VOICES FROM THE FIELD

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How Community Colleges Are Advancing Equity in Career and Technical Education

Overview

A changing economy and rapid advancements in technology have resulted in mismatches between employers' needs and workers' skills in a number of fields — and are likely to continue to generate new ones. Many people in postsecondary education and workforce development see community college career and technical education (CTE) as a way to fill shortages in the labor market while providing a pathway to economic mobility for many Americans. CTE provides occupational preparation and training that often culminates in shorter-term credentials such as certificates; it may or may not provide credits that can be used for college degrees. One important question about CTE programs at community colleges is: Are they equipped to provide those pathways to economic mobility *equitably* (that is, regardless of individuals' races, ethnicities, genders, socioeconomic backgrounds, or geographic regions, or the intersection of these characteristics)?

In 2019, MDRC's Center for Effective CTE conducted a scan of notable community college CTE programs across the country to identify promising practices and common challenges. During the conversations held as part of the scan, it became evident that as CTE programs try to address skill gaps in the labor market, many have also already begun to address equity in creative ways.

KEY FINDINGS

MDRC's scan revealed that community college CTE programs are increasingly committed to achieving equity goals. It also revealed some common promising practices they are adopting to increase opportunity and reduce equity gaps (that is, differences in outcomes between social groups). These practices apply to various points along the education pathway, from outreach and recruitment to postemployment support. Findings from the scan include:

- Colleges may be able to promote equitable and diverse enrollment in CTE programs by adjusting their outreach and by finding creative recruitment strategies, including the use of peer recruiters and community partners.

- Targeted and individually tailored coaching, support networks, and nontuition financial support may help students stay in and complete programs, reducing inequitable disparities in outcomes.

- Postgraduation support services, used more and more frequently in the workforce field, may help underrepresented students persist in the labor market and increase their earnings, thereby reducing wage disparities.

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BUILDING KNOWLEDGE
TO IMPROVE SOCIAL POLICY

- As colleges continue to become more sensitive to equity goals, they can aim to uncover otherwise hidden inequities by analyzing outcomes according to race, ethnicity, gender, and other characteristics relevant to their local contexts.

Introduction

A changing economy and rapid advancements in technology have resulted in mismatches between employers' needs and workers' skills in a number of fields — and are likely to continue to generate new ones.[1] Many people in postsecondary education and workforce development see community college career and technical education (CTE) as a way to fill shortages in the labor market while providing pathways to economic mobility for students.[2] CTE provides occupational preparation and training that often culminates in shorter-term credentials such as certificates; it may or may not provide credits that can be used for college degrees. One important question about CTE programs at community colleges is: Are they equipped to provide those pathways to economic mobility *equitably*? In other words, do they expand access to better-paying occupations among groups (defined by race, gender, or other characteristics) that are typically underrepresented in those occupations?

Historically, a good deal of policy and research attention has focused on improving overall success in community college associate's degree programs, and there is a growing body of evidence about the effectiveness of workforce training programs that incorporate certain features.[3] But less is known about the effects of community college CTE on longer-term economic outcomes. To begin to address this knowledge gap, in 2019 MDRC's Center for Effective CTE conducted a scan of notable community college CTE programs across the country to identify promising practices and common challenges. During the conversations held as part of the scan, it became evident that, as they try to address skill needs in the labor market, many CTE programs are also focusing on issues of equity — both in their own programs and in broader society.

Equity is defined in this brief as individuals having access to high-quality opportunities and being supported to achieve strong outcomes in education, employment, and other areas, regardless of their races, ethnicities, genders, socioeconomic backgrounds, or geographic regions, or the intersection of these characteristics. Pursuing equity generally means providing those opportunities to people who have traditionally been excluded from them, especially people of color and those who would be nontraditional students in community college CTE programs. Equity is also contextual: A woman in the male-dominated field of information technology (IT) is likely to experience inequities in pay and advancement that a man in the same field may not. Many present-day inequities — such as disparities in community college enrollment or completion rates related to race, ethnicity, gender, socioec-

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[1] Koc (2018).

[2] Jacoby (2017); Mann Levesque (2018); Furchtgott-Roth, Jacobson, and Mokher (2009).

[3] Ruder (2019).

onomic background, or geographic region — are rooted in the complex, historical wrongs of racial discrimination, biased federal housing policy, and other policies and behaviors that have led to racial segregation and concentrated poverty. As one example, the inequitable distribution of resources to predominantly white, affluent neighborhoods determines which students have access to more experienced teachers and high-quality curricula in K-12 education, and which students do not.[4] These historical inequities have only been compounded as overall inequality in the economy has increased, with the gap between the richest and poorest households in America now the greatest it has been in 50 years.[5]

Inequities in higher education have been widely documented and acknowledged as a reason for persistent achievement gaps between groups.[6] Issues of equity are not new to the world of CTE, either. In bygone systems of vocational education, for example, low-income students and students of color were steered into the lowest-opportunity tracks.[7] While overall, average wages for middle-skill jobs (those that require more than a high school diploma, but less than a four-year degree) have fallen in the last 40 years,[8] there is a good deal of variation in wages across industries — and across genders.[9] Providing more equitable access to jobs that are persistently in demand and yield family-sustaining wages with chances for advancement may provide an opportunity to reduce broader economic inequities. The programs interviewed for this scan focus on such jobs: computer support, medical assistantship, precision tool machining, electrical line work, and automotive repair. Of course, training individuals for these careers does not by itself ensure equitable opportunities for economic mobility.

This brief discusses factors that can contribute to inequities in community college CTE programs and then provides examples of strategies that the colleges in MDRC's scan are using to try to address

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4   Education Northwest (2019); Reeves, Rodriguez, and Kneebone (2016).
5   Chapell (2019).
6   Korn (2019); Harper (2006); Perna and Thomas (2006).
7   Malkus (2019); Gewertz (2018).
8   Fuller et al. (2014).
9   Baum (2014); Lundy-Wagner (2018); Tesfai, Dancy, and McCarthy (2018).

those factors. Where applicable, the brief also draws on evidence from the field. In the absence of clearer evidence specific to nontraditional students and students of color in community college CTE programs, evidence that shows positive effects on *all* students in a variety of community college programs is used. Major findings from this scan include:

- Colleges may be able to promote equitable and diverse enrollment in CTE programs by adjusting their outreach and by adopting creative recruitment strategies, including the use of peer recruiters and community partners.

