Career and Technical Education for Students with Identified Disabilities

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Career & Technical Education Policy Exchange

August 2025

Roughly one in seven U.S. high school students has an identified disability and is entitled to special education services.[1] Career and Technical Education (CTE) offers these students a dual benefit: industry-aligned training that can lead directly to employment or serve as a springboard to college. Recent studies show that students who concentrate in CTE graduate at significantly higher rates than similar peers.[2] Still, closing post-school gaps—graduation, employment, and independent living—remains a central goal for educators of students with identified disabilities (SWD).[3] We know relatively little about which SWD enroll in CTE, the programs they choose, and how those choices affect their long-term outcomes.

Although the research base on CTE for students with identified disabilities is relatively limited, several studies offer important insights. Earlier work on school-to-work and transition programs for SWD found that structured work-based learning can improve employment outcomes, build career development skills, and strengthen autonomy and self-efficacy.[4] More recent studies focused on modern CTE programs suggest that CTE participation can support high school completion for SWD.[5] However, these benefits are not evenly distributed. Outcomes often differ by identified disability type, and SWD may be less likely to access higher-paying CTE pathways such as information technology and health sciences.[6]

This issue brief draws on research from the Career & Technical Education Policy Exchange (CTEx), a multi-state research partnership that links longitudinal student records with detailed CTE participation data. These data allow for cross-state comparisons using consistent definitions, helping to clarify how CTE access and outcomes differ for students with identified disabilities.[7] Using records from CTEx partner states, we describe how participation varies between SWD and their peers, how outcomes differ by concentrator status, and how identified disability type shapes both access and results.

Participation Patterns for Students with Identified Disabilities

Should students with identified disabilities be more or less likely to concentrate in CTE than their peers without identified disabilities? Given research showing that CTE concentration is associated with improved postsecondary outcomes for SWD, one might hope to see relatively high participation rates. But, like all students, SWD must opt into CTE, and individual interests, local opportunities, or school-level decisions may shape those choices. In some cases, students who concentrate may already be more likely to succeed, regardless of CTE participation.

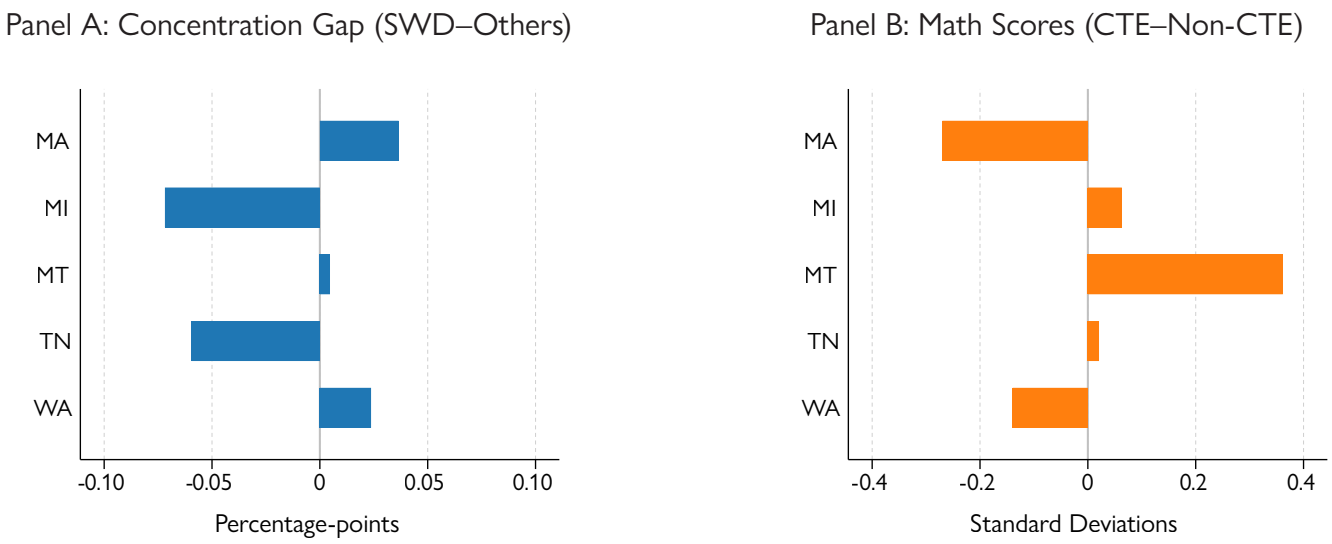
Panel A of Figure 1 shows the gap in CTE concentration rates between SWD and students without identified disabilities across five CTEx states. Somewhat surprisingly, there is no consistent pattern. In Massachusetts (MA) and Washington (WA), SWD are slightly more likely to concentrate—by fewer than five percentage points. In Montana (MT), rates are nearly identical across groups. In Michigan (MI) and Tennessee (TN), SWD are just over five percentage points less likely to concentrate. These differences are relatively modest—smaller than typical gaps by gender or race—suggesting that, overall, SWD and non-SWD participate in CTE at similar rates.

