



Data Insights to Improve Racial Equity in Online Postsecondary Career and Technical Education

Research and Learning from CTE CoLab

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Credit-bearing career and technical education (CTE) at community and technical colleges provides workforce training for students pursuing postsecondary certificates and degrees. Research has demonstrated that CTE credentials result in positive labor market returns on average (Minaya and Scott-Clayton 2020)—but positive returns are not evenly distributed between students of color and white students. Even though CTE students are more likely to be Black or Latinx¹ than all students in community and technical colleges, they have lower rates of degree completion, job attainment, and earnings than white CTE students in the same programs; and these disparities are larger among students in programs offered partially or fully online (Anderson et al. 2021). Differentials by race result from structural racism and systemic and institutional barriers. As online and hybrid education persists as a popular education modality, including in CTE programming, it is important to address these barriers that produce inequities.

The CTE CoLab and the College Community of Practice (see box 1) provides additional insights about racial equity gaps in postsecondary CTE programs, especially those offered partially or fully online. Initial insights from national survey data and existing literature appear in the CTE CoLab project's landscape scan (Anderson et al. 2021). Research from the CTE CoLab confirmed and contextualized many of those preliminary findings through analysis of student data, and it also documented instructor perspectives on how to promote racial equity in online and hybrid courses and programs.

Key points in this brief include the following:

- Online learning continues to be more popular following the pandemic.
- Hybrid courses (combination of online and face-to-face) in the CTE CoLab have better student outcomes overall, relative to fully online or face-to-face courses.

- There are racial equity gaps in CTE student outcomes, nationally and at CTE CoLab colleges.
- Addressing racial equity gaps in postsecondary CTE requires action at various levels:
 - » Instructors are the first line of support for CTE students.
 - » Programs can identify opportunities to support students.
 - » Institutions are the next frontier in addressing racial equity gaps in CTE outcomes.

Key recommendations based on the findings in this brief include a need to

- understand racial equity gaps in student outcomes,
- design courses for equity,
- support equity consciousness at a broader system level, and
- conduct further research on effective approaches.

More details on these recommendations appear in the final section.

BOX 1

The CTE CoLab and the College Community of Practice

About the CTE CoLab

The CTE CoLab aims to reduce equity gaps for students of color—especially students who are Black, Latinx, or Indigenous—enrolled in credit-bearing online postsecondary CTE programs. The CTE CoLab is funded by ECMC Foundation, and it is a collaboration led by the Urban Institute in partnership with the following organizations: World Education, a division of JSI, the National Council for Workforce Education, the University of Pittsburgh School of Education,^a the Instructional Technology Council, the National Coalition of Advanced Technology Centers, and Sandra Grace Consulting LLC. This coalition supports the College Community of Practice—a group of community and technical colleges—to build knowledge, prioritize equity in program goals and delivery, and develop and share resources to improve education and career outcomes in online CTE programming. Learn more at <https://ctecolab.org/>.

Colleges and Programs by Sector

Business and Public Sector

- CUNY Kingsborough Community College (New York), criminal justice
- Nicolet College (Wisconsin), business management
- Olive-Harvey College (Illinois), cannabis education

Information Technology (IT) and Digital Focus

- Chippewa Valley Technical College (Wisconsin), IT software developer
- Diablo Valley College (California), art digital media
- Onondaga Community College (New York), health information technology
- Wake Technical Community College (North Carolina), network management

Early Childhood

- Community College of Aurora (Colorado), early childhood education
- Modesto Junior College (California), child development

Mechanical Technology

- Fletcher Technical Community College (Louisiana), machine tool technology
- Mt. San Jacinto College (California), water technology
- WSU Tech (Kansas), machining technology

^a The Office of Community College Research and Leadership at the University of Illinois Urbana–Champaign was originally a partner before the partnership transitioned to the University of Pittsburgh School of Education.

CTE CoLab Used Data to Inform Colleges’ Racial Equity Goals

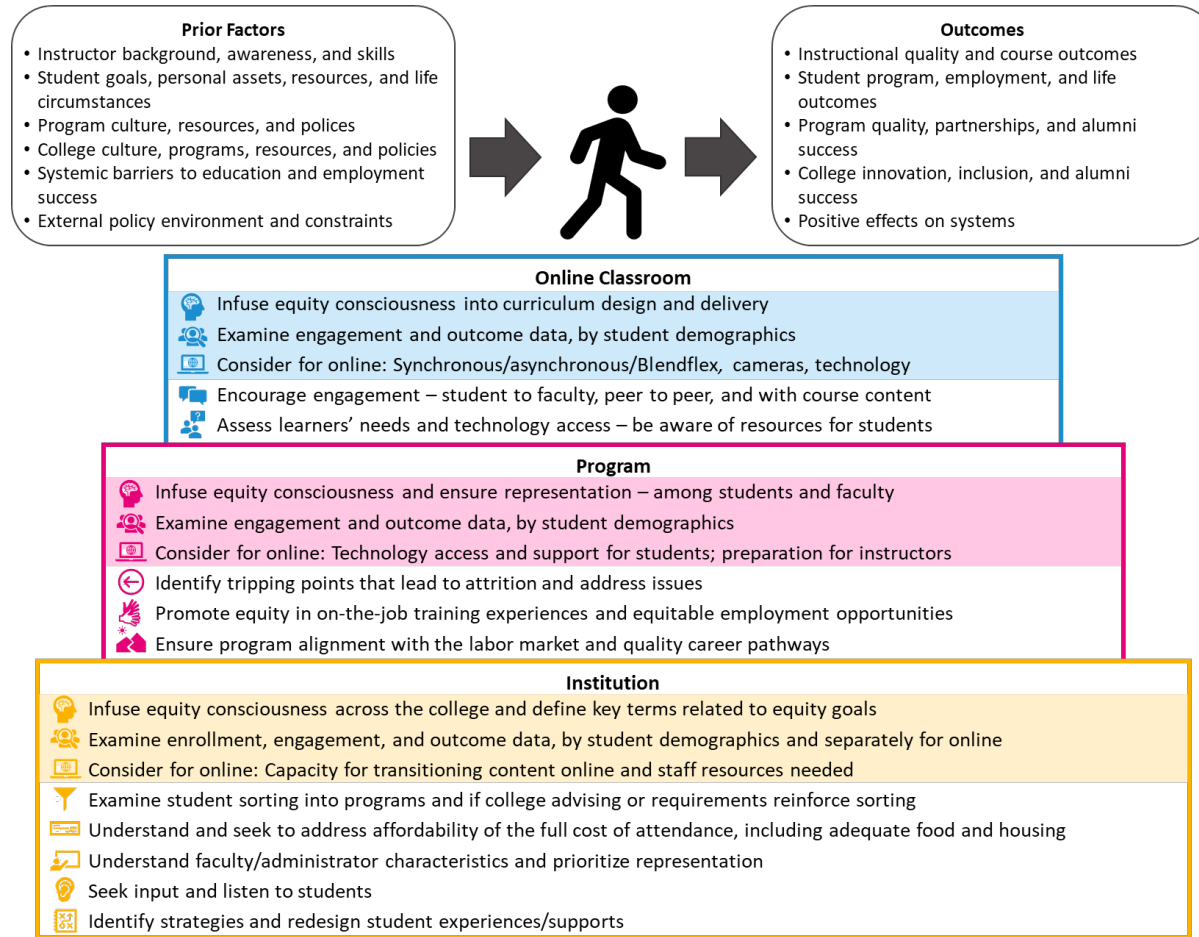
In the CTE CoLab landscape scan, we documented racial equity gaps among students in CTE programs, particularly online and hybrid programs, based on national data and existing literature (Anderson et al. 2021). We also developed a preliminary framework that formed a theoretical basis for the CTE CoLab (see figure 1). The project then supported a national pulse (i.e., rapid-response) survey of postsecondary CTE programs about anticipated changes in coursework modalities (e.g., fully online, fully in-person, and hybrid) and related considerations (Briggs, López, and Anderson 2021).

Twelve community and technical college programs from across the country joined the CTE CoLab CCP through a competitive selection process. Participating programs shared student academic data with the Urban Institute for calendar years 2021 and 2022 (i.e., spring 2021 through fall 2022) and provided insights on the structural gaps within their programs through an ongoing coaching engagement and targeted interviews. The Urban Institute, with the CTE CoLab colleges, fielded two rounds of instructor survey in fall 2021 and fall 2022 (Anderson et al. 2022). The survey documented faculty characteristics, classroom practices, familiarity and comfort with racial equity concepts, and program challenges related to racial equity.²

In addition to using the research insights from the Urban Institute to support their racial equity work, many participating programs also conducted their own student surveys and focus groups to better understand student experiences. They used these tools to develop goals, create an Equity Action Plan, and implement changes to achieve greater racial equity, which is detailed in [“Practice Insights to Advance Racial Equity in Online Career and Technical Education \(CTE\): Lessons from the CTE CoLab”](#) (hereafter referred to as the “CTE CoLab practice report”).