- Targeted and individually tailored coaching, support networks, and nontuition financial support may help students stay in and complete programs, reducing equity gaps.

- Postgraduation support services, used more and more frequently in the workforce field, may help nontraditional students persist in the labor market and increase their earnings, thereby reducing wage disparities.

- As colleges continue to become more sensitive to equity goals, they can aim to uncover otherwise hidden inequities by analyzing outcomes according to race, ethnicity, gender, and other characteristics relevant to their local contexts.

This brief builds on MDRC's work, most recently that of its Center for Effective CTE, defining and outlining strategies for addressing inequities. Past products of the Center, including an issue brief highlighting practitioner perspectives on equity,[10] have examined CTE in a variety of contexts, including high schools, colleges, and workforce development centers. This brief focuses on CTE programs at community colleges.

MDRC's research team interviewed administrators of innovative CTE programs at 17 public community colleges and, in some cases, higher-level college administrators at those colleges. They also interviewed state-level administrators of innovative CTE programs. The team visited and interviewed administrators, instructors, employer and community partners, and students at 6 of the 17 schools, representing a mix of sizes, geographic regions, sectoral focuses, and other features. (Details about those 6 community colleges are provided in Table 1 and Table 2.) These programs integrate sector-specific preemployment and career-readiness services and other common workforce offerings (such as job-search support) with promising workforce training practices such as short-term occupational

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10 Rosen and Molina (2019).

TABLE 1. Community College and Program-Specific Overview

	Austin Community College (Austin, TX) Large city	El Camino College (Greater Los Angeles, CA) Large suburb	Grand Rapids Community College (Grand Rapids, MI) Midsize city	Monroe Community College (Rochester, NY) Large suburb	New River Community and Technical College (Beaver, WV) Small suburb	Valencia College (Orlando, FL) Large city
PROGRAMS OF FOCUS	Career ACCelerator (185 students)	Career Advancement Academy (CAA) (191 students)	Builder's Licensing for ELLs (12 students), Certified Nursing Assistants (CNA) for ELLs (10 students), and other health pathways	Medical Office Assistant (11 students); Accelerated Precision Tooling and Machining (14 students)	Electric Distribution Engineering Technology (31 students)	Accelerated Skills Training (425 students)
SECTOR	Information Technology	Automotive Technology	Construction, health care	Manufacturing, health care	Utilities	Manufacturing, construction, machinery
PROGRAM INFORMATION	50% Hispanic; 30% White; 14% Black/African American; 6% Asian 66% male; 34% female	[SEE NOTE]	**Builder's License** 100% Hispanic 67% male; 33% female **CNA** 40% White; 40% Black/African American; 10% Asian; 10% unknown. Of these, 5 students (50%) identified their ethnicity as Hispanic. 90% female; 10% male	**Medical office assistant** 55% Black/African American; 27% White; 18% Hispanic 100% female **Accelerated Precision Tooling** 86% White; 7% Black/African American; 7% Asian 100% male	100% White. 100% Male.	32% Hispanic; 24% Black/African American; 21% White; 4% multiracial; 4% Asian and American Indian or Alaskan Native; 15% other/unknown 76% male; 24% female
	22% Pell Grant recipients	28% Pell Grant recipients	32% Pell Grant recipients	50% Pell Grant recipients	59% Pell Grant recipients.	40% Pell Grant recipients

(continued)

TABLE 1 (continued)

SOURCES: Data on Pell Grant recipients are school-wide and sourced from the National Center for Education Statistics for the 2018-2019 school year. Demographic data are provided by program operators for the 2019 calendar year, unless otherwise indicated. Data for Valencia's Accelerated Skills training and Monroe's Medical Office Assistant program are from the 2018-2019 school year.

NOTES: Program-specific data on socioeconomic status were not available for all colleges, so school-wide data are used to illustrate relative proportions of students eligible for financial support.

Demographic data for El Camino's CAA were unavailable at the time of publication.

Although the term "Latinx" is used in the text, the term "Hispanic" is used in this table to be consistent with most schools' internal terminology. Similarly, "Black/African American" is used here to be consistent with most schools' internal terminology.

ELL = English language learner.

TABLE 2. Program Features

	Austin Community College (Austin, TX) Large city	El Camino College (Greater Los Angeles, CA) Large suburb	Grand Rapids Community College (Grand Rapids, MI) Midsize city	Monroe Community College (Rochester, NY) Large suburb	New River Community and Technical College (Beaver, WV) Small suburb	Valencia College (Orlando, FL) Large city
ACCELERATED PROGRAM		√	√	√		√
COHORT-BASED		√	√	√	√	√
WORK-BASED LEARNING	√	√	√	√	√	√
CREDIT-BEARING	√	√	√	√	√	

NOTES: "Accelerated programs" are those in the scan that shortened the total amount of time it takes for students to complete programs, with the hope of being more responsive to local labor demand while also reducing the burden on students of being in school for a prolonged period.

"Cohort-based" refers to programs that enroll groups of students together and schedule them for the same courses.

"Work-based learning" refers to programs' coordinated effort to offer students paid work-based learning experiences, such as internships and apprenticeships, that typically take place while students are still in CTE programs.

"Credit-bearing" refers to programs that allow students to earn college credits that can be applied towards college degrees.

skills training, which typically takes less time than a two-year associate's degree and culminates in a certificate or credential valued by the local labor market. Some of the programs in the scan offer credits that can be used toward a college degree, while others do not. While these programs were not developed to address equity issues explicitly, they may help nontraditional students attain skills more quickly than traditional community college programs, or help them gain skills better aligned with local employer demands, enabling them start family-sustaining careers and increase their earnings over time. These programs therefore have the potential to address societal economic inequities if they are implemented with equity in mind.

