



EXECUTIVE SUMMARY

BUILDING BRIDGES:

AN ANALYSIS OF CAREER AND TECHNICAL
EDUCATION IN METRO MILWAUKEE



PUBLIC POLICY FORUM

There has been considerable discussion among policymakers and school leaders in recent years about the need to prepare students as early as junior high and high school for the demands of the 21st Century knowledge economy. Efforts to provide this combination of knowledge and skills often fall under the label of "Career and Technical Education" (CTE). But what exactly is Career and Technical Education and how is it being implemented in Wisconsin and Metro Milwaukee high schools?

This report provides a comprehensive look at CTE in public school districts in the region and state. Using the most recent data available from the State of Wisconsin, we analyze CTE enrollment and programming at the state, regional, and district level, describing trends to show how CTE has changed over time and gauging whether it is achieving desired outcomes. We conclude with policy recommendations for school leaders and policymakers aimed at strengthening the CTE curriculum.

Overall, our research is intended to shed light on how CTE is working in Wisconsin and Metro Milwaukee, and to inform discussion on its progression at the state and regional level.

WHAT IS CAREER AND TECHNICAL EDUCATION?

CTE does not have a common or concise definition and its different definitions can vary considerably in scope and scale. Using common elements and attributes, we define CTE as a curriculum designed to provide students with a combination of academic knowledge and career-oriented skills that will prepare them for seamless entry into the workforce or additional education. A defining characteristic of CTE is that it is a progressive sequence of courses in a specific subject that begins in high school and continues to postsecondary education or industry certification and employment.

High-quality CTE programs incorporate partnerships with the business community and Career & Technical Student Organizations to provide work-based learning and community engagement opportunities beyond the classroom. Such programs also use credit transfer agreements with higher education to help create a continuous pathway of study from high school to college and beyond.

The Wisconsin Technical College System (WTCS) is the main authority on CTE in Wisconsin. The system receives federal grants on behalf of the state and delegates money and responsibility for elementary and secondary CTE activities to the Department of Public Instruction. In addition to distributing Perkins money, WTCS helps local school boards develop high school CTE programs.

The principle funding mechanism for CTE is the federal Carl D. Perkins Grant, which is based on a formula that takes into account the number of students age 15 to 19 in the state relative to the total number of 15 to 19 year-olds in the country. Wisconsin received \$20.2 million in fiscal year 2016, with \$7.8 million granted to school districts and other local education agencies for CTE. Wisconsin also awards \$3 million annually to school districts to promote and support students earning an industry-recognized certification in addition to a high school diploma. Outside of these Technical Incentive Grants, the state does not appropriate specific funding for CTE at the K-12 level.



CTE ENROLLMENT AND DEMOGRAPHICS

Table 1 depicts the statewide and regional enrollment of students in CTE courses in the 2014-15 school year, the most recent year for which data are available. A "CTE participant" is a student who has taken at least one CTE course, while a "CTE concentrator" is one who has taken two or more courses within a specific CTE sequence.

Table 1: CTE Participation, 2014-15

	Total Students	Non-CTE	CTE Participants	CTE Concentrators
Metro Milwaukee	38,233	16,095	22,138	11,293
State of Wisconsin	132,643	44,526	88,117	34,241

In the region as a whole, 57.9% of 11th and 12th graders at public school districts participated in at least one CTE course. This trails the state rate of 66.4%, meaning the region has a higher percentage of students who are not participating in CTE. However, the region does have a higher percentage of CTE concentrators (29.5%) than the state (25.8%).

Table 2 shows that across Wisconsin, students of color comprised 28.2% of public school district enrollment, while such students accounted for 21.8% of CTE participants, signaling that students of color are underrepresented in the CTE curriculum. However, statewide CTE participation among non-white students has grown over time, up from 17.6% in 2007.

Table 2: Enrollment of non-white students by CTE status, 2014-15

	Percent Non-White			
	Total Enrollment	Non-CTE	Participant	Concentrator
Metro Milwaukee	44.4%	55.5%	36.3%	43.1%
State of Wisconsin	28.2%	34.7%	21.8%	23.7%

Non-white students in the region account for 36.3% of CTE participants, surpassing the statewide figure but still trailing the diversity of the region, where students of color account for 44.4% of enrollments. Diversity is more pronounced among CTE concentrators at 43.1%; that is nearly 20 percentage points higher than the state as a whole (23.7%), but it still falls slightly below the percentage of non-white students enrolled in the region.

