

What do we know about Career and Technical Education?

TAKEAWAYS

Nearly all public school districts offer some Career and Technical Education (CTE) programs; however, the types of programs vary.

CTE coursework is associated with increased earnings for those who participate, relative to demographically similar peers.

Rigorous research finds that career academies, vocational high schools, and early college high schools can improve educational outcomes or earnings.

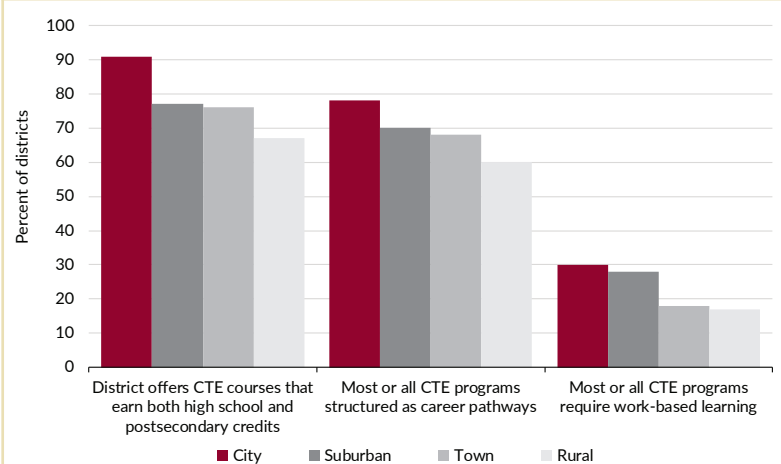
More research is needed on the wider range of CTE models and the many implementation challenges facing CTE programs.

Career and Technical Education (CTE) programs focus on learning and building skills directly related to work and labor market demands, often for a particular sector or occupation. Previously referred to by names such as manual arts or vocational education, CTE takes place at the secondary (high school), postsecondary (college), and adult education levels. Programs are provided in educational institutions and real-world settings, with the latter including apprenticeships, on-the-job training, and a variety of intensive program models often geared toward opportunity youth (defined as young people between ages 16 and 24 who are neither enrolled in school nor working, constituting approximately one in nine 16- to 24-year-olds in the United States today). This brief, a product of the Transition to Adulthood Research Network, highlights what research can tell us about these programs and their effects.¹

CTE comes in many forms and serves a range of students.

During the 2016 to 2017 school year, 98 percent of public school districts offered CTE programs to students at the high school level.² Of those districts, two-thirds reported that most or all of their CTE programs were structured as career pathways that align with related postsecondary programs (see Figure 1). Work-based learning activities and CTE courses for which students could earn both high school and postsecondary credits were offered at about three-quarters of districts. These types of CTE programming tended to be less available in rural communities compared with more urban areas, as depicted in Figure 1. For public high school graduates in 2009, males, students with disabilities, and African American students were more likely to have concentrated in CTE than other student groups.³

Figure 1: City school districts are more likely than suburban, town, and rural districts to offer CTE programming; CTE programs requiring work-based learning are less prevalent than other CTE program models.



Source: L. Gray and L. Lewis, Career and Technical Education Programs in Public School Districts: 2016–17: First Look (NCES 2018-028), Washington, DC: National Center for Education Statistics, U.S. Department of Education, April 2018.

Of the postsecondary students seeking an associate degree or professional certificate, approximately 6.7 million students were enrolled in a CTE program pursuing an associate degree, and another 1.7 million were pursuing a certificate during the 2011 to 2012 school year.⁴ Health sciences is by far the most common field of study, as shown in Figure 2. Students in these programs are more likely to be male, black, Hispanic, and first-generation than those enrolled in bachelor's degree programs.⁵ Nearly three-quarters of associate degree students are enrolled at a public two-year college, whereas about half of students pursuing a certificate are enrolled in a private for-profit institution.

CTE is associated with improved educational outcomes and earnings.

Research finds that taking CTE courses in high school has been associated with positive effects on earnings and mixed effects on academic outcomes for

students who participate, relative to demographically similar peers, particularly among low-income students and those taking more extensive CTE coursework.⁶ Similarly, completing career-focused postsecondary certificates and associate degrees has been associated with large and persistent earnings increases, although the benefit varies widely by field and provider institution.⁷

Several high school CTE models have been shown to improve educational outcomes and/or earnings.