Issues of inequity can occur at a number of points along the education pathway. Accordingly, this brief progresses along the pathway of a typical course of study: from recruitment and enrollment ("access"), to support offered during the program ("persistence and completion"), to what happens after graduation ("outcomes"). It concludes with practice and policy implications and next steps. The brief is intended to provide useful information to administrators, instructors, staff members, and students of community college CTE programs, as well as researchers, advocates, and policymakers who care about promoting best practices in this field. Individuals from those domains may recognize approaches that have been shown to benefit all students; those highlighted in this brief are selected because they also show promise for addressing inequities.

Access: How Recruitment and Screening Can Be Barriers to Equity — or Opportunities to Promote It

Part of the challenge of ensuring equitable access is in reckoning with *systemic*, *institutional*, and *internalized* barriers or biases that create obstacles to access and enrollment. For example, a lack of women and people of color in information technology,[11] especially in more senior positions (which reflects a *systemic* impediment) creates a public perception of IT as a field for white males. Individuals who do not identify with that group may struggle to envision themselves in that field. For example, a female Austin Community College IT student interviewed for this scan said, "When I first signed up for courses, I was already battling mental barriers and feeling like I didn't fit in. When I got into the classroom, it was almost like a mental shutdown." This example provides an illustration of how a lack of diversity can influence individual career decisions through mechanisms of internalized bias.[12] In practice, these mechanisms can lead fewer nontraditional students to apply to certain programs. And if they do apply, screening and eligibility criteria that are not proven to lead to better student

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11 Myers (2018).
12 Correll (2001).

WHAT ARE SYSTEMIC, INSTITUTIONAL, AND INTERNALIZED BIASES?

"Systemic" (also commonly referred to as "structural" or "systematic") racism and biases refer to widespread public policies and cultural norms that perpetuate inequities, particularly where historical injustices contribute to those present-day inequities. "Institutional" biases or racism are policies and practices at the institutional level that put one or more social groups at a disadvantage (for example, school suspension policies in K-12 schools). "Internalized" biases represent the conscious or unconscious acceptance of systemic and institutional biases at the individual level. For more, see Aspen Institute (2016); Pyke (2010).

outcomes can become hurdles that disproportionately and unnecessarily affect those already disadvantaged by other systems, demonstrating how institutional biases can play out.[13]

Before diving into solutions, programs can first take steps to diagnose whether and how inequities are showing up in access and enrollment. For example, Latinx students are underrepresented at community and technical colleges in 40 of the 44 states examined in a recent scan conducted by The Education Trust.[14] One practical approach is to examine whether student body demographics mirror the demographics of the surrounding community.[15]

To respond to some of the systemic challenges, and thereby diversify their talent pools, institutions may need to take affirmative steps such as actively recruiting individuals from underrepresented groups.[16] For individuals like the IT student mentioned previously, community college CTE programs may need to provide extra support to ensure that systemic, institutional, and internalized biases do not deter them from pursuing careers in fields they are interested in. The research team's conversations uncovered several promising practices community college CTE providers can implement to address the various types of access challenges, including making adjustments in marketing and outreach, drawing on student and alumni contacts, and formalizing recruitment roles.[17] Examples of the colleges' strategies in these three areas are discussed below, along with other approaches that have been studied.

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13 Kazis and Molina (2016).
14 Anthony and Elliott (2019). The United States Census defines Latino (masculine) or Latina (feminine) as any person of "Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin." In recent years, research literature and other publications have started using "Latinx" as a broader, gender-neutral reference to this population. See Carnevale and Fasules (2017); Nichols (2017).
15 Nichols and Schak (2019).
16 Mindful advising at high schools could also lead to more diverse college applicant pools, but high school advising is often outside the reach of community colleges.
17 In a strong economy, colleges can face broader recruitment challenges, since individuals with limited skills can find employment relatively easily. The interviews conducted for this scan took place during a period of economic strength and low overall unemployment, which may account for some of the recruitment challenges that interviewees described. However, this context probably does not fully explain the recruitment challenges community colleges are currently facing, particularly in light of systemic, institutional, and internalized biases.

Some community college CTE programs are attempting to shift local perceptions of who "belongs" in certain fields and industries through the use of role models or what they refer to as "near-peer" contacts.

CHANGES IN MARKETING MESSAGES AND STRATEGIES

Recruitment and marketing materials can be powerful lures, but they can also inadvertently dissuade certain groups from applying. For example, if students do not see themselves represented in materials, they may believe a program is not for them. Creating marketing materials that feature individuals from a variety of racial, gender, and age groups — even if that diversity is somewhat aspirational when the materials are created — is an increasingly widespread practice that is not new to postsecondary education. At Valencia College (a large urban college offering certificate programs and two- and four-year degree programs), advertisements for an Accelerated Skills Training program in advanced manufacturing represent the already diverse student body and are also in Spanish to connect with a local community that is predominately Spanish-speaking.

Another strategy is to highlight the benefits of a program. One MDRC study of short-term workforce training programs found that their marketing materials commonly highlight logistics — for example, the length of a program and the support it offers — but do not convey their benefits to individuals. A more successful recruitment and marketing strategy may, for example, highlight the high salary that one can earn on completing the program, the average earnings of graduates, or the opportunities for advancement in the relevant field.[18] A national survey of students and communities found that prospective students value CTE programs for their ability to provide real-world skills.[19] Research at the Aspen Institute showed that many unemployed and underemployed adults are distrustful of higher education advertising, but say they might be convinced to enroll by positive testimonies from peers or by wage and employment data showing that a program can lead to positive results.[20]

NEAR-PEER CONTACTS AND ROLE MODELS

Some community college CTE programs are attempting to shift local perceptions of who "belongs" in certain fields and industries through the use of role models or what they refer to as "near-peer" contacts: that is, contacts between people who are currently enrolled or who recently completed a program and people in the local community with whom they share characteristics. New River Community and Technical College, (a small community college in West Virginia), is attempting to introduce the community to its students and the many programs it has available by hosting a Tech Expo featuring its students and open to the public. The college sees the event and other community service projects as valuable opportunities to recruit, particularly to recruit individuals who may not otherwise have considered those fields.

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18 Kazis and Molina (2016).
19 Advance CTE (2017).
20 Davidson et al. (2019).

