalaureate (AB) degree in an early first wave of newly started programs.

Figure 7.

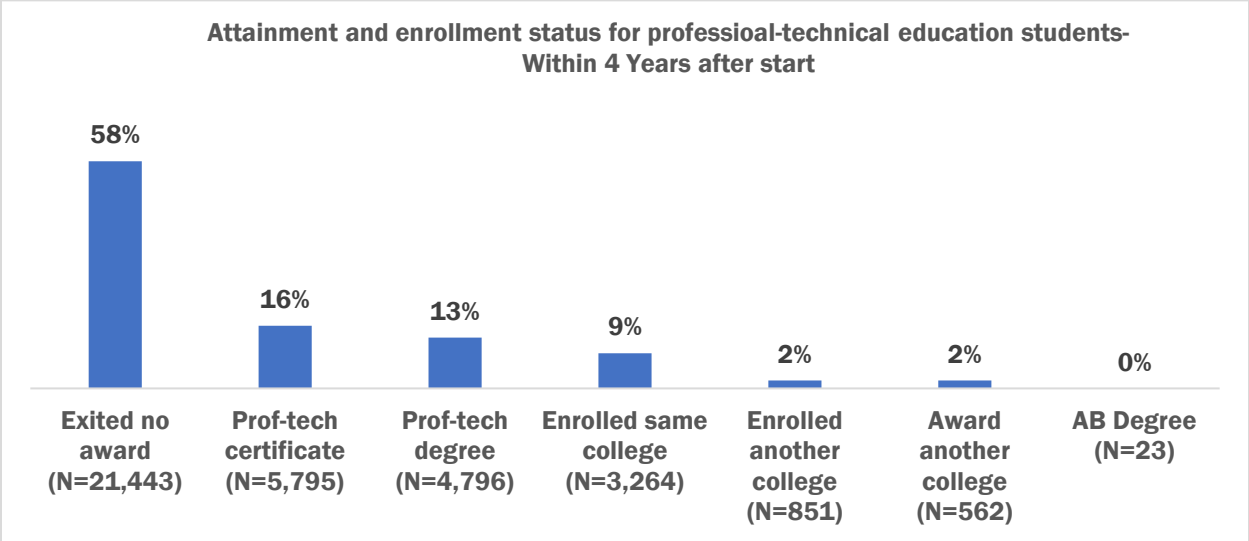
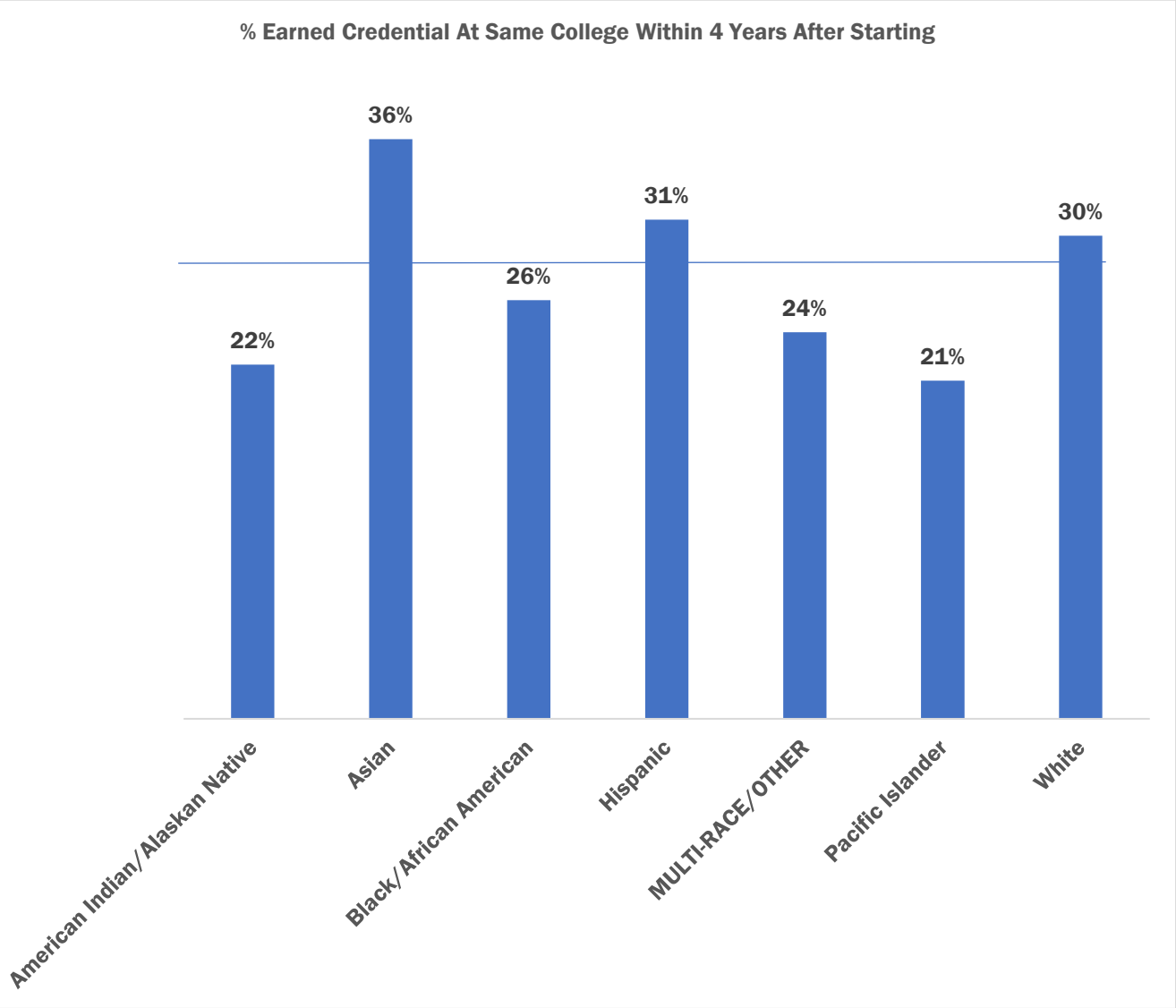