Dual enrollment programs, programs of study, and early college high schools (small, autonomous schools that combine high school and college into a coherent educational program)⁸ enable high school students to enroll in college courses and earn postsecondary credit and credentials. Research suggests that CTE-focused dual enrollment and programs of study have been associated with positive effects on a range of educational outcomes, but that patterns vary considerably across schools and states.⁹ Randomized controlled trials (RCT) and other studies find that early college high schools that serve low-income students, oftentimes providing CTE programming, improved high school graduation and postsecondary credential completion rates.¹⁰

Many CTE programs provide work-based learning opportunities. For example, results from an RCT evaluation of the Urban Alliance High School Internship Program indicate that the program improved high school and college educational outcomes for male students.¹¹ Other rigorous evaluations find that students who enroll in vocational high schools were more likely to graduate from high school than comparable students who did not enroll in such schools.¹²

Career academies, consisting of small learning communities within larger schools that combine work-based learning activities and academic and technical curricula organized around such themes as health sciences and information technology, have become an increasingly common model of CTE. Recent studies have provided mixed evidence for education effects, but a multi-site RCT revealed positive impacts on long-term earnings.¹³ Results from several studies suggest that effects may be concentrated among males.

Postsecondary and workforce CTE may increase earnings.

Career pathways programs provide sequential postsecondary education and training that are geared toward increasingly advanced credentials and employment opportunities in growing occupations. Rigorous evaluations of services offered by community colleges and other providers indicate that these programs can result in increased educational attainment and wages.¹⁴

Apprenticeships help individuals build skills while working, thus potentially offering benefits to both workers and employers. As is true for other types of work-based CTE, causal impact studies of apprenticeships are uncommon. Results from a matched comparison group study of the U.S. registered apprenticeship program indicates that it holds promise for increasing employment and earnings.¹⁵ Apprenticeships are more prevalent in Europe, and a quasi-experimental evaluation there finds that while apprenticeships boosted youth employment, those benefits were offset by diminished employment later in life.¹⁶

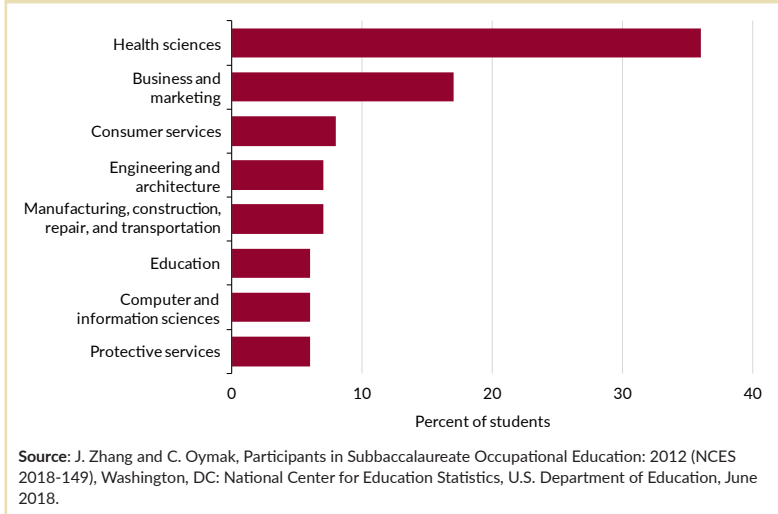
There is still much to learn about the effectiveness of CTE.

CTE programs face a number of challenges, including low completion rates; predicting what sectors are likely to present sustained economic opportunities; the ability of educators and employers to collaborate and rapidly innovate in response to changing economic circumstances; aligning secondary and postsecondary programs; capacity constraints in programs targeting high-return fields; bringing effective models to scale; and a growing need for information to help students and policymakers distinguish between high- and low- (or no-) return programs.¹⁷

Policymakers and practitioners are also faced with the difficult task of designing CTE interventions to reduce social inequities by providing economic opportunities to disadvantaged populations, rather than reinforcing disparities by unnecessarily steering disadvantaged individuals into CTE instead of traditional educational pathways that might provide them with the broadest range of future opportunities. More research is needed on these challenges, as well as on the wide range of CTE models, including internships, blended secondary/postsecondary programs, community colleges, and apprenticeships; how program impacts vary by subgroups such as gender or race; and long-term impacts.¹⁸

For sources and more information, go to <https://www.irp.wisc.edu/resource/what-do-we-know-about-career-and-technical-education>

Figure 2. Health sciences is by far the most common field of study among students pursuing an associate degree or professional certificate.



What do we know about Career and Technical Education?

ENDNOTES

¹Convened by the Institute for Research on Poverty, in collaboration with the U.S. Collaborative of Poverty Centers, the Poverty and Transition to Adulthood Research Network includes researchers, policymakers, and practitioners. The network explores the influence of poverty on healthy transitions to adulthood, including educational attainment, labor force participation, and family formation; positive youth development strategies with disadvantaged populations; the role of policies and programs (e.g., human capital development; child welfare, including foster care and programs for youth aging out of care) in promoting successful transitions to adulthood for disadvantaged youth. To learn more about this and other Poverty Research networks, visit [IRP's website](#).

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