Relatedly, students in the IT training program at Austin Community College can get paid internships at the local housing authority. Public housing residents are directly served by the diverse student interns, and in the formal and informal interactions that ensue, some residents can learn more about career opportunities they might not have envisioned for themselves. In one reported example, an intern was visiting an apartment where a child lived with his grandmother. The grandmother shared that the boy had always talked about wanting to be a video game designer. The intern took the boy seriously, explained how it could happen, and used himself as an illustration that it was possible to make a career out of an interest in computers and software. Further research could help determine whether near-peer contacts such as these do, in fact, change the demographics of who applies to CTE programs in these fields.

FORMALIZED AND FOCUSED RECRUITMENT ROLES

One approach some colleges are taking to address equity-specific recruitment challenges is to hire a recruiter dedicated to equity goals. Valencia, which enrolled over 400 students in the last school year in its Accelerated Skills Training program, has a team of six people who recruit students and also help place graduates in jobs through active community engagement. Grand Rapids Community College (a large community college in an urban environment) was able to use a local philanthropic grant to hire a recruiter who is bilingual and does active outreach in communities with high unemployment. One staff member said, "We of course have our marketing materials, but you have to be feet on the ground in the community. You have to be there and know people." For example, at Monroe Community College in Rochester, New York, a grant-funded program adviser now recruits nontraditional students for careers in gendered professions, targeting men for female-dominated fields such as medical assisting or women for traditionally male-dominated fields such as precision machining manufacturing. While recruitment alone cannot upend decades of systemic, institutional, and internalized biases, colleges are hopeful it is a start.

Partnerships also help colleges pursue equity-related recruitment goals. Grand Rapids has a "shared intake" process with community partners to recruit individuals from underserved communities, such as Latinx individuals through the Hispanic Center of West Michigan and people of color through the Urban League. Community partners in turn use their connections to English as a Second Language programs, local nonprofit organizations, and churches to inform the community about opportunities at the college. Through these outreach efforts, the college has also built relationships with community leaders and members. These partnerships do not stop at recruitment, though: Staff members hear from partners about ways to streamline and improve enrollment processes for specific groups. For example, community partners informed the staff at Grand Rapids that local members of the Latinx community are wary of the Free Application for Federal Student Aid (FAFSA — the application for Pell Grants, among other forms of aid). In response, the Grand Rapids recruiter works in the community to build trust and allay those concerns. Again, further research could explore whether these community partnerships are effective in encouraging more Latinx individuals to apply to Grand Rapids' programs.

ENROLLMENT REALITIES AND PURPOSEFUL SCREENING

All students might encounter challenges registering for courses or completing financial aid applications, but nontraditional students often need to navigate complex enrollment systems without the advantage of peers or a community that can guide them. More privileged students are likely to have the added support of friends and family members who are familiar with these systems. One student explained: "Neither of my parents had ever finished high school. My parents can't really help me out with, like, signing up for college, how you find colleges, how you get scholarships — I was pretty much going in blind." Though MDRC's scan did not identify specific approaches to provide added support, some colleges are working to address issues of equity in access for nontraditional students by streamlining their application and registration procedures.

Some of the colleges in MDRC's scan, for example, reexamined their screening criteria. In general, it can be useful for CTE programs to reexamine their admissions and eligibility criteria regularly, to determine why those criteria are in place and whether they are effective proxies for the skills and aptitudes required to be successful.[21] Colleges want to make sure their admissions criteria and procedures do not inadvertently deter or screen out nontraditional students who do possess those skills and aptitudes. To begin with, colleges can adjust admissions procedures to decrease the number of steps required for a participant to gain entry, or otherwise shorten the amount of time required to apply. Lengthy, multistep admissions and enrollment processes can be intimidating for all students, but are all the more so for nontraditional students who may have been out of school for a number of years or who may already be struggling to envision themselves in a certain education or career pathway. Programs can also examine whether their remedial or developmental education course prerequisites are keeping out certain populations of students, and whether students really need to complete those courses before they participate.

The operators of Valencia's Accelerated Skills Training program switched one eligibility requirement from a 4-hour skill test to two 45-minute skill tests once they recognized that the shorter tests predicted students' skill levels just as well. Though a shorter test is likely to benefit all students, nontraditional students may be more put off by a lengthy test because they have less, or less recent, academic experience, or because they have had negative or even traumatic experiences in school.[22] Administrators at Grand Rapids work closely with their local workforce agency and other nonprofit organizations to limit the amount students must travel to enroll in programs and receive funding. To illustrate the point, administrators explained that in a single visit to a local Goodwill Industries location, a person could see a job coach, learn about and enroll in Grand Rapids CTE courses through one of the college's grants, and receive additional Workforce Innovations and Opportunities Act (WIOA) funding from the workforce agency (via a dual-enrollment mechanism).

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21 Rosen and Molina (2019); Davidson et al. (2019).
22 Henderson and Lundford (2016).

Administrators can also approach students more flexibly. If students interested in enrolling in Monroe's Accelerated Precision Tooling program do not meet a minimum threshold on a skill test, instructors meet with them to understand their motivation for applying and to assess whether there are other factors that indicate they could be successful. Administrators can use this information to make exceptions to admission criteria. Outside of the CTE field, this approach has gotten attention already under the name "multiple measures": taking into account a broader set of criteria through which applicants can demonstrate readiness.[23] It may show promise in the CTE context as well.

Persistence and Completion: How Inequities Show Up — and Are Being Tackled

Equitable enrollment in a program does not guarantee equitable completion and graduation rates across groups. Persistence rates in community college and graduation rates continue to be unequal across racial groups among students enrolled in community college and seeking degrees.[24] Less is known about persistence and completion rates by race and gender in community college CTE courses and programs. However, some colleges interviewed already implement broadly successful, evidence-based strategies to encourage persistence, such as creating learning communities (small groups of students who enroll at the same time and take at least two classes together),[25] providing financial support,[26] creating block schedules with predictable class meeting times (such as from eight a.m. to two p.m., Monday through Friday),[27] and abbreviating program durations. To ensure that students across different population groups all achieve high completion rates, colleges are also implementing coaching and case management for students whom they believe may benefit from extra institutional support. As described below, the community college CTE programs included in MDRC's scan use a variety of these practices to target specific populations with the goal of helping nontraditional students and students of color complete at equitable rates.