The second panel of Figure 1 shows average Grade 8 standardized math scores for concentrators and non-concentrators in each state. Positive values indicate that students with stronger academic performance are more likely to concentrate. Notably, the pattern here runs in the opposite direction of the SWD concentration gaps. In MA and WA, where CTE concentrators tend to have lower math scores than non-concentrators, SWD are more likely to participate. In contrast, MI and TN show little difference in average math scores between concentrators and non-concentrators, while in MT, concentrators have substantially higher scores on average.

Taken together, these results suggest that SWD are less likely to concentrate in CTE in states where concentrators tend to have stronger prior academic performance. In other words, access to CTE may be shaped not only by student interest but also by differences in who opts into these programs.

These figures alone cannot fully explain how students are matched to CTE. One possibility is differential selection: Because SWD tend to score lower on standardized assessments, they may be less likely to pursue CTE in states where

Figure 1. CTE Concentration and Academic Achievement by State



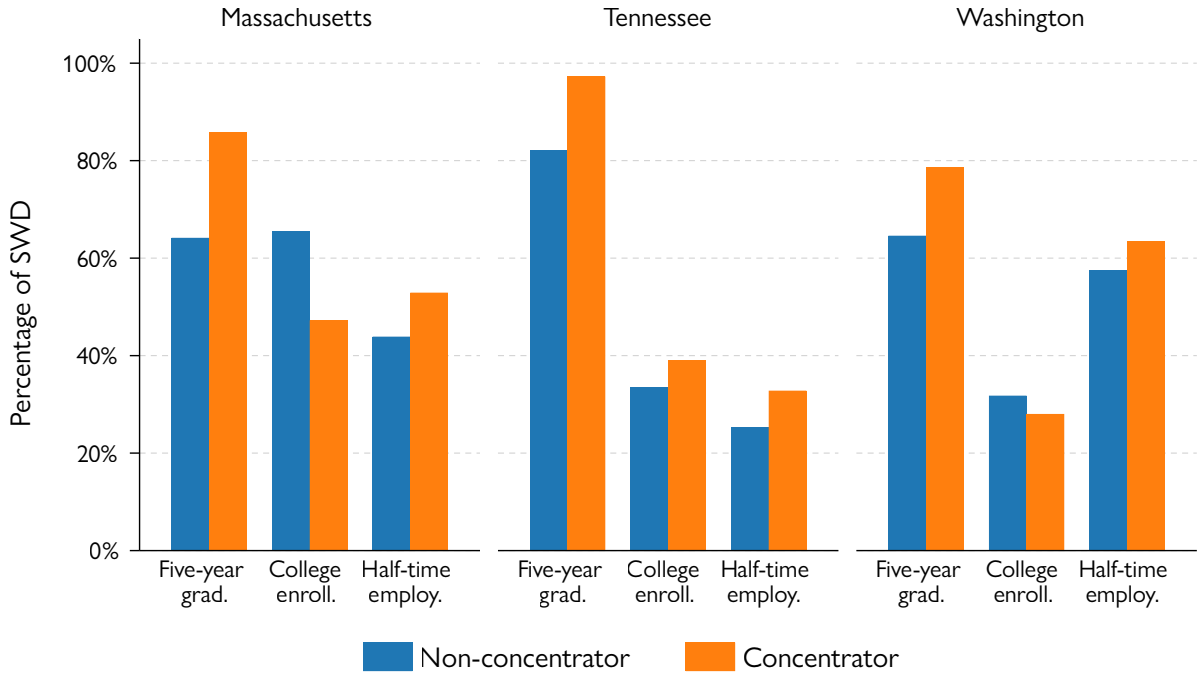
Notes. Panel A shows the difference in CTE concentration rates between students with identified disabilities and students without identified disabilities. Panel B shows the difference in Grade 8 standardized math scores between CTE concentrators and non-concentrators. In both panels, we average the differences over four Grade 9 cohorts between 2015 and 2018. For further data details, see Urban et al. (2022).
Source. Urban, C., Carruthers, C. K., Dougherty, S., Goldring, T., Kreisman, D., & Theobald, R. (2022). *A multi-state analysis of trends in Career and Technical Education*. Georgia Policy Labs.

