



# Inequities in CTE Access in Washtenaw County

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## KEY FINDINGS:

1. Access to Career and Technical Education (CTE) is limited. All students in Washtenaw County, from every demographic group, have access to fewer programs on average when compared to the state.
2. Access to CTE is inequitable. Economically disadvantaged, Black, and Hispanic students have less overall access to CTE programming compared to their more affluent and White peers.
3. Access to any program is dependent on which district and building a student attends. Economically disadvantaged, Black, and Hispanic students are less likely to attend schools with at least one on-campus CTE program.
4. Access to high skill, high wage, and in demand programs varies across districts and is inequitable.
5. Strategies to address these inequities could include merging entities or systems, facilitating opportunities within comprehensive high schools and neutral site locations, addressing local transportation and scheduling issues, and funding models.

# INTRODUCTION

This report is a continuation of the Youth Policy Lab's (YPL) examination of access to career and technical education (CTE) programming. Whereas our 2022 policy brief titled [How Access to CTE Varies Across Michigan Schools and Students](#) analyzed this topic throughout the entire state of Michigan, the analyses presented here focus on Washtenaw County. Our previous brief highlighted key racial and socioeconomic access gaps to CTE programs, and Washtenaw Intermediate School District (WISD) Superintendent Naomi Norman and WISD CTE Director and Career Education Planning District (CEPD) Administrator Ryan Rowe approached YPL to help them understand the extent to which those gaps exist in Washtenaw County.

Washtenaw County provides an interesting context in which to study CTE access. In some ways, Washtenaw County closely resembles the rest of the state.<sup>1</sup> Roughly three out of every four residents are White and about one out of every eight are Black. Approximately 13% of the county lives in poverty. However, these county-level averages mask significant demographic variation across localities within Washtenaw County. For example, one-quarter of Ypsilanti's population is Black while the same is true of less than one percent of residents in Dexter, Chelsea, and Whitmore Lake. Ann Arbor exhibits high levels of both college degree attainment (77.2% among adults age 25 and older – roughly 1.5 times the county average) and poverty (22.5%).

This demographic variation interacts with CTE funding and delivery models (see below for further details) in ways that offer important policy implications. Unlike most ISDs in Michigan, WISD does not levy a CTE millage to fund its programs. Instead, its local districts operate programs independently and according to various consortium-based agreements. **Whereas most other ISDs use their millages to fund countywide CTE centers to which all students have access, there are stark boundaries in WISD that determine which students can enroll in which programs.** In other words, the community in which a student lives determines the set of CTE programs available to them.

As we have argued in our other reports, there is plenty of empirical evidence to suggest that CTE benefits students in meaningful ways. For example, researchers have found that participation in CTE is associated with increased likelihood of on-time high-school graduation.<sup>2,3,4</sup> Other evidence suggests that CTE is also correlated with positive labor market outcomes like increased wages and employment rates in some fields.<sup>5,6</sup> The question of whether all students have the opportunity to enroll in these programs and begin developing career skills, then, is an important one.

# CTE FUNDING AND DELIVERY IN WISD

Students in Michigan can enroll in CTE programs at their home high school or travel to an off-site location (if there are any available) to enroll in a program. Off-site locations can include other comprehensive high schools, contracted program sites (e.g., beauty schools and community colleges), or standalone CTE centers.

There are two CTE funding and delivery models in Washtenaw County. Three local districts operate their

own programs independently while the rest belong to the South and West Washtenaw Consortium (SWWC). Table 1 describes these systems in further detail and explains their implications for students' access to CTE programming. See Appendix 1 for a map of all local districts in Washtenaw County and the CTE programs they offered in the 2022-23 school year.

**TABLE 1:** CTE Funding and Delivery in Washtenaw County

	CTE Program Operated by	
	South and West Washtenaw Consortium	Individual Local Districts
<b>Description</b>	A group of neighboring local districts agree to let students travel across borders to participate in CTE programming	A local district operates programs that it may or may not make available to external districts
<b>Local Districts</b>	Chelsea, Dexter, Lincoln, Manchester, Milan, Saline	Ann Arbor, Whitmore Lake, Ypsilanti
<b>Program Enrollment Eligibility</b>	Grade-eligible students attending one of the local member districts	Operating district decides
<b>Slot Allocation Method</b>	Based on a school's share of the consortium's 9-12th grade enrollment	Operating district decides
<b>Funding Sources (Beyond State and Federal)</b>	Negotiated tuition fee for visiting students	Negotiated tuition fee for visiting students (if applicable)
<b>Administrative Entity</b>	The local district that hosts a given program (multiple within consortium)	The local district

## DATA

To allow for comparisons with the statewide statistics published in our 2022 brief, our sample and methodology in this report remain the same for most of the tables and figures presented below. We restrict our analyses to the 2017-18 school year and include all school types (e.g., alternative schools and public academies) in addition to traditional comprehensive high schools. Students are assigned to a high school (i.e., their “home” or “own” school) according to the building in which they spent most of their instructional time during the 2017-18 academic year.