FIGURE 1

Preliminary Framework of Equity Strategies to Promote Student Success in Online Postsecondary CTE Pathways



URBAN INSTITUTE

Source: Theresa Anderson, Amanda Briggs, Shayne Spaulding, Eboni Zamani-Gallaher, and Daniel López, “Racial and Ethnic Equity Gaps in Postsecondary Career and Technical Education” (Washington, DC: Urban Institute, 2021).

Note: CTE = career and technical education.

In this brief, we summarize key findings from the various research components of the CTE CoLab. We build on initial findings from the landscape scan to provide a resource for those interested in promoting racial and ethnic equity in postsecondary CTE, especially for online and hybrid programs. In each section, we use those findings as context to understand data from participating colleges. We begin by framing issues of racial equity and online/hybrid learning in postsecondary CTE, followed by insights about racial equity gaps in CTE student outcomes from national and CTE CoLab data. We then provide strategies from instructor surveys and other data on how to address these opportunity gaps. We close with a discussion about how colleges can push the work forward to continue to promote racial equity and equal opportunity. (Box 2 defines key terms.)

BOX 2

Key Terms

Career and technical education refers to for-credit, postsecondary career and technical education programs offered at public community and technical colleges.

CTE students refer to students enrolled in for-credit courses who have declared a major in a CTE field of study, which align with 13 occupational fields defined by the National Center for Education Statistics.

Equity Concepts

Culturally responsive teaching involves conscious awareness that culture is at the heart of education—in curriculum, instruction, administration, and performance assessment (Gay 2018).

Equity consciousness is the process of recognizing that practices and policies have not been designed to promote equity and that intentional strategies are required to meet the needs of students of color and improve outcomes (Bensimon 2018; Liera and Dowd 2019; McNair, Bensimon, and Malcom-Piqueux 2020; Zamani-Gallaher 2020).

Equity is the fair treatment, access, opportunity, and advancement of all people, while simultaneously striving to identify and eliminate barriers that prevent the full participation of some groups. The principle of equity acknowledges that there are historically underserved and underrepresented populations and that fairness in the unbalanced conditions of these groups is necessary to provide equal opportunities to all groups.^a

Institutional, systemic, or structural barriers are obstacles that collectively affect a group disproportionately and perpetuate or maintain stark disparities in outcomes. These obstacles can be policies, practices, and other norms that favor an advantaged group while systematically disadvantaging a marginalized group (Simms et al. 2015).

Opportunity gaps or equity gaps are ways that uncontrollable life factors, such as race, language, economic, and family situations, can contribute to lower rates of success in educational achievement, career prospects, and other life aspirations.^b

Structural racism refers to the historical and contemporary policies, practices, and norms that create and maintain white supremacy.^c Structural racism continues to disproportionately segregate communities of color from access to opportunity and upward mobility by making it more difficult for people of color to secure quality education, jobs, housing, healthcare, and equal treatment in the criminal justice system.

Online Education Concepts

Online education is a learning environment in which technology facilitates interactions between teachers and students who are separated by time or space. It ranges from hybrid/blended instructional approaches to fully online courses and programs. In this brief, we treat the terms “online education,” “online learning,” and “distance education” as interchangeable.

An **online course** is a course that is taught virtually. Online course-taking can mean completing one fully online course during a semester or participating in a fully online program.

An **online program** is a program of study in which all courses are taught virtually.

Hybrid/blended instructional approaches combine online and face-to-face courses.^d

Sources:

- Bensimon, Estela M. 2018. “Reclaiming Racial Justice in Equity.” *Change: The Magazine of Higher Learning* 50 (3–4): 95–98.
- Gay, Geneva. 2018. *Culturally Responsive Teaching: Theory, Research, and Practice*. 3rd ed. Multicultural Education Series. New York: Teachers College Press.
- Liera, Román, and Alicia C. Dowd. 2019. “Faculty Learning at Boundaries to Broker Racial Equity.” *The Journal of Higher Education* 90 (3): 462–85.
- McNair, Tia B., Estela M. Bensimon, and Lindsey Malcom-Piqueux. 2020. *From Equity Talk to Equity Walk: Expanding Practitioner Knowledge for Racial Justice in Higher Education*. Hoboken, NJ: Wiley.
- Simms, Margaret C., Marla McDaniel, Saunji D. Fyffe, and Christopher Lowenstein. 2015. *Structural Barriers to Racial Equity in Pittsburgh: Expanding Economic Opportunity for African American Men and Boys*. Washington, DC: Urban Institute.
- Zamani-Gallaher, Eboni M. 2020. “Ensure Students Are Learning: Asset-Based, Equity-Minded Approaches to Teaching and Learning.” *Issue Brief: Number 1*. Austin, TX: Center for Community College Student Engagement & Office of Community College Research and Leadership.

Notes:

- ^a“Diversity, Equity and Inclusion Glossary,” University of Washington, College of the Environment, accessed June 2, 2023, <https://environment.uw.edu/about/diversity-equity-inclusion/tools-and-additional-resources/glossary-dei-concepts/>.
- ^b“Opportunity Gap,” Close the Gap Foundation, accessed June 2, 2023, <https://www.closesthegapfoundation.org/glossary/opportunity-gap>.
- ^c“Structural Racism,” Urban Institute, accessed June 2, 2023, <https://www.urban.org/tags/structural-racism>.
- ^d“Blended Learning, Hybrid Learning, the Flipped Classroom ... What’s the Difference?,” Panopto, July 26, 2021, <https://www.panopto.com/blog/blended-learning-hybrid-learning-flipped-classroom-whats-difference/>.

Motivating the CTE CoLab

The CTE CoLab landscape scan summarized how racial and ethnic disparities in higher education and digital access replicate themselves in online and hybrid credit-bearing postsecondary CTE programs. Going into this project, we believe that helping colleges focus on the opportunity gaps faced by students of color would lead to effective and sustainable solutions. We did not expect that opportunity gaps would be resolved in the two years of the project, but that the CTE CoLab grant, coaching, technical assistance, and peer learning would give colleges the motivation and space to make concrete plans and take initial steps to promote racial and ethnic equity in their CTE programs.

From the Landscape Scan: What Is Equity and Why Does It Matter?

Before we discuss insights and strategies gained from the CTE CoLab, it is important to situate the problem this project sought to address. When we talk about “equity,” we mean giving students who have been systematically disadvantaged targeted and intentional opportunities to access high-quality opportunities and achieve the outcomes they desire. Equity can be understood as a process of identifying how disparities affect the educational opportunities of students based on marginalized social identities, and then developing strategic solutions to redress these inequities through ongoing, sustainable, equity-centered efforts.³ Equity requires targeted and intentional approaches that purposefully consider the perspectives, belief systems, structures, and practices that best advance educational opportunities and outcomes for marginalized, underrepresented, and/or underserved students through culturally responsive initiatives that reflect the needs, cultural backgrounds, and lived experiences of diverse learners.⁴

Equity consciousness is one critical element of achieving meaningful changes to reduce disparities by race. As defined by Dr. Eboni Zamani-Gallaher, “equity consciousness purposely promotes culturally responsive practices that best advance educational opportunities and outcomes for racially minoritized, marginalized students.”⁵ Instructors need to acknowledge that colleges and universities have performed poorly (and continue to perform poorly) for students of color, and that racial inequity is an outcome of structures, policies, and practices that are presumed to be race neutral (Bensimon 2018; Liera and Dowd 2019; McNair, Bensimon, and Malcom-Piqueux 2020). Hence, equity-conscious faculty are not only data driven but are data informed and encompass critical cultural awareness coupled with action to provide culturally relevant materials and deliver asset-based instruction that readily fosters antiracist education (Zamani-Gallaher 2020).

Identifying and narrowing disparities in postsecondary CTE programs through equitable approaches and systems change is important, because research has shown the positive labor market returns of community and technical college certificates and degrees, especially in health-related and technical fields (Minaya and Scott-Clayton 2020). In addition, the impact of reaching key academic milestones such as completing an associate’s degree has disproportionate positive benefits for Black and Latinx students, leading to a higher likelihood of transfer to a four-year college compared to rates of transfer among white peers (Lin, Fay, and Fink 2020). Closing gaps in outcomes is especially important for college CTE programs delivered online. And these targeted efforts toward groups that are most disadvantaged also help programs become more accessible for all students—a strategy referred to as “targeted universalism” (powell, Menendian, and Ake 2019).

Online Learning Continues to Be More Popular Following the Pandemic

The CTE CoLab originated during the COVID-19 pandemic when many college programs had moved rapidly online. But CTE programs were already transitioning to online and hybrid modalities before the pandemic. The number of CTE students who had taken at least one online course increased from 10 percent in 2000 to 46 percent in 2016. In fall 2020, 74 percent of all students in degree-granting postsecondary institutions had taken at least one online course (Anderson et al. 2021).