concentrators as a group show higher prior achievement. In this sense, variation across states may reflect not just program design or admissions practices but also family and student decision-making about whether CTE is a good fit. For this reason, it is important that states and districts examine how students and families make enrollment decisions and ensure they neither unfairly exclude SWD from opportunities nor inappropriately track them into certain programs.

Outcomes for Students with Identified Disabilities

Students without identified disabilities who concentrate in CTE typically experience better outcomes than their non-concentrating peers: higher rates of high school graduation, college enrollment, and short-term employment and earnings. Figure 2 shows how those same outcomes compare for SWD, using unadjusted mean values from three CTEx partner states that participated in a joint study of CTE and SWD.

Figure 2. Student Outcomes for Students with Identified Disabilities, by CTE Concentration



Notes. The graph shows Grade 9 cohorts for 2008–16 in Massachusetts, 2010–14 in Tennessee, and 2011–16 in Washington. For further details on the data shown in the figure, see Carruthers et al. (2022).
Source. Carruthers, C. K., Dougherty, S., McGuinness, S., Payne, S., & Theobald, R. (2022). *Graduation, college, and employment outcomes for CTE students with an identified disability*. Georgia Policy Labs.

Among SWD, CTE concentration is associated with substantially higher graduation rates in all three states—by about 15 percentage points in WA and TN and more than 20 percentage points in MA. These are large, meaningful differences, even without accounting for other student characteristics.

College-going patterns, however, vary. In MA and, to a lesser extent, WA, SWD who concentrate in CTE are less likely to enroll in college than those who do not. This gap is especially pronounced in MA, where districts often deliver CTE through whole-school models. Even so, overall college enrollment among SWD in MA—including both concentrators and non-concentrators—is higher than in the other two states.

Across all three states, SWD who concentrate in CTE are more likely to be employed at least half-time following high school. This reinforces earlier findings showing that CTE can improve early labor market outcomes for SWD, but it also highlights how those benefits may depend on how different states structure and deliver CTE is structured and delivered in different states.

Together, these results point to the importance of context. State-level policies, local labor markets, and program design all shape how CTE functions for SWD. The findings also suggest caution in interpreting results from a single state or from pooled cross-state estimates. Lessons learned in one context may not transfer neatly to another.

Finally, it's important to note that these comparisons are descriptive, not causal. Students who choose to concentrate in CTE may differ from those who do not in ways that are not evident in the data. One key source of that variation—identified disability type—is explored in the next section.