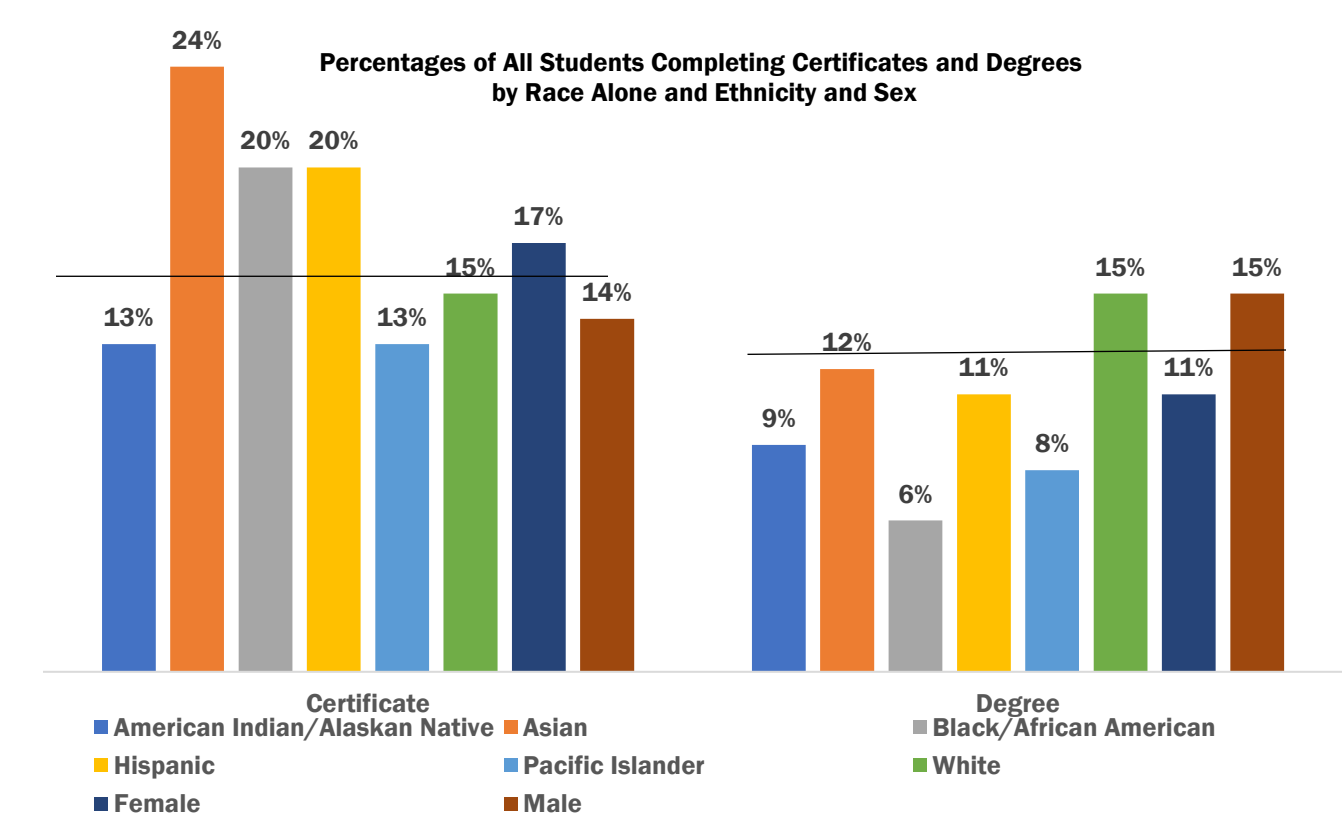
Figure 8 presents the credential attainment by race and ethnicity alone. A line is drawn at 29 percent, which is the attainment rate for all students. The attainment rate for men and women (not shown) is about equal. American Indian/Alaska Native, Pacific Islander, and Black/African American students all had lower attainment rates.