Therefore, it was anticipated that many programs would continue to operate in online and hybrid modalities after pandemic recovery. In late 2020, we launched a survey of career and technical colleges in the National Council for Workforce Education network to understand how CTE programs delivered courses before and during the pandemic and their anticipated shift toward hybrid and online learning after the pandemic. We received 78 responses from 69 colleges across 30 states. Most CTE programs represented in the survey were delivering instruction in person prior to the pandemic. For six of the eight program areas listed, rates of online and hybrid instruction were predicted to be higher after the pandemic, with the largest shift toward hybrid delivery in licensed practical nursing; manufacturing technologies; and heating, venting, and air condition programs (Briggs, López, and Anderson 2021).

Students have continued to demand more online and hybrid course options following the initial move to online learning in 2020. The California Community College Chancellor's Office conducted a survey in fall 2021 and found that more than half of students preferred hybrid instruction, while 27 percent preferred fully online instruction and 18 percent preferred fully in-person instruction (Oakley 2021). Surveys administered by Bay View Analytics in spring and fall 2022 showed that students were more optimistic about blended and online learning following the pandemic, and many reported wanting to take more such courses in the future (Seaman and Seaman 2023).

In short, online learning is not going away; in fact, it is likely to continue to grow. With these ongoing shifts toward online learning, it is important to understand how programs can meet student needs, address barriers, and create equitable experiences for students of color.

Insights from the CTE CoLab Add Nuance to National Trends

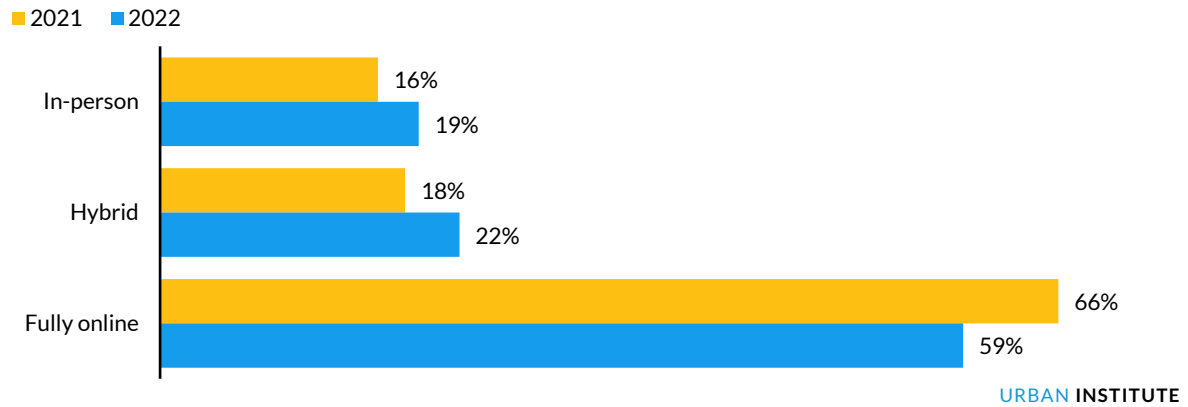
Hybrid Courses in the CTE CoLab Saw Better Student Outcomes Overall

The Urban Institute worked with the CTE CoLab colleges to collect institutional data on student demographics, academic experiences and outcomes, and the modality of program courses. We examined how racial and other disparities manifest at the program level using this data.⁶

The CTE CoLab student academic data showed that a large majority of CTE CoLab courses were delivered fully online, which was expected given the focus of this initiative. But from 2021 to 2022, program courses became somewhat less likely to be offered fully online and more likely to be offered in hybrid or in-person modalities (figure 2).

FIGURE 2

Percent of CTE CoLab Program Courses Taught in Different Modalities



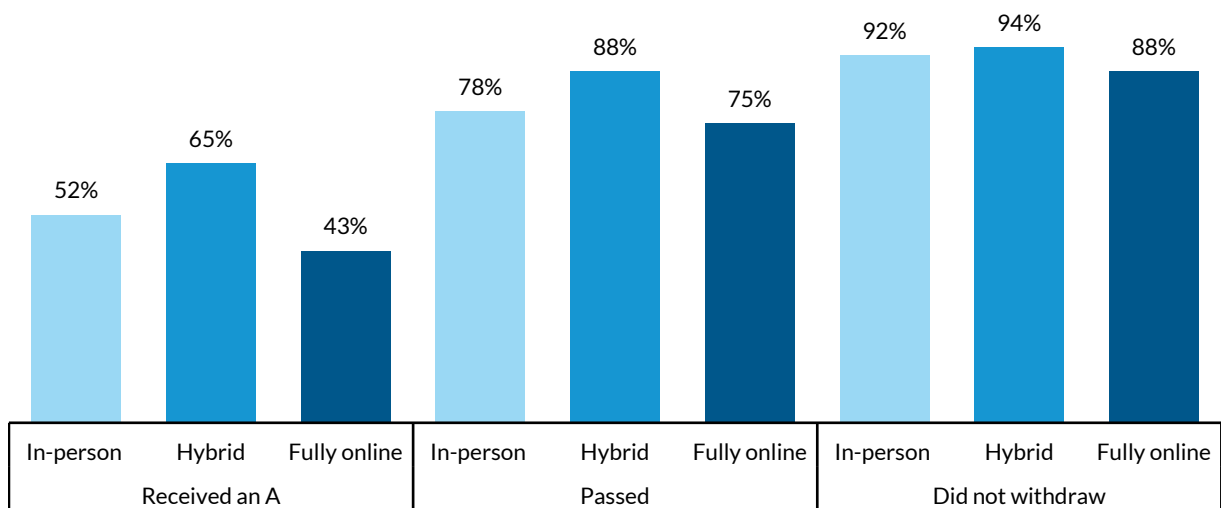
Source: CTE CoLab academic student data.

Note: All colleges are weighted to have equal representation from each college. Data include only core program courses for semesters in calendar years 2021 and 2022.

Students had slightly better outcomes in hybrid courses: they were more likely to receive an A, pass, and not withdraw (figure 3). Students had relatively worse outcomes in fully online courses compared to hybrid and in-person courses, which mirrors some existing research findings (e.g., Potter 2015). Some variations may result from the kinds of courses offered in each modality or the characteristics of students who select into different types of courses. Further research is needed to better understand the strategies that work particularly well for hybrid courses and how those could be applied to online courses, or whether certain elements of CTE programming are better delivered through hybrid learning than fully remote learning. More research is also needed to understand which students are selecting each modality and why as well as what types of courses are likely to be offered in different formats could help address barriers for fully online students.

FIGURE 3

Percent of Students Achieving Each Course Outcome by Modality in All CTE CoLab Colleges, 2022



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Source: CTE CoLab academic student data.

Note: All colleges are weighted to have equal representation from each college. Data include only core program courses for semesters in calendar years 2021 and 2022.

CTE Students and CTE Online Students Look Different from Students Overall

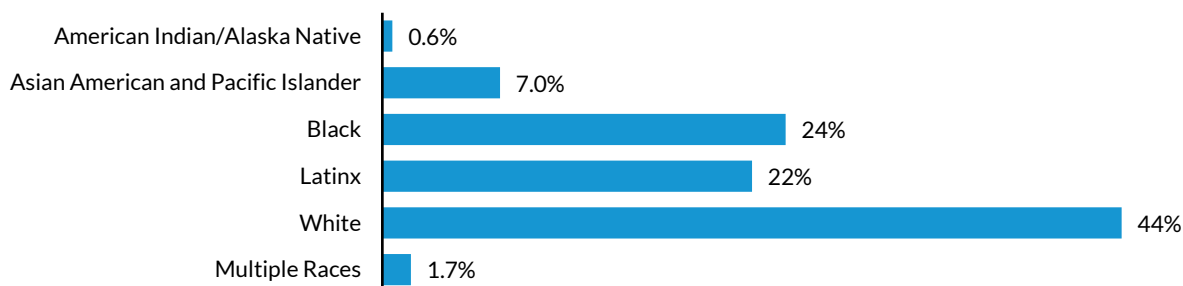
Online and hybrid CTE programs can best address their students’ needs by understanding who the students are. Analysis from the 2016 National Postsecondary Student Aid Study found that CTE students were slightly more likely than all students in community and technical colleges to be male, Black or Latinx, and older than 23. They were also more likely to have dependent children, to work more than 30 hours a week in a non-work-study job, to be first-generation college students, to have taken a developmental or remedial course, and to receive a Pell grant. Meanwhile, students in fully online CTE programs were more likely to be female, white, and older than 23 than all CTE students. They were also much more likely to have dependent children, to work more than 30 hours a week, and to be first-generation college students. They were, however, less likely than all CTE students to have taken a developmental or remedial course, to be in the lowest income bracket, or to receive a Pell Grant (Anderson et al. 2021).

Although CTE students were more diverse than community and technical college students overall, white students remained the plurality in all CTE sectors as of 2016. That said, white students were most represented in higher-compensated fields of study (the trades field) and least represented in the lower-compensated fields (consumer services) (Anderson et al. 2021). This suggests that a focus on reducing occupational segregation and/or improving compensation among sectors that have more nonwhite workers would further improve equity. Substantial changes to the labor market, however, would require buy-in beyond colleges.