Identified Disability Type Matters

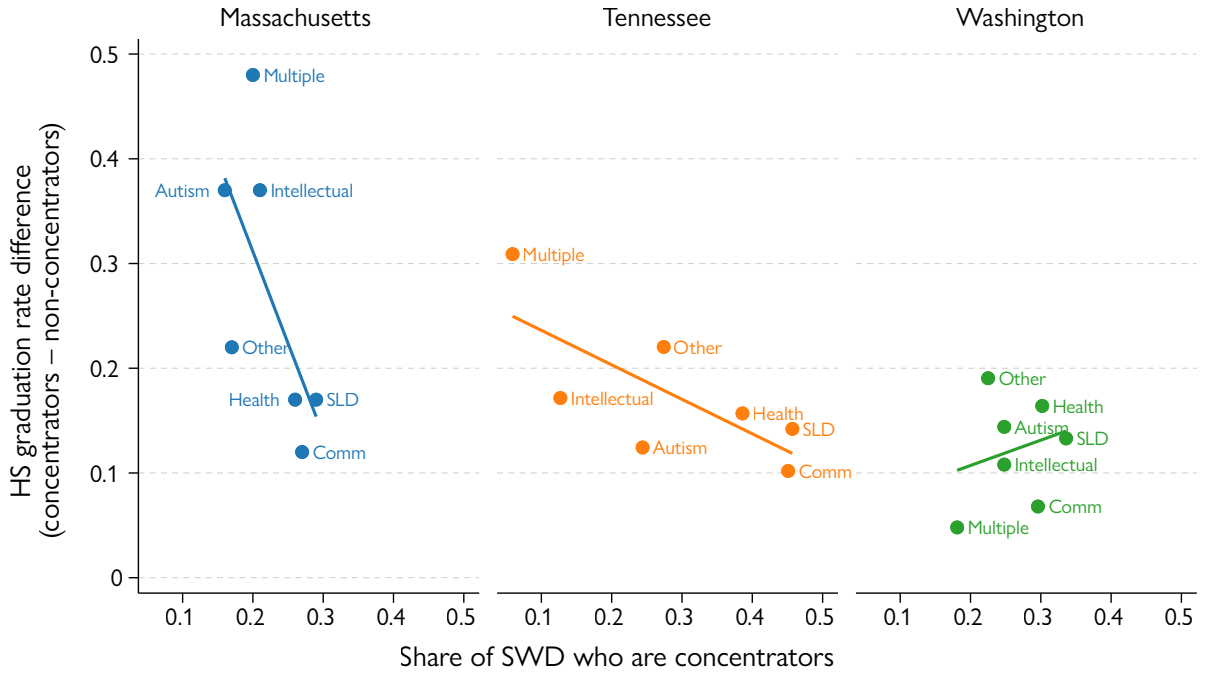
The previous figures reflect average outcomes for all students with identified disabilities, but these averages can mask important differences across identified disability categories. For example, if students with certain identified disability types are less likely to access CTE—or if a student's Individualized Education Program (IEP) is more likely to integrate CTE—we would expect to see that reflected in disaggregated patterns.

Figure 3 plots two variables by identified disability type for each of the three states: the CTE concentration rate (x-axis) and the difference in five-year graduation rates between concentrators and non-concentrators (y-axis). In MA and TN, the relationship is strongly negative: Identified disability types with higher CTE participation tend to show smaller graduation gains. In WA, the relationship is weaker and reversed: Identified disability types with higher concentration rates tend to show larger gains.

These results highlight two key takeaways. First, CTE participation rates differ widely by identified disability type. Across all three states, students with multiple identified disabilities, autism, or intellectual disabilities are less likely to concentrate. In contrast, students with communication disorders, health impairments, or specific learning disabilities (SLD) are more likely to concentrate.