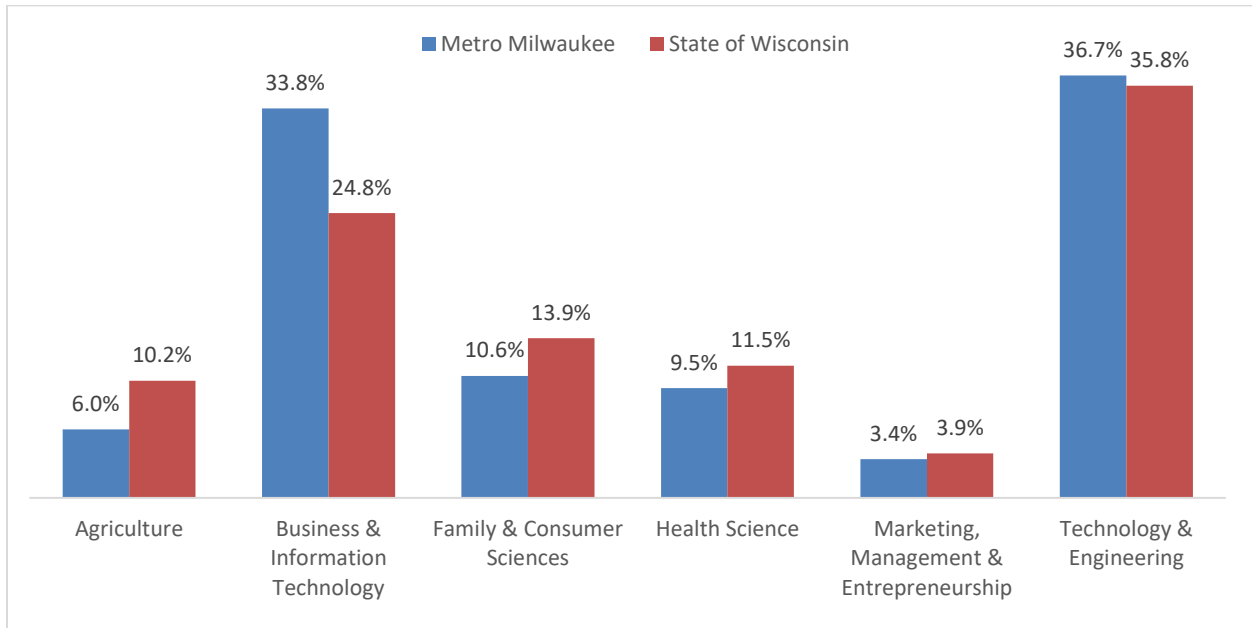
WHAT PROGRAMS DO CTE STUDENTS STUDY?

CTE in Wisconsin is separated into six program areas: Agriculture & Natural Resources; Business and Information Technology; Family & Consumer Sciences; Health Science; Marketing, Management & Entrepreneurship (MM&E); and Technology & Engineering.

Chart 1 illustrates the breakdown of regional and state CTE concentrators by program. Again, these students take two or more courses within a specific area, which aligns with the premise of CTE being a progressive sequence of courses in a given field.



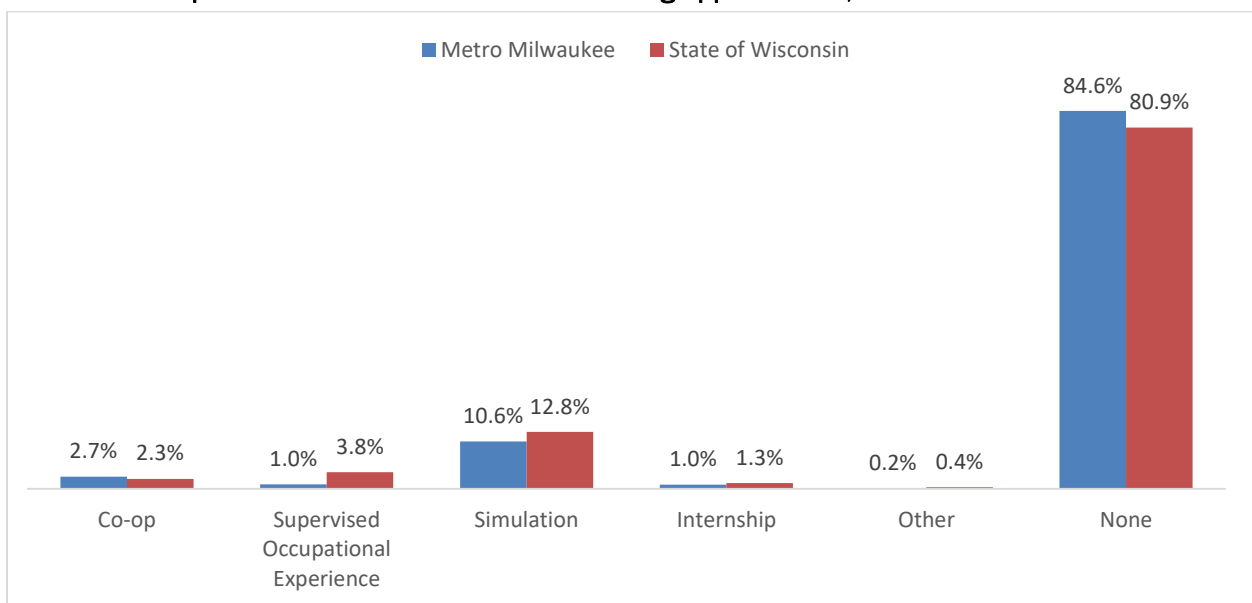
Chart 1: Distribution of regional and state CTE concentrators by program area, 2014-15