CTE CoLab Students Reflect the National Trends, on Average, but Programs Vary

It is important that each CTE program analyzes its student characteristics to understand the profile of their enrolled students. It may be helpful to compare that student profile with the profile of students at the institution overall or in the community to identify areas to improve representation and educational opportunity. Students in the CTE CoLab programs were most likely to be white, followed by Black and Latinx (figure 4).⁷ These racial identities intersected with gender and other identities that were not evenly distributed across sectors. For example, most students were older than 24, male, had not taken developmental education coursework, and/or were from low-income backgrounds.⁸

FIGURE 4
Race/Ethnicity of CTE CoLab Students, 2022



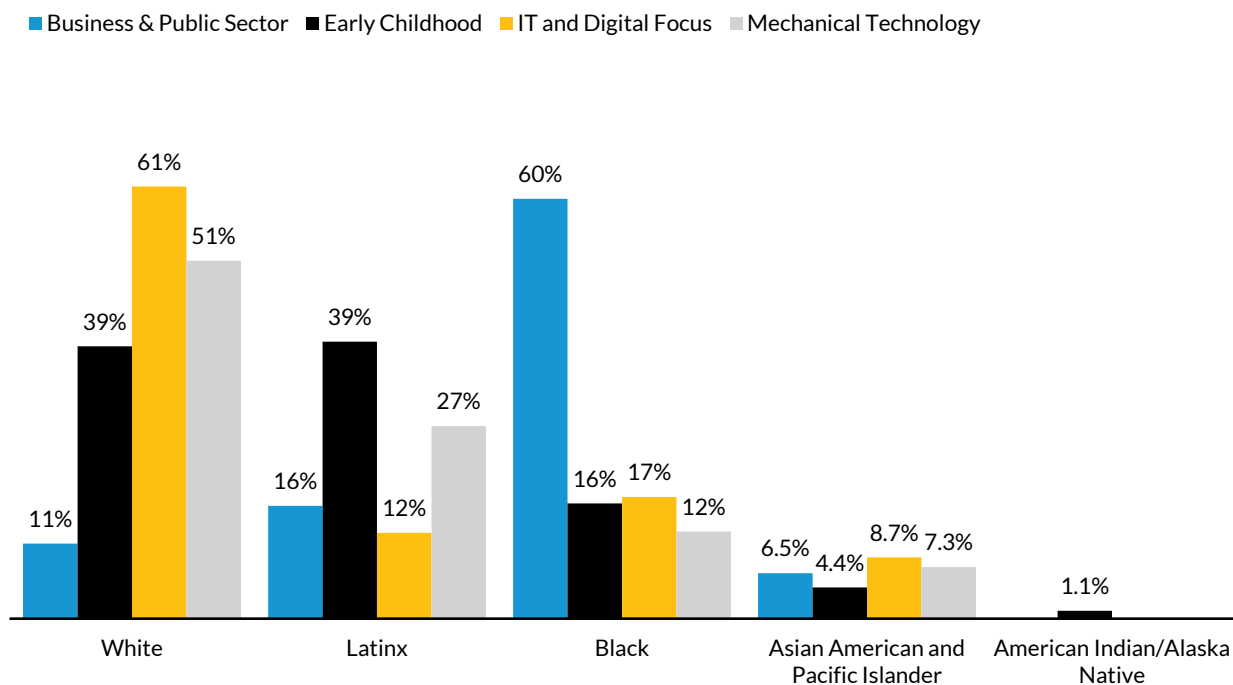
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Source: CTE CoLab academic student data.

Note: All colleges are weighted to have equal representation from each college. Data include semesters in calendar year 2022 for all students.

While we cannot report results for each college, figure 5 shows the contrast of student racial characteristics in each of the CTE CoLab program sectors, which varied widely. In IT and Digital Focus programs and Mechanical Technology programs, most students were white. In Business and Public Sector programs, most students were Black. In Early Childhood programs, students were most likely to be Latinx or white.

FIGURE 5
Race/Ethnicity of CTE CoLab Students by Sector, 2022



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Source: CTE CoLab academic student data.

Note: All colleges are weighted to have equal representation from each college. Data include semesters in calendar year 2022 for all students by program sector.

Compared to the overall population of enrolled students at the CTE CoLab colleges, the students in CTE CoLab programs were more likely to be Black or white and slightly less likely to be Asian American/Pacific Islander (AAPI) or Latinx. They were also more likely to be male than students at the college overall.

There Are Racial Equity Gaps in CTE Student Outcomes, Nationally and at CTE CoLab Colleges

NATIONAL FINDINGS

National data demonstrate opportunity gaps in postsecondary CTE for students from different racial/ethnic backgrounds. Analysis from the 2012 Beginning Postsecondary Student survey showed that when comparing the same students in the same programs who started in the same year, nationally, Black students were particularly disadvantaged relative to white students in average graduation rates, training-relevant employment, and earnings six years after enrollment. And the differences remained even when controlling for high school GPA and history of taking developmental education courses. Latinx students fell between these two groups, on average (Anderson et al. 2021). The observed

earnings gaps likely relate not only to opportunity gaps stemming from educational experiences but also to racial earnings disparities in the labor market, where Black and Latinx workers are systemically discriminated against and face structural barriers to entering higher-quality jobs with greater upward mobility (Brown 2020; Hamilton et al. 2015).

Specifically, 2012 Beginning Postsecondary Student survey analysis showed that Latinx students were 7 percentage points less likely than white students to earn a degree or certificate at their first college, whereas Black students were 12 percentage points less likely. Even after controlling for highest degree attained and sector of study, Latinx students earned roughly \$2,600 less, on average, than white students six years after enrollment, whereas Black students earned over \$8,200 less, on average. Among students starting in online courses or programs, the earnings gaps were more than \$8,800 annually, on average, for Latinx students and more than \$12,000 annually, on average, for Black students. This means that Black CTE students earned less than half of what their white counterparts earned six years after enrollment, when comparing students who started in the same program in the same year and eventually earned the same degree. As before, these gaps remained even when controlling for high school GPA and whether they had taken a developmental course (Anderson et al. 2021).

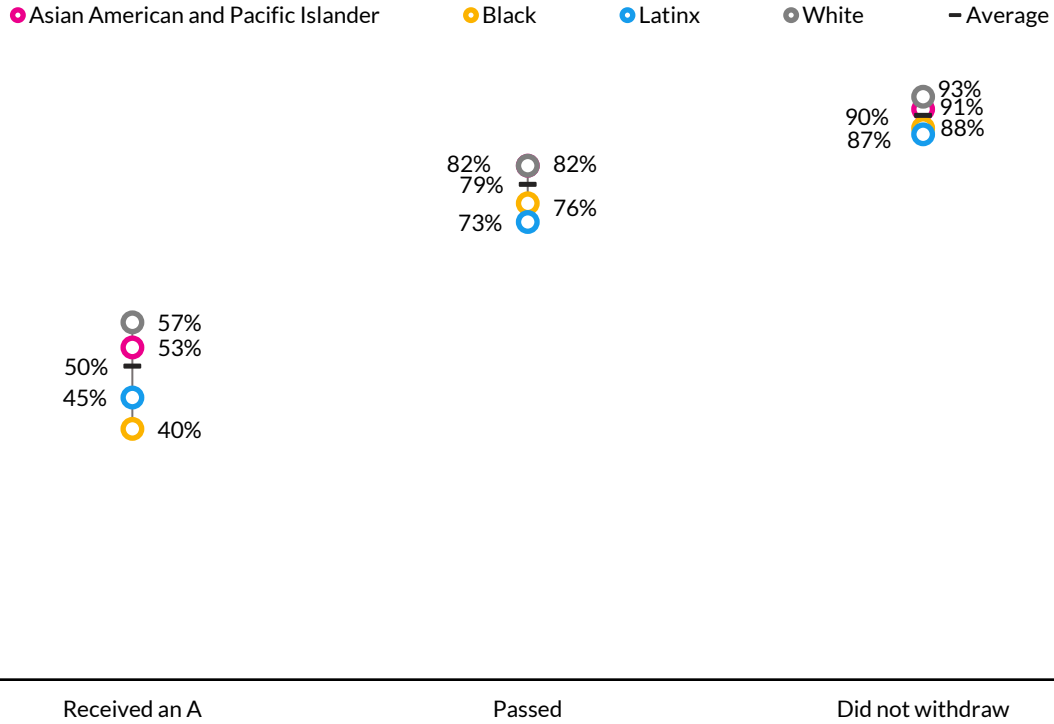
CTE COLAB FINDINGS

While we could not conduct long-term analysis on student graduation rates and earnings outcomes using the CTE CoLab student academic data, gaps by race appeared even in short-term course and program outcomes, foreshadowing longer-term disparities. This suggests that programs and instructors can identify differences early on and that long-term gaps may be preventable through course- and program-level interventions.