SUPPORTIVE PEER NETWORKS

Any student may face academic or scheduling challenges; students who are the first in their families to obtain a postsecondary education may not have the same social support or access to information as others to help them meet those challenges. Organizing students into cohorts (that is, keeping together students who enroll at the same time) may help address this disparity. Students at New River, Monroe, and Valencia reported that cohort structures and smaller class sizes enabled them to

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23 Cullinan et al. (2018).
24 Blom and Monarrez (2020).
25 MDRC (2010, 2012); Weissman et al. (2009).
26 Mayer, Patel, Rudd, and Ratledge (2015); Gupta (2017).
27 Lumina Foundation (2011).

connect with and support each other academically. As a New River student explained, "It's a lot easier to make connections in a smaller class size, and this comes in handy when you need extra support or if you miss anything." Some Monroe students said that they help each other understand concepts and that "by helping each other, it helps cement [the teaching]." While cohort structures for CTE classes have been implemented in numerous settings without the explicit intention of addressing equity issues, in the colleges MDRC visited, they appeared to have the effect of creating supportive academic communities that nontraditional students often otherwise lacked. MDRC has studied cohort structures in the context of general community college programs and has found that they did seem to have this effect: Students who took classes as a cohort were reported to have high levels of engagement and were more likely to stay enrolled.[28]

> "We're a pretty close-knit group, so we all help each other. If somebody, you know, is [grasping] something quicker than another guy, you can [reach out] to them and find out what worked for them and save 20 minutes." — Monroe Community College student in the Accelerated Precision Tooling program

SUPPORTIVE STAFF AND FACULTY NETWORKS

Several colleges identified that students may benefit from support individually tailored to their backgrounds and needs. At Grand Rapids, for example, a team of counselors serves students in CTE programs. As one counselor said, they are there to coach students throughout the entire process, including supporting them as they decide which pathway to pursue. "We definitely take more of a hand-holding approach where we want to meet the students from the second they [express interest]. We meet with them, try to build that relationship by asking them, 'Where do you want to go?' and [providing] some ways that [they] can get there. Just like a coach in a sports game, you're giving them different plays." At Monroe, advisers provide students counseling and career guidance, gas cards, gift cards for the dining halls, and referrals to other community providers.[29] As one student said of Valencia's Accelerated Skills Training program: "Everyone is very supportive. They want you to succeed. It has heart, it's not just a machine."

Other colleges try to identify outside partners who can provide the additional support students may need. One college administrator explained, "We had to figure out early on that we can't be the social service agency," and said the college instead focuses on "finding the connection to those people [at partner agencies] who can help." In Austin, the community college CTE program has a strong partnership with a local nonprofit organization that provides counseling and financial support. The counselors there provide different kinds of support depending on students' grades, housing situations, and other related factors, many of which are associated with broader inequities.

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28 Weiss et al. (2014).
29 Counselors at both Monroe and Grand Rapids' programs are supported in part through a federal America's Promise Grant, aimed at accelerating workforce partnerships in in-demand industries.

Students also described teachers as important sources of support professionally, academically, and sometimes personally: "The instructors 'make' this program: [they're] so personable. They really want you to understand it … so, they make everything relatable for us through stories." To ensure that this type of support is tailored to students, some colleges have "early alert" systems so that instructors and staff members can flag warning signs that students are struggling. Staff members and students at many colleges (including Monroe, Valencia, and New River) said it was important for programs to have relatable and caring instructors who can identify when students are struggling and provide appropriate support or referrals.

Again, while relationships with instructors are crucial for all students, observations and interviews at the colleges in MDRC's scan suggested that they are all the more important for nontraditional students and students of color. These relationships can reach students even more deeply when instructors have overlapping identities or similar life experiences as their nontraditional students. These commonalities can help instructors and students relate to and empathize with each other and counteract biases. A number of studies in K-12 schools indicate that students of color benefit from being assigned teachers of color, which may suggest that a similar pattern could be observed in higher education and CTE as well.[30] Colleges can therefore make a point of hiring diverse faculty and staff members or those from nontraditional backgrounds. To ensure that faculty and staff members can support nontraditional students (and do not fall prey to unconscious biases), Valencia's organizational development engages them in ongoing, structured conversations and "reading circles" focused on equity and inclusion.

Finally, on-campus clubs are another way nontraditional students can receive support. El Camino College is a two-year community college near Los Angeles. There, students can take part in a chapter of the Society of Women Engineers, a national organization focused on empowering and advocating for women in engineering and technology.

CONVENIENT COURSE SCHEDULING

> "After this class I just have one more auto class. Originally, I was going to take it last semester, but they never offered one and I never got into another. So I missed that class and now I have to wait until next spring to take that one class I need to graduate. If you miss it, it can be a long time" — El Camino College student in an automotive technology program through the college's Career Advancement Academy

Some students reported that it can be challenging to take classes that meet across far-flung campuses or that must be taken in certain sequences. Students who are working part-time jobs to make ends meet, for example, or who rely on public transportation will have less wiggle room with scheduling. Cohort scheduling (scheduling students who enroll together for the same courses) and block scheduling (clustering classes into predictable meeting times) may address these challenges because the

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30 Villegas and Lucas (2005).

Colleges are finding ways to shorten the total amount of time it takes for students to complete programs, with the hope of being more responsive to local labor demand while also reducing the burden on students.

practices remove some of the uncertainty related to enrolling for classes and provide those classes conveniently in one central place.

Of course, while cohort and block scheduling can reduce the logistical burden on students, administrators also reported they are challenging to implement, and in a few cases were abandoned as a result. Facing this reality, instead of adopting these strategies, Austin Community College employs a part-time program director for its IT training program who acts as an in-house advocate, coordinating with department heads to rework course schedules and requirements and address scheduling issues as they arise. This approach builds on recent guidance from the Aspen Institute, which suggests that one element of a strong community college CTE program is giving students clear guidance on course sequencing.[31]

SHORTER PROGRAM DURATIONS

Colleges are also finding ways to shorten the total amount of time it takes for students to complete programs, with the hope of being more responsive to the local labor demand while also reducing the burden on students of being in school for a prolonged period. For example, Monroe was able to ensure that its previously 30-week, for-credit CTE track continued to grant college credits even after it was accelerated to 22 weeks. It did so by eliminating general education classes from the program, since Monroe determined they were not necessary for graduates of its Accelerated Precision Tooling program to find employment and succeed on the job.[32] Essentially, these students graduate with "half an associate's degree" and can come back in the future to take the general education courses and complete the degree.