Second, any benefits of CTE concentration—at least as measured by graduation—also vary by identified disability type and by state. In MA and TN, the groups with higher concentration rates often show smaller gains in graduation. One possible reason is that these students already graduate at relatively high rates, leaving less room for improvement. In WA, however, the

Figure 3. CTE Concentration and the High School Graduation Rate, by Identified Disability Type



Notes. "Comm" is communication disorder, "Health" is health impairment, "Intellectual" is intellectual disability, and "SLD" is specific learning disability. The graph shows Grade 9 cohorts for 2008–16 in Massachusetts, 2010–14 in Tennessee, and 2011–16 in Washington. For details on the data shown in the figure, see Carruthers et al. (2022).
Source. Carruthers, C. K., Dougherty, S., McGuinness, S., Payne, S., & Theobald, R. (2022). *Graduation, college, and employment outcomes for CTE students with an identified disability*. Georgia Policy Labs.

opposite pattern holds: Students more likely to concentrate also see larger graduation gains. This may reflect the fact that overall graduation rates for SWD in WA are lower than in the other two states (as seen in Figure 2).

One potential explanation for the variation in graduation gains is how states define and report graduation for SWD. Under federal law, students can receive special education services through the end of the school year during which they turn age 21—if specified in their IEP and their state provides public education through that age. If states differ in public education age limits—or if use varies by identified disability type—this could affect graduation comparisons. While delayed graduation might appear less favorable in the short term, it can support smoother transitions to adulthood when paired with high-quality services.

Our data cannot fully explain these patterns, but they point to the importance of disaggregating outcomes by identified disability type. Policymakers and practitioners should consider how access, supports, and reporting practices

vary across identified disability categories and how those differences may shape who benefits from CTE.

Conclusion and Areas for Future Research

The aim of this issue brief is twofold: to provide practitioners and policymakers with a foundation for reflecting on CTE participation and outcomes for SWD in their own states and to help guide future research into how and under what conditions CTE benefits SWD. While the size of the benefits varies across states, one finding is clear: CTE concentration is consistently associated with higher high school graduation rates for SWD. At the same time, the extent of those benefits differs by identified disability type and may depend on how students are selected into CTE and which specific programs they are able to access.

Practitioners and policymakers should pay close attention to patterns of access—who is enrolling in CTE, how students and families make enrollment decisions, and whether students from all identified disability categories have the opportunity to participate in a full range of programs. Several areas warrant further investigation:

- **Access to High-growth Pathways.** As CTE offerings have expanded to include fields like health care, information technology, and advanced manufacturing, are SWD accessing and benefiting from these new opportunities? National and WA data show a 40–50% increase in applied STEMM (Science, Technology, Engineering, Math, and Medicine) course-taking among SWD from 2004 to 2013, but more recent research is needed to understand current trends and outcomes.

- **Disability-based Disparities in Program Access.** Do students with different identified disability types have equal access to CTE overall and to specific program areas? One multi-state study showed that while early implementation of Perkins V (the most recent federal law governing CTE) saw little change in SWD access, concentration rates fell by six percentage points in MI and MT after one year—while remaining flat elsewhere. Ongoing monitoring and disaggregated reporting are essential.

- **Postsecondary Outcomes.** While the benefits of CTE for SWD are most evident in high school graduation and early employment, far less is known about how CTE influences college entry, certificate attainment, or degree

completion for these students. More research is needed to understand whether and under what conditions CTE supports smoother transitions to postsecondary education.

Together, these questions underscore the need to move beyond aggregate participation statistics and toward a deeper understanding of how CTE can better serve students with identified disabilities—across programs, across states, and across identified disability types.

Endnotes

1. In 2023, 15.2% of public school students received services under the Individuals with Disabilities Education Act (IDEA). nces.ed.gov/programs/digest/d23/tables/dt23_204.70.asp

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7. A companion issue brief, Definition and Measurement Issues in CTE, provides an overview of data consistency considerations across multiple states.

About the Authors

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Shaun Dougherty is a professor of education and policy at Boston College's Lynch School of Education & Human Development. His research and teaching interests focus on education policy analysis, causal program evaluation and cost analysis, and the economics of education—with an emphasis on career and technical education, educational accountability policies, and the application of regression discontinuity research designs. He emphasizes how education can address human capital development and issues of equity related to race, class, gender, and identified disability status.

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