We examined three course outcomes within CTE CoLab programs: received an A, passed, and did not withdraw. Overall, white and AAPI students' course outcomes were above the average, whereas Black and Latinx students' outcomes were below the average (see figure 6). The disparities were largest in course grades, where Black students were only 70 percent as likely as white students to receive an A in their courses. It is important to emphasize that in all analyses we do not attribute these disparities to underlying capabilities of different groups. Instead, we attribute them to opportunity gaps for students of different racial and ethnic backgrounds within the structure of online and hybrid CTE courses and programs. Programs and colleges can change their structure to reduce disparities by race and ethnicity. As one CTE CoLab college stated, "it's not about preparing the students for college, it's about preparing the college for the students."

FIGURE 6

Percent of Students Achieving Each Course Outcome by Race/Ethnicity in All CTE CoLab Colleges, 2022



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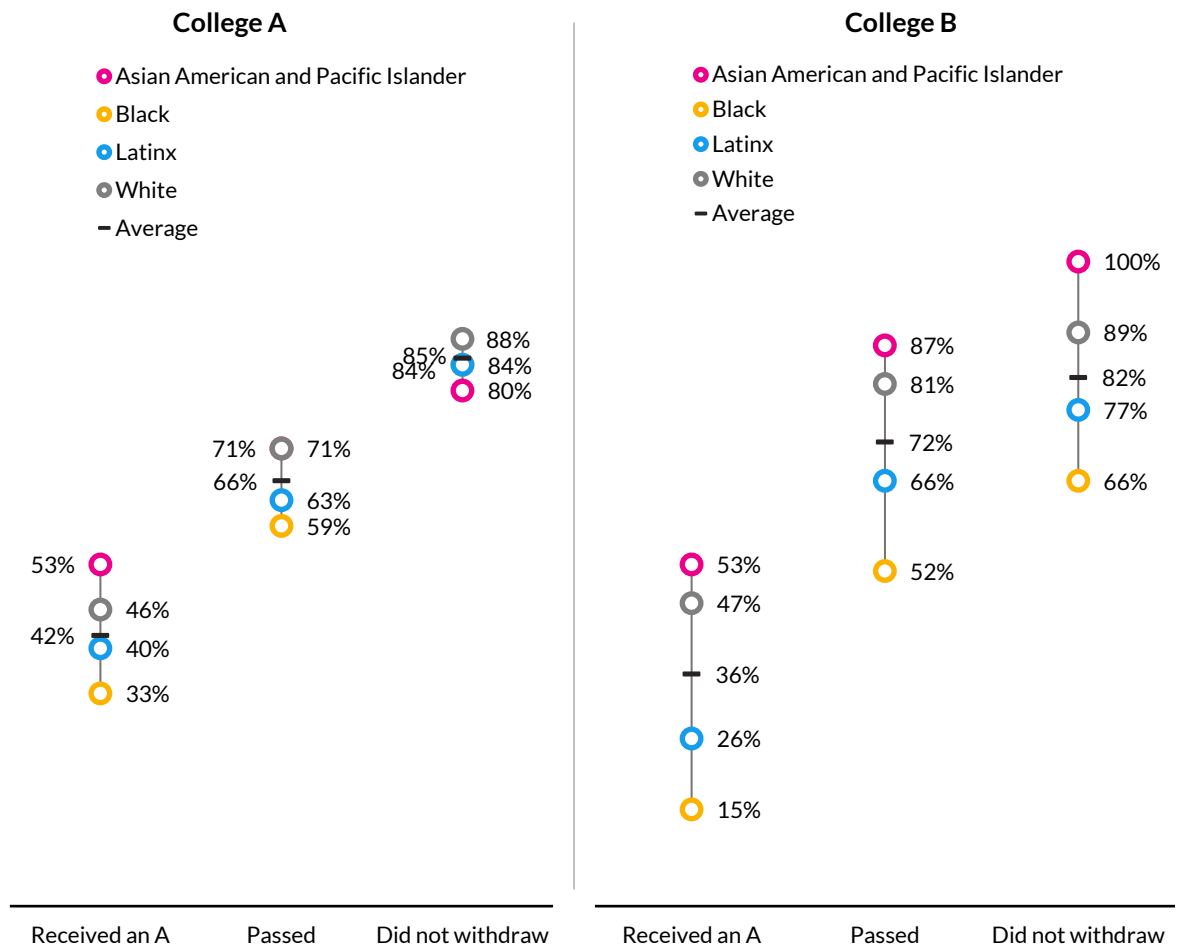
Source: CTE CoLab academic student data.

Note: All colleges are weighted to have equal representation from each college. Data include only core program courses for semesters in calendar year 2022.

While almost all CTE CoLab programs demonstrated similar patterns, the gaps were more apparent when looking at individual college programs. At both College A and College B in figure 7, white and AAPI students consistently experienced better course outcomes than Black and Latinx students. However, College B displayed much larger outcomes disparities.

FIGURE 7

Percent of Students Achieving Each Course Outcome by Race/Ethnicity in Example Colleges



URBAN INSTITUTE

Source: CTE CoLab academic student data.

Note: Data include only core program courses for semesters in calendar year 2022.

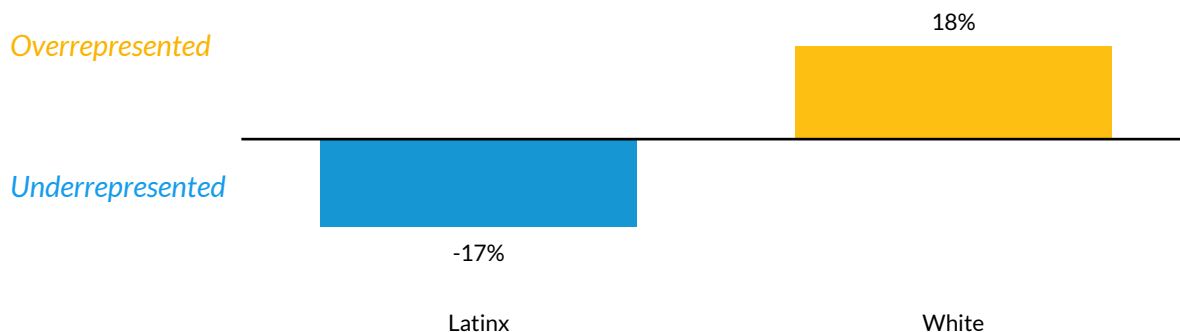
Student academic data can illuminate challenges facing other student groups. For example, in one college, Latinx students were taking more credits per semester on average but had below average GPAs. Qualitative follow-up with Latinx students in that program may help administrators and instructors identify the cause of these patterns and formulate strategies to improve those students' program experiences.

When we examined program completion by race, there were few clear patterns across all colleges. (For most individual institutions, the sample sizes were too small to report.) One CTE CoLab program provides an illustrative example. As shown in figure 8, Latinx students in this program were underrepresented among program completers compared to their representation in that program overall, whereas white students were overrepresented among program completers compared to their

overall representation in that program. Because the program had set goals around supporting Latinx students, these disparate outcomes can provide a useful metric to track over time.

FIGURE 8

Representation of Program Completers by Racial Groups in Example College



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Source: CTE CoLab academic student data.

Note: Program outcomes for an example college in calendar year 2021 include comparison of completion rates to the overall student program population in the most recent term of data available.

We also looked at students' other background characteristics besides race, including gender, first-generation status, low-income background, parenting status, and being an English-language learner. However, we did not find consistent patterns across programs. We recommend that individual CTE CoLab colleges and programs examine their data to identify needs within their student population, tailor supports, and modify program structures to be more accessible to a range of students. Ideally, programs and colleges would track changes in outcomes for racial and other groups over time as well as examine employment and earnings outcomes using state wage records.

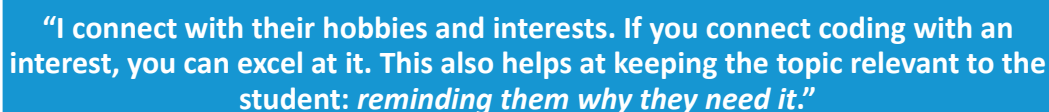
Addressing Racial Equity Gaps in Postsecondary CTE Requires Action at Various Levels

The preliminary framework to address opportunity gaps in online CTE programs (figure 1) identified strategies that could be undertaken at various levels—by instructors, programs, and colleges—to support the success of Black, Latinx, and Indigenous students. Common across all levels are efforts to **promote equity consciousness, disaggregate and examine data, and even the playing field in online learning**. The CTE CoLab focused on efforts primarily at the instructor and program level. This section shares insights from the instructor surveys administered in fall 2021 and fall 2022. (Insights from technical assistance and coaching are summarized in the CTE CoLab practice report.)

Instructors Are the First Line of Support for CTE Students

Instructors are the main college touchpoints for students and therefore can be a first line of support for them. Instructors' efforts to get to know students, especially in online and hybrid learning environments, and their awareness of available supports directly affect their effectiveness.