Colleges MDRC researchers visited are also setting up credit-building pathways so students have the option to use their "seat time" in the CTE programs toward higher education degrees later on. For example, West Virginia University at Parkersburg (a small community college) was able to assign credits for previously noncredit courses thanks to recent legislation intended to promote postsecondary education. These credit hours currently count toward elective/general credit requirements, but the college is working to link them with specific and relevant courses and departments. In addition, staff members at several schools, including Monroe, Grand Rapids, and Valencia, have worked to ensure that students can obtain credit for work experience to speed them through their CTE programs and help them obtain college-level degrees in the future.

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31 Davidson et al. (2019).

32 "General education" courses are non-major-specific courses such as math or English.

FINANCIAL SUPPORT

Most students need financial support during school. They have tuition expenses, of course, which many nontraditional students cannot pay out of pocket. Many students also need survival income for living expenses, books, child care, and transportation, which are often left out of financial aid packages.[33] On top of that, the financial aid system can be difficult to navigate and can be set up with extra requirements that impose costs, such as drug tests students may have to pay for out of pocket. Research points to the benefits of financial support.[34] For example, in MDRC's study of performance-based scholarships, modest scholarships (ranging from a few hundred dollars to $1,500 per term) improved academic progress and degree completion for low-income students.[35]

Yet many community colleges face underfunding challenges. Unlike the academic programs at community colleges, many CTE programs do not qualify students for Pell Grants. Community colleges have to get creative in seeking funding sources.

Some programs coordinate paid work-based learning experiences, such as internships and apprenticeships, that typically take place while students are still in a CTE program. New River takes advantage of a state-sponsored "learn and earn" program through which students receiving electrical lineman training can earn college credit and wages while interning full time with local employers.[36] The company and the college share the cost of interns' pay. As mentioned, Austin Community College coordinates paid internships at local housing authority offices. Again, arranging for opportunities where students can earn money and work experience while attending a program — while not a new practice — may be particularly important for nontraditional students who may not have other forms of financial support, and can therefore have implications for equity.

The costs of textbooks, transportation, and child care can all weigh heavily on nontraditional students, particularly those from economically disadvantaged backgrounds. To address these costs, many of the programs interviewed rely on partnerships with local nonprofit organizations. As mentioned previously, Austin Community College has developed a strong partnership with a local organization to provide students with counseling and financial support, including funds for tuition as well as nontuition needs such as transportation and child care. The partnership reduces (and ideally eliminates) the amount of debt students accrue during school. Evidence from MDRC's studies of Accelerated Study in Associate Programs shows that helping students (including nontraditional students) with nontuition costs while providing academic and advising support contributes to students' success,[37] which suggests that similar forms of support may be fruitful in the CTE context as well.

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33 Palmer and Dancy (2017).
34 Ford, Grekou, Kwakye, and Nicholson (2014).
35 Mayer, Patel, Rudd, and Ratledge (2015); Hallberg (2019).
36 West Virginia Community and Technical College System (2020).
37 Gupta (2017); Miller, Headlam, Manno, and Cullinan (2020).

Of course, colleges can only depend on local nonprofit and community-based organizations if those organizations exist and themselves have resources, which may not always be the case in the communities around small and rural community colleges. If they cannot find well-funded partners, or if they want to offer financial support in-house, colleges may seek grant funding, but it can then become a challenge to sustain the support beyond the specific grant. In those cases, policy changes may help. For example, New Jersey's recent expansion of Supplemental Nutrition Assistance Program assistance to community college CTE students addresses hunger and food insecurity in a durable way that is independent of local service providers.[38] Community college CTE programs can also coordinate with state and local workforce agencies in the development of "career pathways" required under the Workforce Innovations and Opportunities Act; low-income CTE students in these career pathways programs can then benefit from WIOA-funded support services.[39]

STRATEGIES TO HELP STUDENTS WITH ACADEMIC HURDLES

Academic and content challenges are additional factors that may lead students to drop out of community college programs.[40] For example, among students who are identified as underprepared and directed to developmental education courses, only 28 percent complete associate's degrees within eight years.[41] To ensure that New River's required college-level math and English courses do not become avoidable barriers to completion, the college's electrical lineman program has customized the math and English curricula to its technical content, and if additional developmental education classes are required, they run concurrently with the college courses as corequisites. Positive effects of corequisite models in general academic programs in New York City and Tennessee suggest that they may bear promise for CTE programs, as well.[42]

To support English language learners, Grand Rapids is integrating English language programs offered in partnership with a local literacy organization into several of its CTE tracks. Students in these programs must meet a minimum threshold of English language competency and then practice their English through content tailored to the track's industry.

Outcomes: What Happens After Graduation

In matters of equity, what happens after students complete training is crucial. Racial and gender-based wage gaps have been widely demonstrated. Research has demonstrated that sectoral training programs that include a number of specific features (for example, an explicit focus on career-

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38 State of New Jersey Department of Human Services (2018).

39 Association for Career and Technical Education (2015).

40 Holzer and Baum (2017), p.55; Crosta (2013).

41 Jaggars and Stacey (2014).

42 Logue, Watanabe-Rose, and Douglas (2016); Ran and Lin (2019).

advancement coaching), can lead to increases in employment and earnings over time.[43] But research also shows lingering inequities in the earnings and employment outcomes of individuals with nondegree credentials, depending on the industry and credentialing institution.[44] On top of that, students who do pursue careers in fields that are not traditional for their genders or races may struggle to feel a sense of belonging in both the classroom *and* workplace, which can affect employment retention and advancement. Some community colleges in MDRC's scan are actively addressing these inequities by supporting job placement and offering postemployment support, and by reinforcing to employers the value of diversity and inclusion. The following examples illustrate these tactics.