Figure 8.



As previously shown, award level has an impact on employment prospects and is therefore important to evaluate for equity gaps. Overall, 16 percent of students earned a certificate versus 13 percent who earned a degree as their highest attainment. Figure 9 disaggregates type of award by race and ethnicity and sex. White students have the highest degree attainment rate. Black/African American, American Indian/Alaskan Native and Native Hawaiian/Pacific Islander students have the lowest degree attainment rates. Certificates have a variety of influences. For example, the high percentage of short certificates for Asian students include nursing assistant certificates awarded to students seeking to improve their applications to nursing programs. The high percentage for Hispanics includes a large share in agriculture as previously noted. However, the large share in the other Historically underserved students of color (HU-SOC) groups is primarily in lower prospect fields. Completion rates and time to completion must improve for all students and differences in degree versus certificate attainment must be narrowed. Women have a substantially higher likelihood for certificate versus degree attainment. Men are slightly more likely to earn degrees.

Figure 9.



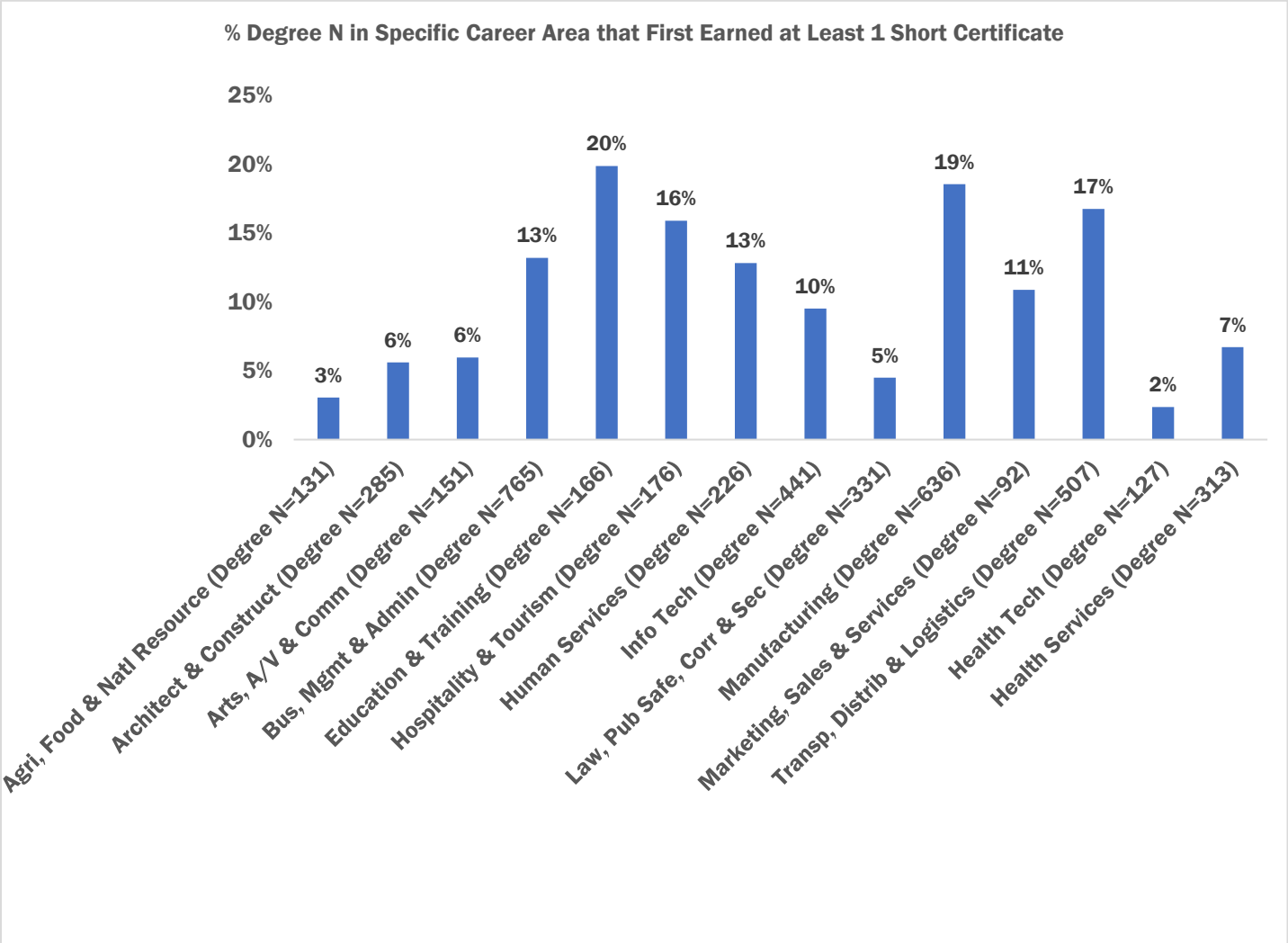
Short certificates

Since the early 2000's institutions have reconciled the competing needs for employment now and opening the door for more education later by stacking certificates to create career pathways. There is a long-standing view that creating career pathways by breaking degree programs into smaller sections, with an employability exit point at the end of each certificate, will make it easier for people earn degrees over time while not neglecting their immediate need to work. As a result of this idea, colleges have promoted short certificates as a way forward to the degree. However, few students adhere to this strategy. The majority of certificate awardees do not go any further in the four-year period.

4,296 students earned short certificates as their highest attainment in the four-year period. Another 580 students earned short certificates, but stacked these towards a degree. Combining these two groups, nearly nine in ten (88 percent) students went no further than a short certificate. 580 out of 4,876 students (12 percent) who earned at least one short certificate before they earned their degree.

Figure 10 shows the number of degree awardees and percentages of degree awardees who earned short certificates leading to their degrees. A line is drawn at 12 percent for the overall percentage. Education and Training at 20 percent is the highest percentage. This area has been a specific policy focus with statewide agreement on short certificates that can stack to a degree in early childhood education. However, as found in other research, the cumulative evidence in our analysis suggests that short-term certificates overall may only moderately encourage students to stack toward degrees and allow them to stop out and come back to earn a degree. The large majority of students in our cohort (almost all) enrolled and returned every year leading to their degree. Most were continuously enrolled for the two to four years leading to the degree. Further a large majority started full-time with most receiving financial aid to support their continuous enrollment.