In the CTE CoLab instructor surveys, many instructors reported that they implement strategies in their courses to connect with and get to know students, including their past education, employment, lived experiences, and perspectives. Many start their courses surveying students, asking them to introduce themselves on online forums. They also meet with students individually or require them to come to office hours. Instructors in CTE CoLab colleges used these strategies not only to identify support needs but also to adapt coursework to fit their students and make curricula more culturally responsive. Instructors described the following strategies.



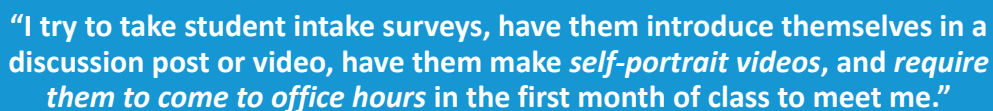
"I connect with their hobbies and interests. If you connect coding with an interest, you can excel at it. This also helps at keeping the topic relevant to the student: *reminding them why they need it.*"



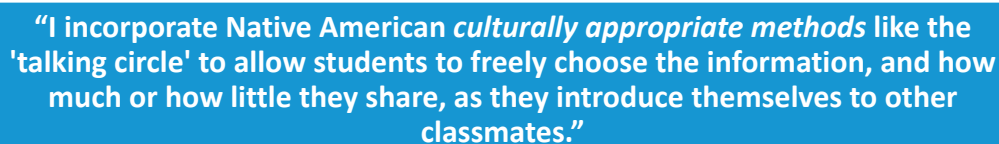
"I survey students initially; further, I have a weekly reflection survey. I always *respond individually* to students for both of these activities."



"I have an *intro discussion forum* where students post a condensed bio/intro and share their interests and experience."



"I try to take student intake surveys, have them introduce themselves in a discussion post or video, have them make *self-portrait videos*, and *require them to come to office hours* in the first month of class to meet me."

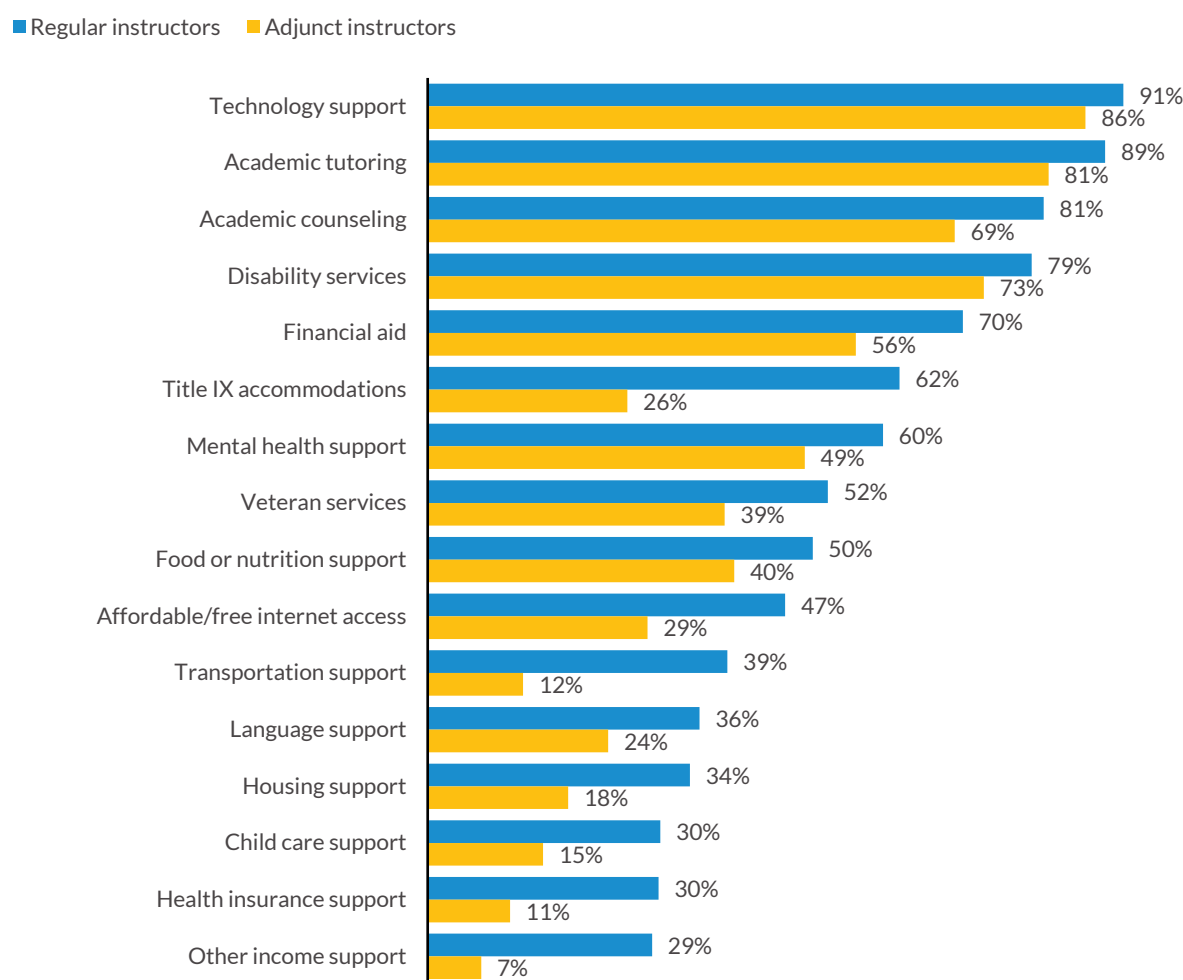


"I incorporate Native American *culturally appropriate methods* like the 'talking circle' to allow students to freely choose the information, and how much or how little they share, as they introduce themselves to other classmates."

Getting to know students may raise instructors' awareness of strengths and skills as well as challenges that students face. Black, Latinx, and Indigenous students are disproportionately more likely to face barriers to education access and gaps in digital resources and skills (Carnevale and Strohl 2013; Hecker and Briggs 2021; Sanchez and Scavette 2020). They are also more likely to be parenting (Cruse et al. 2019). Furthermore, a disproportionate number of low-income working students are Black and

Latinx (Carnevale and Smith 2018). Instructors can help students connect with helpful supports only if they are aware of the resources that are available in the institution or community. As shown in figure 9, CTE CoLab instructors were most familiar with technology and academic supports, but they were less aware of basic needs supports (e.g., housing, child care, and health insurance). Regular instructors were slightly more likely to be aware of resources than their adjunct colleagues. Programs can emphasize available resources in faculty professional development, particularly for adjunct faculty, to ensure that faculty are able to connect students to needed supports.

FIGURE 9
Percent of CTE CoLab Instructors Responding “Yes – I Could Direct [Students] to a Specific Resource/Person”



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Source: CTE CoLab Fall 2022 Instructor Survey. For initial findings from the fall 2021 instructor survey, see Theresa Anderson, Amanda Briggs, Julia Payne, and Daniel López, “Instructor Insights on Racial Equity in Online College Career and Technical Education, Fall 2021” (Washington, DC: Urban Institute, 2022), <https://www.urban.org/research/publication/instructor-insights-racial-equity-online-college-career-and-technical>.

INSTRUCTORS REPORT DIFFERING LEVELS OF EQUITY CONSCIOUSNESS

Instructors will be better positioned to identify and tailor programs to the differing needs of students who come from diverse racial and ethnic backgrounds if they have a high level of equity consciousness. To measure the level of equity consciousness, we asked about instructors' comfort and confidence discussing structural racism and racial equity in the CTE CoLab instructor surveys. We also asked how often they incorporate examples or resources into their teaching that represent people from diverse backgrounds (figure 10).

Just under 70 percent of respondents in the 2022 instructor survey were quite or extremely comfortable *discussing* topics like structural racism and racial equity, but fewer than half of respondents were comfortable *leading* discussions on such topics. Instructors of color were less likely than their white colleagues to be comfortable discussing these issues; but they were slightly more comfortable leading discussions or raising issues related to structural racism than their white colleagues. Instructors of color also were less confident than their white colleagues that they could have honest conversations regarding these topics. In addition, 29 percent of instructors reported almost always incorporating diverse examples into their teaching, whereas over 40 percent of instructors of color reported almost always incorporating diverse examples. This suggests there is still substantial opportunity for increased equity consciousness even for white instructors who profess being comfortable discussing these issues.

Between fall 2021 and fall 2022, many of the CTE CoLab colleges implemented additional professional development training on racial equity topics for the faculty in their programs. Overall, we did not see substantial shifts in instructor responses year over year to the equity consciousness questions (2021 results appear in Anderson et al. 2022). In both years, instructors in the Early Childhood sector demonstrated more equity consciousness, while instructors in the Mechanical Technology sector demonstrated less. However, there was a notable positive trend in the Mechanical Technology sector: in 2021, 57 percent of instructors responded “almost never” to the frequency of incorporating culturally responsive examples or resources into teaching question, whereas only 33 percent gave the same response in 2022. In addition, it is possible that instructors changed their perspective on what equity consciousness looked like as they learned more about nuanced racial equity concepts—in other words, they may have become more aware of the limits of their knowledge.