Technology & Engineering was most popular among concentrators, with 36.7% of concentrators in the region and 35.8% statewide selecting this program area. Business & IT was the second most popular program area, with 33.8% of concentrators in Metro Milwaukee and 24.8% statewide studying this field.

A high-quality CTE curriculum enhances classroom instruction with work-based learning. **Chart 2** shows the number of CTE concentrators in both the region and state who took part in a work learning program in the 2014-15 school year. The data reveal that very few CTE concentrators take part in these work learning programs.

Chart 2: Participation in non-certificated work learning opportunities, 2014-15



ACADEMIC PERFORMANCE AND CTE

The primary goal of CTE is to prepare students for further education and for the workforce. A necessary step in this process is to complete a high school diploma. In the state as a whole, 94.2% of the cohort of students who entered high school four years earlier went on to graduate in the 2014-15 school year. As shown in **Table 3**, CTE concentrators in the region exceeded the state graduation rate (96.8%) as did CTE participants (96%). Non-CTE students graduated at a lower rate (90.2%) than CTE students and below the state average. Rates for each student group increased over time.

Table 3: High School Graduation Rate by Student Group, 2015

	Non-Participants	Participants	Concentrators
State of Wisconsin	90.2%	96.0%	96.8%

Table 4 provides a look at reading and math proficiency for all students and for CTE concentrators as measured by state assessments. On the reading component, 38% of CTE concentrators in the region and 36.3% in the state scored proficient or advanced as 10th graders. These rates are slightly lower than the 39% proficiency rate for all 10th graders in the region and 38.8% statewide.

Table 4: WKCE percent proficient and advanced for senior CTE concentrator students, 2014-15

	10th Grade Reading		10th Grade Math	
	District Total	CTE Concentrators	District Total	CTE Concentrators
Metro Milwaukee	39.0%	38.0%	43.9%	47.1%
State of Wisconsin	38.8%	36.3%	44.9%	46.2%

On the math section we see the reverse, as 47.1% of CTE concentrators in Metro Milwaukee were proficient or advanced, compared to 43.9% of all 10th graders. Statewide, 46.2% of CTE concentrators were proficient or advanced, compared to 44.9% of all 10th graders. Based on the available data, we cannot conclusively say that CTE concentrators perform better or worse than non-CTE concentrators on state assessments.



OUTCOMES FOR CTE CONCENTRATORS

Next we explore how CTE students are faring after they complete high school. The data come from an annual survey of CTE concentrators conducted a year after their high school graduation. **Table 5** shows nearly 74% of concentrators in the region and state were pursuing further education per the most recent survey for which data are available. Employment was the next most common pursuit, with 16.5% of concentrators in Metro Milwaukee and 19.6% statewide reporting that they were currently employed. Slightly more than 8% of CTE concentrators in the region were not currently employed but seeking employment, nearly double the statewide rate of 4.3%.

Table 5: Outcomes for CTE concentrators, 2014-15

	Employed	Further Education	Military	Seeking Employment	Other*
Metro Milwaukee	16.5%	73.6%	1.6%	8.1%	0.2%
State of Wisconsin	19.6%	73.8%	2.1%	4.3%	0.2%

*Other includes Homemaker, Not Seeking Employment, and Deceased

Table 6 provides a look at the type of higher education pursued by CTE concentrators who chose further education after high school. Though the state and Metro Milwaukee have about the same percentage of CTE concentrators seeking further education – roughly 74% – there are differences in the types of schools attended. We find that 68.3% of those in the region and 63.3% statewide were enrolled at a 4-year institution. Meanwhile, 28.9% of concentrators in Metro Milwaukee and 33% in Wisconsin were attending a 2-year college. While not shown in the table, we also find that statewide, 72.3% of concentrators were studying a field related to their CTE training.