JOB PLACEMENT

Once students graduate, do they have the resources and connections to find good jobs? The significant impact of social networks in labor markets has been well documented,[45] and in matters of equity across race, gender, and socioeconomics, relatively privileged students are more likely to have social connections that they can use to connect with employers than are traditionally disadvantaged students.[46] Instructors often fill this role informally, providing students with referrals and even connecting them with job opportunities from their own professional networks — as several instructors reported doing in the programs interviewed for this scan. In addition, at Austin Community College, an alumnus of the CTE program now works at a local company and frequently taps the program for talent. This example shows one way that programs can use their own growing social networks to connect students with opportunities. Finally, Grand Rapids has been able to combine multiple funding sources — including two large federal grants (America's Promise and Trade Adjustment Assistance Community College and Career Training) — to hire two job developers; program staff members are now working to make the case to keep those two people after the grant funding ends.[47] These job developers manage a combined caseload of over 300 students a year, and their focus on health care professions allows them to connect students directly with employers. The services they provide are in addition to the résumé and job-application support available to all students through at the college's employment services team.

Outside of job development, colleges are working to connect employers and students through internships, work experiences, and networking events. New River's Tech Expo — mentioned earlier in this brief as a recruiting event — is also an opportunity for students to showcase their skills and talents and meet with prospective employers. Many students were reportedly offered jobs on the spot. In addition, some colleges see internships and other work experiences as opportunities for students to build professional networks they can use to get future employment.

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43   Hendra et al. (2016). Career-advancement coaching is just one feature of this model and cannot be isolated as the feature that is causing positive impacts in employment and earnings.

44   Grossman et al. (2015); Stevens, Kurlaender, and Grosz (2018); Belfield and Bailey (2017); Baird, Bozick, and Zaber (2019); Dadgar and Weiss (2012); Deming et al. (2016).

45   Calvo-Armengol and Jackson (2004).

46   Pastor and Marcelli (2000).

47   Job developers focus on moving people into employment by working with employers to identify their needs.

Colleges must collect follow-up data if they are to learn whether graduates are earning equitable wages after they leave programs.

SUSTAINED CONTACT AFTER EMPLOYMENT

Several college administrators said that while all students enter programs intending to complete them, some leave early when they are offered employment opportunities. Funding and accountability metrics may view these early exits negatively even if students are leaving for good jobs. Administrators at Monroe and several other colleges are therefore working to keep track of wage outcomes as more reliable indicators of success. As they do so, educators, researchers, and stakeholders should pay attention to whether those wages are equitable across race and gender, since in many professions race- and gender-based biases translate into differences in how people are treated, paid, and considered for advancement.[48] In general, colleges must collect follow-up data if they are to learn whether graduates are earning equitable wages after they leave programs.

There are other benefits to sustained contact after students leave a program: Research suggests that postemployment support may help new employees stay on the job longer and build experience.[49] The colleges in MDRC's scan largely expressed a desire to offer more postgraduation support, though many community colleges are not set up to provide it. Some colleges are taking steps to do so, however. Some are adopting the best practice of reducing the number of "handoffs" across different staff members by assigning each student a primary person to be in touch during and after the program.[50] At Valencia, administrators explained that, "As much as students love you, after they leave you and they have their certificates in their hand, it is really hard to communicate with them, and so another benefit to working really hard on the front end for graduation is that we're able to keep in contact with them about what's going on with their employment." Grand Rapids' job developers fill this role by meeting with students during the training program to help them develop their résumés, search for jobs, and hone their interviewing skills. This same staff member follows up with students after they graduate; the intention is that students' familiarity with this staff member will encourage them to remain in touch.

Once programs have relevant data, further research could explore whether staying in touch is an effective strategy that leads to better academic and employment trajectories over time. As noted in other work conducted by MDRC's Center for Effective CTE, better and more nuanced data collection and analysis — including examining the outcomes of subgroups defined by race and ethnicity, gender, or socioeconomic status — is an important start to measuring whether program outcomes are equitable across groups.[51]

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48 Pager and Shepherd (2008); Jameel and Yerardi (2019); Washington Center for Equitable Growth (2017); Lam (2019).
49 Hendra et al. (2016).
50 Kazis and Molina (2016).
51 Dalporto (2019).

As one administrator said, "Students want teachers that look like them."

PARTNERSHIPS TO PROMOTE DIVERSITY AND INCLUSION ON THE JOB

Community colleges are not the only institutions increasingly interested in diversity, equity, and inclusion in education and the workplace. In part because of a tight labor market, employers are expressing interest in being more inclusive, as well. In response to that interest, Grand Rapids partnered with a local hospital and others in the community to identify assessments that could be used to make better hiring decisions and address unconscious biases common in hiring practices. This approach is now being expanded to other businesses. Internally, the college has also developed strategic leadership teams for recruiting and retaining faculty members of color; as one administrator said, "Students want teachers that look like them."

Administrators at Northeast Wisconsin Technical College, one of the community colleges interviewed by phone for this scan, reported that employers have approached the college seeking information and training on how to become more inclusive. In response, the college has established a committee devoted to providing that information and training, including encouraging employers to add training in cultural awareness, how to be inclusive, and ways that privilege can manifest.

Of course, not all employers and employees have the desire for more diversity. For example, one employer noted that while its leaders see the value in diversity, equity, and inclusion training, employees sometimes do not. For example, the company hosted training in unconscious bias that included notes about "white privilege," but "it was hard [for white employees] to hear that they're privileged when they're making entry-level wages." Moreover, one college speculated that when employers cite "soft skills" as the reason they do not want to hire certain individuals, it is a euphemism for not wanting to hire someone who is different from their typical employee. What's more, colleges are sometimes confronted with blatant discrimination. One staff person reported that an employer had said, "I'm not hiring any blacks today."

While these reports can be dispiriting, there is reason to be encouraged. Especially in a strong labor market, colleges are well positioned to make fair hiring practices a requisite for referring graduates for openings. And colleges like Northeast Wisconsin Tech have started inviting employers to training sessions and discussions on campus about privilege, inclusivity, and getting "comfortable with being uncomfortable" in conversations about diversity, equity, and inclusion.