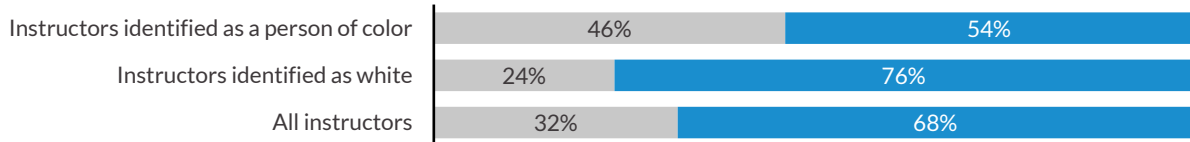
In both years, some instructors in Mechanical Technology programs and IT and Digital Focus programs indicated that, because their curriculum was technical, they believed there was no need for a focus on equity. However, other instructors found ways to incorporate racial equity into their curricula by teaching how structural racism and bias play a role in their industry or field of study and to make equity an explicit discussion in their classes. Some instructors mentioned how personal experiences motivated their decision. Generally, instructors noted that equity consciousness is an area for continued growth and improvement, and that resources tailored to their specific curriculum would be useful.

FIGURE 10

CTE CoLab Instructors' Responses to Equity Consciousness Questions, 2022

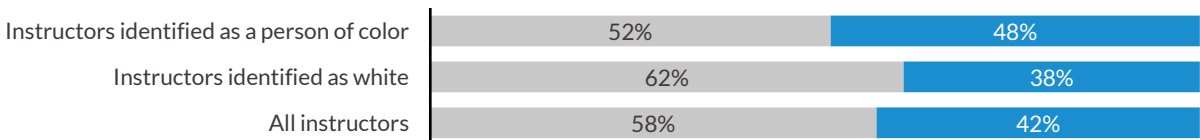
"How comfortable are you discussing topics like structural racism and racial equity with your colleagues?"

■ I have not considered this, not at all comfortable, slightly or somewhat comfortable ■ Quite or extremely comfortable



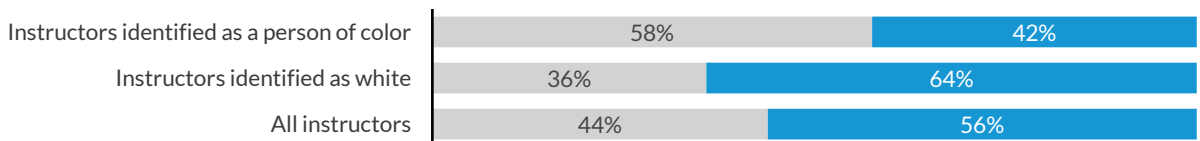
"How comfortable are you leading discussions or raising issues related to structural racism and racial equity with your colleagues in the focus program?"

■ I have not considered this, not at all comfortable, slightly or somewhat comfortable ■ Quite or extremely comfortable



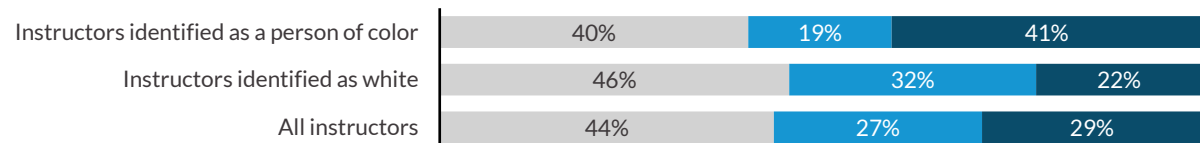
"How confident are you that faculty, staff, and administrators in your program can have honest conversations with one another about structural racism and racial equity?"

■ I have not considered this, not at all confident, slightly or somewhat confident ■ Quite or extremely confident



"How often do you incorporate examples or resources into your teaching that are explicitly intended to represent people who have different races, ethnicities, or cultures from those typically represented in your field?"

■ Almost never, once in a while, or sometimes ■ Frequently ■ Almost always




URBAN INSTITUTE

Source: CTE CoLab Fall 2022 Instructor Survey. Survey results are weighted to ensure similar respondent composition as the fall 2021 instructor survey. For more detailed findings from the fall 2021 instructor survey, see Theresa Anderson, Amanda Briggs, Julia Payne, and Daniel López, "Instructor Insights on Racial Equity in Online College Career and Technical Education, Fall 2021" (Washington, DC: Urban Institute, 2022), <https://www.urban.org/research/publication/instructor-insights-racial-equity-online-college-career-and-technical>.


INSTRUCTORS RARELY DISAGGREGATE DATA

Data disaggregation is a critical element of identifying equity conscious solutions to address opportunity gaps. In fall 2022, only 29 percent of instructors reported disaggregating student data or comparing outcomes by race, ethnicity, or any other category. This was an increase from 20 percent reporting disaggregating student data by race in fall 2021. Instructors who did not disaggregate data reported that the data were not available or that they were not sure how to analyze those data. Some were concerned that looking at data in this way would lead to bias, assumptions, or stereotypes. And others said it was not their responsibility to disaggregate data. Nonetheless, several instructors expressed interest in disaggregating data.




“I’ve not thought of doing this before. But moving forward, I would like to look at this data and think about how to understand differences that may be there.”

“I have always been taught a student is a student; however, after several [professional development sessions], it is clear we are missing opportunities to ensure underrepresented students have the tools and resources needed for a successful outcome.”




Some instructors who did disaggregate data, or who received disaggregated data on their courses, noted that they helped them revise course materials.



“I use this data to see if a particular demographic is underserved by my classes, revising the materials as needed.”

“Disaggregating and comparing outcomes by race, ethnicity, and gender help me understand which students are generally performing or underperforming in class, thereby informing my approach to curriculum design, instruction, and/or student support. Going forward in the semester, I adjust course content and assessments accordingly.”



Data disaggregation is important because it provides real-time insight into potential disparities among student groups. Instructors can identify and track opportunity gaps for students in their courses before it is too late. They may be able to make corrections during the course or to examine their teaching practice and redesign their approach in future semesters. To learn more about how CCP programs engaged with student data, see the CTE CoLab practice report.

Programs Can Identify Opportunities to Support Students

While instructors have the most direct interactions with students and have a large effect on course experience, given their limited purview and capacity, they cannot be expected to meet all of students’ needs and address the factors that affect students’ experiences at the program and institutional level.

Many of the strategies implemented by CTE CoLab programs are described in the CTE CoLab practice report. Here, we describe how CTE CoLab colleges undertook data collection and analysis efforts to determine how to support students across their programs. The colleges often used mixed-methods data collection and analysis. This is useful because quantitative (numerical) data can show racial disparities but cannot identify specific causes and barriers. Qualitative (narrative) data insights can supplement quantitative data to identify precise issues and point to potential solutions.

The colleges largely supplemented the student records data with student surveys and/or focus groups. Surveys can deepen understanding of existing structural barriers for students of color within a program. While surveys can be time-consuming for already-busy students, faculty, and administrators, many colleges found that the insights gained from the surveys helped direct decisionmaking on their racial equity goals. The Urban Institute also provided colleges with key considerations for the student surveys to ensure they were useful and focused.

Chippewa Valley Technical College used weekly student surveys to better understand student needs. Survey questions asked about workload, barriers to completing the work, belongingness, stress, comfort connecting with other students, challenges with or barriers to completing the coursework, and relevance of coursework to personal lives. The weekly surveys enabled program instructors to make ongoing changes to courses throughout the semester, helped faculty connect students to any needed resources, and increased the communication between students and faculty.

Community College of Aurora developed a survey to better understand the language and technology needs of students. This survey helped inform their equity action priorities. From the survey, they learned that many students did not indicate a need for a Spanish-speaking tutor, but students did need additional digital literacy skills and technology support. As a result, the college program prioritized technological support and purchasing laptops for the classroom.

Diablo Valley College conducted a student survey that asked about student demographics, hours spent working, access to technology resources, support services they wanted to know more about, which supports were helpful, connectedness to the program, and success and challenges. From this survey they found that students wanted more feedback from instructors and flexibility with assignment deadlines. In addition to this program-level student survey, the art digital media program combined several data sources into a *Data Equity* book. The book contained findings from the Urban Institute instructor survey, a program-wide student survey, campus-wide student surveys on media preferences, a technology survey, and a racial climate survey, as well as college- and program-level student data on completion, success, and modality that were disaggregated by race and ethnicity. The program used the book to engage in conversations on racial equity with faculty and administrators.