Figure 10.



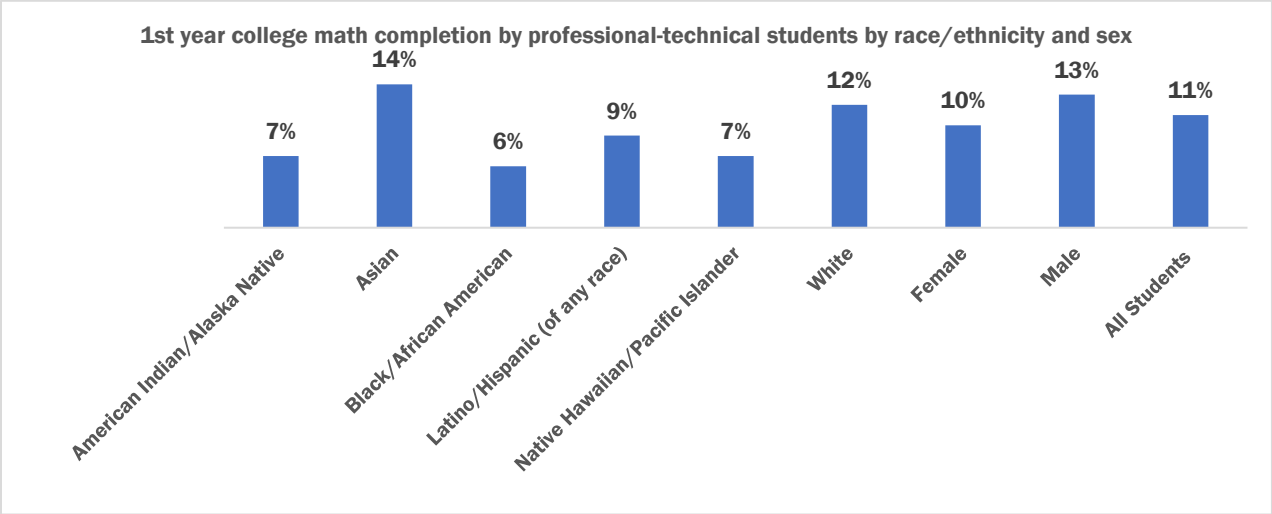
College-level math and degree attainment

Addressing college math early relates to subsequent professional-technical degree attainment. Professional-technical math is an equity issue as Historically underserved students of color (HU-SOC) and women are underrepresented in completing college math in their first year in college.

As in the case with academic transfer students and two-year academic degrees, we see a strong correlation to professional-technical degree completion after student's complete college math. Our key milestone is college math completion within the first year enrolled. In Figure 7 we saw that overall degree attainment for our starting cohort was 16 percent after four years. However, 36 percent of students who complete math earn a professional-technical degree within four years. This compares to 10 percent degree attainment for students who did not complete math in their first year.

More professional-technical students need to complete college math as a critical milestone for degree attainment. Completing math is an equity challenge. Overall just 11 percent of professional-technical students make early progress on completing college math. HU-SOCs are overrepresented in the group that does not complete math and the completion gap is more acute for women than men.

Figure 11.



Guided Pathways is a comprehensive reform model focused on student success by designing clear pathways for students, helping them to make informed decisions, and stay on their chosen path while striving to increase attainment in credentials with labor market value. Helping students to discern a path, reforms in helping students become college ready, and course maps for programs and predictable scheduling are strategies for advancing the initiative.

In our analysis we see that overall attainment must be raised. Historically underserved students of color (HU-SOCs) are overrepresented among students leaving college with no credential. However, we also see inequities in the types of credential earned with HU-SOCs overrepresented among certificate awardees and underrepresented for degree attainment.