In occupations where there are few people of color, new employees from underrepresented groups can struggle to acclimate and feel that they belong. At Grand Rapids, coaches are attempting to share lessons about diversity and inclusion with students and relay guidance about letting "your voice be heard in a workplace that's not diverse." Counselors at New River have taught workshops on sexual harassment, and for one cohort, the local workforce agency provided a weekly workshop that covered a variety of topics, including how to appreciate working with those who may be different from you. One of Austin Community College's employer partners encourages interns to see "strength in their diversity" and "diversity as a competitive advantage," as it enables them to contribute different ideas

and suggest alternate processes. The partner elaborated that "[the interns] tend to think that they're performing well if they don't make waves, don't ask questions," which the partner attributed to the types of jobs many of them have held before or societal norms in which they are pressured to comply or not challenge people they consider to be their superiors. The employer partner sees its role as one of helping students shift their mindsets and see themselves as "knowledge workers" by asking questions and contributing insights.

What's Next: Practice and Policy Implications

MDRC's scan of innovative community college CTE programs revealed that these programs and their colleges are increasingly committed to achieving equity goals. It also revealed some common practices they are adopting to increase opportunity in an equitable way and reduce equity gaps. The practices apply to various points along the education pathway, from outreach and recruitment to postemployment support. While these practices appear innovative and promising, it is not yet known whether they lead to positive effects for nontraditional students and students of color in relation to outcomes such as enrollment, persistence, credential attainment, job placement, and earnings. Some of these ideas and practices may warrant more rigorous research to begin to build stronger evidence about their effectiveness. Additionally, some of these practices require resources or flexibility that may be prohibitive for some colleges, so further exploration may be needed to address how they can be adopted on a larger scale if they are deemed worthwhile.

Meanwhile, MDRC's scan suggests that there are steps that community colleges can take to reduce inequities within the confines of current structures and funding. First, colleges are likely to have more flexibility and resources to focus on access rather than completion, as innovations related to providing equitable access are likely to be less expensive overall and less bound by regulations than changes to class and credit structures. Changes in marketing messages — such as emphasizing the benefits of a program rather than its logistics — can be a low-cost way to promote programs among nontraditional students and students of color. Likewise, any community college could use alumni and community partners to recruit in underserved local communities. It is useful to hire a recruiter who can spend significant time in underserved communities, developing relationships and gaining access to audiences of potential students, but it takes dedicated funds, so not all colleges may be able to afford it.

CTE programs can also work on developing better systems to support these prospective nontraditional students through potentially complex application and enrollment processes, to ensure that they are not lost between recruitment and enrollment. They may want to give those enrollment-support responsibilities to recruiters or other staff members or partners whom prospective students encounter early on. Programs can also review their eligibility criteria and screening procedures to be sure they are not turning away nontraditional students who have the potential to succeed.

CTE programs considering any of these innovative practices will need two things: money and data.

Of course, taking steps to increase equitable access to CTE programs will only lead to equitable outcomes if students do well once they are enrolled. Strategies to support equitable persistence in and completion of quality CTE programs generally require more structural changes to the programs and more money. Some colleges may be able to accelerate their CTE programs, offer them with cohort scheduling and block scheduling, or ensure they grant credits that count toward college degrees, and others may not. Likewise, some colleges may be able to offer dedicated case management and coaching and additional financial support for nontuition expenses, and others may not. Most of these strategies require funding levels that may not be covered by state and local funding streams for CTE (as do some interventions and support services focused on postgraduation outcomes). But for the colleges that can undertake them, the strategies do warrant additional research and exploration.

Next, community college CTE programs should work to ensure that these strategies to address access and persistence translate to equitable initial employment. There are a number of approaches they can try. For example, they can choose faculty members with strong connections to the relevant industry, who can then draw on those relationships on behalf of their nontraditional students. They can offer work-based learning opportunities to nontraditional students, which may help those without extensive professional networks make connections in their fields that could lead to permanent jobs. Or they can hire full-time job developers to place graduates into jobs in their fields.

Finally, with appropriate funding, programs can promote equity by offering postemployment services to help former students stay in jobs and advance in their careers. A program could designate a staff member — perhaps a coach, case manager, or job developer — to coach graduates on these topics after they find employment. Such postgraduation and postemployment support could build on comparable practices and research in workforce development. This approach may also support the work that many community colleges are doing to establish noncredit-to-credit pathways, helping to encourage nontraditional CTE graduates to take advantage of earned credits and continue their studies in pursuit of a degree.

CTE programs considering any of these innovative practices will need two things: money and data. College administrators interviewed as part of MDRC's scan agreed that stable sources of funding, including from reliable federal and state sources, would allow them to invest in promising practices and support services that could benefit all CTE students, and nontraditional students and students of color in particular. The National Skills Coalition recommends a number of state policies that could make funding available to help students earn quality nondegree credentials. For example, states could define "quality nondegree credentials" in a way that allows colleges to use state tuition-assistance funds for programs that meet local and regional labor market demands. States can also establish policies that help students address their needs in transportation, child care, nutrition, and housing, among

other areas, all of which would be essential to close equity gaps.[52] This kind of attention and commitment from policymakers would help community college CTE programs achieve equity goals.

As for data, programs operators can only adjust programs to meet equity goals if they know where they are hitting and missing those goals. There are currently only limited data available on the extent of the equity gaps in community college CTE programs, so practitioners have an opportunity to contribute greatly to the field's understanding. They can begin by tracking and analyzing whether disparities across specific groups exist in program participation and outcome data.[53] They can select a characteristic — say, gender — and explore whether their data show clear differences in outcomes between groups. Do their recruitment strategies succeed in bringing more nontraditional students into these programs? Does the support they provide help such students persist in and complete their programs at rates comparable to their more traditional peers? Do these students find work in their fields, and do they stay on the job, advance in their careers, or pursue continued education at equitable rates? Once practitioners begin to have a clearer picture of equity gaps, there is a good deal of evidence they can turn to about promising and effective practices in community college associate's degree pathways and workforce programs (though there is much less on the effectiveness of practices specifically in community college CTE programs, and even less on whether practices are equitably effective across groups).

Broader progress toward equity will require commitments at the state and federal levels and among colleges, funders, and employer partners to elevate equity-related goals and fund the efforts to achieve them. In the meantime, through a combination of innovations in research, policy, and practice, community college CTE programs can begin to advance toward equity in their programs and for their students.

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Acknowledgments

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