WSU Tech conducted both a student survey and focus groups. The focus groups informed an approach to curriculum development for a program orientation that previously did not exist. Focus groups, which were led by the college's DEI officer, asked what students need to be successful. Findings affirmed some of the programmatic changes and equity practices already in place. In addition to the focus groups, WSU Tech worked with their institutional research department to further disaggregate student data and

investigate inequities within the Machining Technology program. Their findings emphasized that equity gaps were a historical trend, and that in particular the program needed to better support Latinx male students. The program leader noted that the student data was useful for identifying gaps and motivating racial equity work and that combining this with student surveys and focus groups can help identify the specific barriers and student supports that the program can address.

Institutions Are the Next Frontier in Addressing Racial Gaps in CTE Outcomes

While the CTE CoLab focused on course- and program-level change and setting equity action goals at the program level, colleges as institutions play a large role in promoting racial equity. The project landscape scan presented a preliminary framework with opportunities for institutions to promote racial equity in CTE programs, particularly in online settings (Anderson et al. 2021). An important institutional role for colleges is to set priorities for racial equity and to help define common language and frameworks that can be organized across programs and courses. Many colleges have demonstrated leadership by identifying equity goals in their strategic plans. Providing institutional support for programs and instructors to have access to usable resources, time and pay to engage with them, and training on how to identify and leverage insights would help many colleges take a big step toward achieving those goals.

Institutions can also consider accessibility of online tools, general digital literacy, availability of digital resources for students, staff, and faculty. Technology has become an important focus since the growth of online and hybrid learning in the wake of the pandemic. The next frontier would be to try to understand why certain types of course modalities—such as hybrid—may be showing better outcomes than fully remote courses and, in some cases, face-to-face courses.

The findings in this brief should be empowering to institutions, because colleges can use their own data to conduct similar analyses. But institutional research capacity and data resources take investments, particularly if CTE programs want to work with institutional research staff to analyze data in support of equity goals. Several CTE CoLab programs had close working relationships with institutional research staff as part of this grant effort, but it is unclear if that is feasible or sustainable in the long term under current resource allocations, given institutional research capacity across multiple programs. In addition, colleges may need to collect more data on student characteristics that relate to specific situations, such as parenting status (Sick et al. 2023) and how students are financing their education (Herzog 2018), as well as course or program characteristics, such as details of modality (beyond the broad categories of online, hybrid, and face-to-face, which can vary widely in practice). Colleges can also track students into the labor force, such as by linking to state wage records. This can help colleges identify ways to promote equitable job opportunities, including career advancement.⁹ It would be valuable for colleges to make those insights available to program administrators and staff to inform program changes over time.

Beyond institutions, policy systems related to accreditation, licensing, and funding may affect opportunities for accommodations and flexibilities needed to promote success for students in online and hybrid courses from diverse backgrounds. These policies may also affect the types of data collected

about CTE pathways. Institutions can coordinate with policy designers to try to promote flexibility, which has emerged as particularly promising to student success.

Key Recommendations and Looking Forward

Efforts to promote racial equity in online and hybrid CTE courses and programs at the instructor, program, and institutional levels are important for various reasons. They support opportunities for students in postsecondary CTE programs to have flexibility in how they approach their coursework while mitigating disadvantages that result from structural racism. As hybrid and online learning continue to become more viable and popular options in the long term, it is important that students of color—especially students who are Black, Latinx, or Indigenous—have equal opportunity to succeed in these modalities. Equity efforts also support the training of a skilled, diverse workforce that can help promote local, state, and national economic development while improving families' well-being. And these efforts can help colleges facing enrollment declines attract new markets of racially diverse learners into CTE programs that have historically presented high barriers to entry and success. Making and sustaining meaningful change requires attention at multiple levels, including in courses, programs, institutions, and the broader policy and social environment (including funders).

Key recommendations include the following:

- **Understand racial equity gaps in student outcomes**
 - » **Instructors** and **programs** can examine course and program data to identify student characteristics and differences in outcomes by race and other factors.
 - » **Instructors** and **programs** can understand more about where and why gaps exist by collecting qualitative insights from students through prompts/assignments, interviews, focus groups, surveys, and/or feedback forms.
 - » **Instructors** can use data insights to inform course design to improve course outcomes. They can seek to improve their own knowledge of resources and supports that may be valuable to students and share these insights with others.
 - » **Programs** can design policies, practices, and supports around student needs and desires, with the goal of reducing inequities in entry, retention, and completion. (More detailed examples appear in the CTE CoLab practice report.)
 - » **Institutions** can provide institutional research capacity and training for program leaders and instructors on data collection and usage. Institutional research offices can work with individual programs or instructors to monitor student progress and success in real time or improve data tools easily accessed by faculty, staff, and administrators.
 - » **Institutions** can look at student data across programs to see where racial opportunity gaps are most severe.
 - » **Institutions** can conduct surveys, focus groups, or feedback forums to understand how to respond to students' needs across program areas.

- **Design courses for equity**
 - » **Instructors** can modify syllabi and curricula to be more culturally responsive. This includes reviewing course content for diverse examples, making syllabi welcoming, and creating community within their online classrooms. (More detailed examples appear in the CTE CoLab practice report.)
 - » **Programs and institutions** can support faculty by offering equity-centered professional development, especially for adjunct faculty, that include concrete examples of equity-conscious approaches to course design and delivery. Professional development instruction on digital tools for faculty may also be beneficial. Programs and institutions can provide release time or paid stipends to encourage participation and ensure they are not perpetuating inequities in which faculty members are able to participate.
 - » **Institutions** can ensure programs are prepared to support faculty professional development.
 - » **Institutions** can set a standard for language, concepts, and terminology related to racial equity. They can also promote promising approaches to ensure programs and coursework are not further perpetuating racial inequities in online and hybrid CTE.

- **Support equity consciousness at a broader system level**
 - » **State policymakers** can make education, employment, and earnings data available to programs, institutions, and state stakeholders so they can track long-term student outcomes by race and ethnicity.
 - » **Other system stakeholders** can review accreditation, licensing, and funding procedures that limit colleges' flexibility to respond to student, instructor, and program needs. Flexibility has emerged as one of the most important elements of promoting student success.
 - » **Employers** can engage with equity efforts at colleges. (More detailed examples appear in the CTE CoLab practice report.)

- **Conduct further research on effective approaches**
 - » **Institutions and funders** can support research on strategies that work particularly well for hybrid courses and how those strategies could be applied to online courses, or on whether certain elements of CTE programming are better delivered through hybrid learning than fully remote learning, focusing on benefits for different types of learners.
 - » **Institutions and funders** can explore more examples of innovative and effective approaches to reducing opportunity gaps by race and effectively communicating the importance and impact of those approaches to a range of audiences.

The CTE CoLab began important discussions, helped programs develop detailed plans, and piloted some promising approaches to equity work informed by data insights. But implementing these changes will take continued effort and attention, data tracking that allows colleges and other stakeholders to measure progress, and a willingness to continue to identify and pursue strategies for improvement.

Notes

- ¹ Throughout this brief, we use the term “Latinx” to refer to Hispanic, Latino, and Latinx people. We use the term “non-Hispanic” as a modifier for other racial groups (e.g., non-Hispanic white).
- ² A copy of the survey instrument is available at https://www.urban.org/sites/default/files/2023-07/Instructor%20Survey_CTE%20CoLab.pdf.
- ³ “Educational Leaders Equity-Centered Transformation Spark Grants Initiative Program,” Office of Community College Research and Leadership (OCCRL), accessed June 2, 2023, <https://occrll.illinois.edu/EC3P/spark>. OCCRL cites Decuir and Dixson (2004) and Gorski (2016) in informing this definition.
- ⁴ “Educational Leaders Equity-Centered Transformation Spark Grants Initiative Program,” Office of Community College Research and Leadership.
- ⁵ Eboni Zamani-Gallaher, “Unpacking Equity and Access,” YouTube video, 18:36, posted by the National Institute for the Study of Transfer Students, https://www.youtube.com/watch?app=desktop&v=iB6nHqTjC6E&ab_channel=NISTS.
- ⁶ Institutional data in this brief are student academic data provided by colleges’ institutional research offices from 11 of the 12 CTE CoLab colleges. Data are reported for only the “core” courses, which program administrators identified for each program. All analysis was completed at the program level. For results across multiple colleges, data are weighted to have equal representation from each college. Unless otherwise noted, data are from the spring 2022, summer 2022, and fall 2022 semesters. Subgroup outcomes are not reported for small group sizes.
- ⁷ Data pulled from the National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall 2021 Enrollment Race/Ethnicity data, all students, accessed June 2, 2023, <https://nces.ed.gov>.
- ⁸ In this brief, we use the terms “indigenous” and “American Indian/Alaska Native” to refer to indigenous people. Graphs and data analysis use the term “American Indian/Alaska Native” for consistency with data sources.
- ⁹ Theresa Anderson and Shayne Spaulding. “Promoting Racial and Ethnic Equity in Online Career and Technical Education Programs Will Support an Equitable Recovery from COVID-19,” *Urban Wire* (blog), Urban Institute, March 15, 2021, <https://www.urban.org/urban-wire/promoting-racial-and-ethnic-equity-online-career-and-technical-education-programs-will-support-equitable-recovery-covid-19>.

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