We have described labor market value in terms of employment prospects of completers for entering full-time employment and their earnings. We use this criteria to respond to basic expectations that most people (and at least two-thirds of students discussed in this research) hold for a job. We learned that employment prospects vary substantially by career area. It is important to acknowledge that some of these differences can be driven by issues outside of our control. For example, students do not choose to go into education and training for the money. In that respect, teaching and child care is undervalued in our economy and society and our basis for determining prospects may offer only a partial picture of how we should view fields like it.

We should still take the opportunity to ask ourselves, how can we help all students achieve the strongest possible employment prospects within their chosen field? To do this we need to address differences in degree attainment within given programs and career fields. The professional-technical associate degree provides the highest labor market value for the students in our analysis. Other studies we have undertaken show that over time the economic returns for the associate degree grow while short certificates returns flatten.

We juxtapose two practices for advancing associate degree attainment. First, we analyzed short certificates as a strategy for increasing attainment and advancing students on a degree pathway. The vast majority of students awarded short certificates do not use them to ladder to degrees. For a very large portion of HU-SOC and women in general, program selection plus the short certificate that becomes a final credential results in weaker employment prospects, not much different than the prospects for students leaving with no award.

Next, we looked at completion of college math and its bearing on professional-technical degree attainment. Our two practices have an unusual relationship. While short certificates do not add up to degrees, completing college math does have a strong bearing on degree completion for professional-technical students. One of the rationales and consequences for using short certificates has been to delay math for students we presume are not academically oriented and will be “turned off”. The two practices are at odds

with each other. This relationship has a direct effect on closing equity gaps for increasing completions with credentials that have labor market value.

Colleges should think carefully about how they lay out their pathway steps. In particular the laddering of programs into short certificates at a minimum should be reviewed and reconsidered as a primary initial focus. Program maps have to be accompanied by predictable and reliable (default/opt-out) class schedules for the degree to demonstrate the way to the new normal and mitigate the fact that many short certificates have become a terminal award with weaker employment prospects.

New college math pathways for professional-technical programs need to be created and start much sooner for all career areas. Professional-technical math can take a page from academic transfer in their willingness to see the importance of college math, expose the attrition in the transfer math pipeline, and look for new ways to advance by making math relevant to the students' transfer major. Here professional-technical programs need to build on "just-in-time" instruction that can be immediately applied and is often integrated into subject matter coursework.

Finally, our focus on associate degree attainment would be remiss without recognizing the increasing importance of the bachelor's degree to the economic returns for students. This is particularly true with the advancement of the applied baccalaureate degree (AB). Most of the growth in this degree has happened after the period studied in this research paper, so we can only now begin to pay attention to the pipeline as it will be affected by the reforms we make for Guided Pathways. However, we already are seeing strong earnings return and stronger prospects from the AB, including in fields described in this paper that initially show weaker prospects to start.

The most recent AB study finds that even as these programs become more diverse, overall attainment for historically underrepresented groups is still a critical issue that needs watching. They point out for example that over time Black/African American completers have decreased as a share of AB students. The importance of the professional-technical degree for both employment and further education needs a real and committed emphasis in Guided Pathway maps.

In closing, Guided Pathways offers a unique opportunity to shape and align our professional-technical career paths in ways that more strongly emphasize the needs for higher educational attainment and skills. In that regard, our two-year degree is the strongest first rung for all of our students across all of our missions.

1 Prior SBCTC research that provides additional context and background can be found at:
https://www.sbctc.edu/resources/documents/colleges-staff/research/workforce-research/resh-rpt-15-1-labor-market-results-of-wf-students.pdf

https://www.sbctc.edu/resources/documents/colleges-staff/research/workforce-research/17-1-producing-nursing-grads-and-rethinking-pipeline-for-guided-pathways.pdf
https://www.sbctc.edu/resources/documents/colleges-staff/research/workforce-research/17-2-certificate-structure-study.pdf
https://www.sbctc.edu/resources/documents/colleges-staff/research/research-briefs/running-start-guided-pathways-march2017.pdf

https://www.sbctc.edu/resources/documents/colleges-staff/research/bachelor-applied-science-research/17-4-applied-baccalaureate-program-growth-employment-outcomes-8-23-17.pdf

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