Table 6: Types of further education among CTE concentrators, 2014-15

	Further Education	2-yr	4-yr	Other
Metro Milwaukee	73.6%	28.9%	68.3%	2.9%
State of Wisconsin	73.8%	33.0%	63.3%	3.6%

Table 7 shows the percentage of CTE concentrators who were in the workforce a year after graduation and whether their employment was full- or part-time. In the region, 16.5% of CTE concentrators were in the workforce; of those, 43.5% had obtained full-time employment, 17.8% worked part-time, and the employment frequency for 38.8% was unknown. The state had a higher rate of full-time employment (66.5%) than the region, and lower rates of part-time workers (11.9%) and unknowns (21.6%). Across Wisconsin, only 36.3% of concentrators worked in a job related to their CTE training.

Table 7: Types of employment among CTE concentrators, 2014-15

	Employed	Full-Time Employment	Part-Time Employment	Unknown
Metro Milwaukee	16.5%	43.5%	17.8%	38.8%
State of Wisconsin	19.6%	66.5%	11.9%	21.6%



THE CTE TEACHER WORKFORCE

Per DPI regulations, a course only can be counted as CTE if it is taught by an instructor with a license in that specific subject area. The number and variety of CTE courses that can be offered is constrained by the size of the CTE teacher workforce. Our analysis focuses on both CTE teachers and assignments, since some educators teach multiple subjects. **Table 8** provides a look at the region and state.

Table 8: CTE assignments, teachers, and schools by subject, 2015-16

Assignment Subject	Assignments in State	Assignments in Metro	Teachers in State	Teachers in Metro	Schools in State	Schools in Metro
Total CTE	4,031	776	3,479	738	857	133
Percent of All	5.2%	4.1%	5.8%	5.2%	36.2%	27.8%

In 2015-16, there were 4,031 CTE assignments in the state and 776 in the region. Looking at the overall figures, 4.1% of all assignments in the region and 5.2% in the state are for a CTE subject. Across Wisconsin, 5.8% of teachers are licensed to teach a CTE course, slightly more than the 5.2% of teachers in Metro Milwaukee. Overall, 36.2% of schools in Wisconsin and 27.8% in Metro Milwaukee have at least one CTE assignment.

POLICY RECOMMENDATIONS

We propose a set of policy recommendations to strengthen CTE. This is not meant to be an exhaustive list, but rather to spur a conversation on the future of CTE in our state and region. The list includes:

- Establish a universal CTE definition and enhance data collection
- Better define CTE pathways through enhanced partnerships with higher education
- Enhance outreach to businesses and the community to partner in CTE programming
- Help CTE participants become CTE concentrators
- Create improved and/or enhanced forms of state funding for CTE

Taken together, pursuit of these and other policy improvements could help create a more robust and universal CTE curriculum.



CONCLUSION

This report set out to explore Career and Technical Education in Metro Milwaukee high schools. Overall, we find that the majority of 11th and 12th grade students in the region and the state take at least some CTE courses during high school. A smaller percentage of students – less than one third – concentrate on CTE by taking two or more courses in a program of study. Additionally, we find:

- Women and students of color are underrepresented in CTE courses.
- CTE students have higher high school graduation rates than non-CTE students.
- CTE concentrators have a mixed performance on state assessment exams, with higher proficiency rates in math than the district average, but lower proficiency on the reading section.
- Nearly 75% of CTE concentrators continue their education after high school, with 68% attending a 4-year college.
- Less than 17% of CTE concentrators in the region enter the workforce directly from high school and most take jobs unrelated to their CTE training.

As with many research projects, this report raises more questions than it provides answers. Some questions for future research include:

- What are the enrollment and completion patterns of CTE students who go on to attend Wisconsin higher education institutions?
- What are the employment outcomes of CTE concentrators four to five years after high school?
- Is the CTE curriculum effectively aligned to the workforce needs of employers?
- Have recent changes to CTE teacher licensing resulted in more teachers hired and more CTE courses offered?

While often thought of as a relatively new phenomenon, Career and Technical Education has existed in some form for more than a century. We know that a high-quality CTE curriculum should contain several key elements, but this report suggests that not every school or district in the state or region incorporates each of those elements. We encourage school leaders and policymakers to carefully review these findings and we hope they will use them to improve the effectiveness of CTE programs and enhance their role in boosting post-graduation outcomes and preparing our future workforce.

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