Programs are defined at the program-by-building level, which readers may know as a PSN (i.e., program serial number). These are unique numbers that distinguish courses offered at different locations. For example, the welding program in school A might be PSN 1234 while the welding program at school B is 1235.

We create measures of CTE availability based on known rules and observed enrollment patterns in MDE data. First, we assume that students are eligible to enroll in all programs offered within their home high school. Second, we consider a PSN at other schools to be available to students from a particular sending school if there is a pattern across

years of students from the sending school attending that program. A key advantage of this approach is that it ignores programs that are technically available “on paper” but that students do not or cannot attend in reality.

There are 29 schools included in our analysis. See Appendix 2 for the full list.

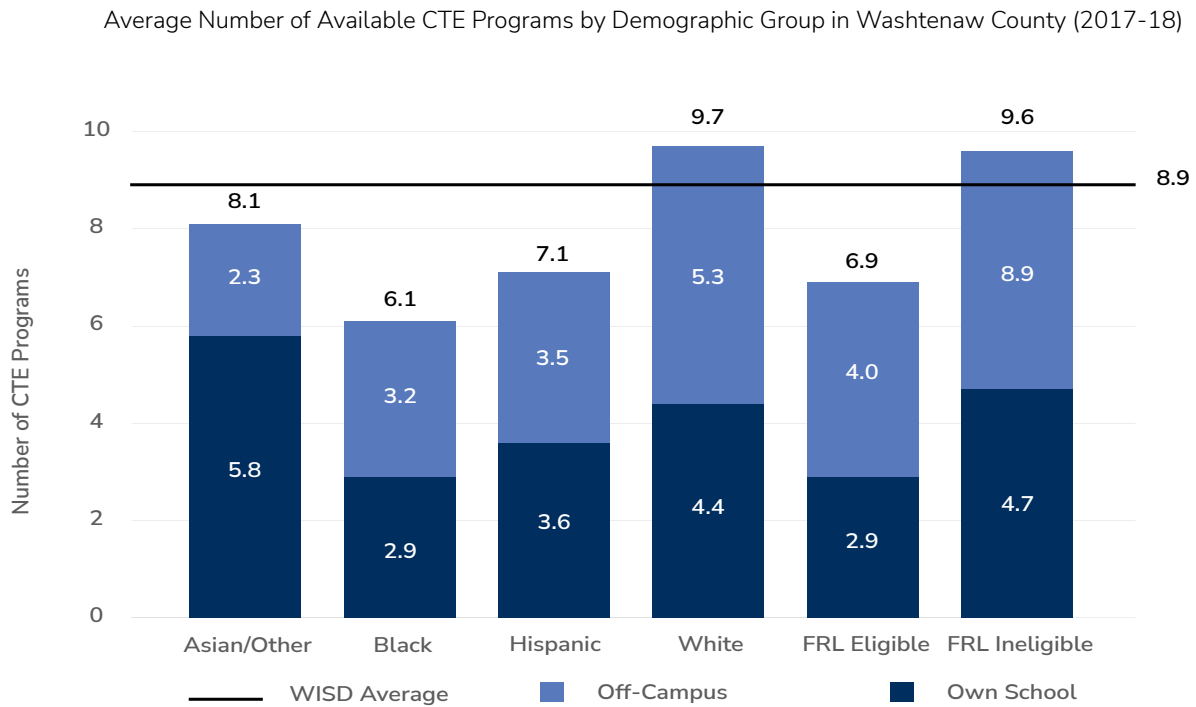
Note that we also include figures at the end using data from the 2022-23 academic year. We received the underlying data for these figures from Superintendent Norman and Director Rowe to supplement the core analyses in this report. Readers should be aware that these figures relax some of the aforementioned historical enrollment requirements used to determine cross-campus enrollment eligibility. (They do, however, include all public high schools regardless of school type.) This is largely due to complications caused by the COVID-19 pandemic. As such, readers should consider this second set of figures as snapshots from a single year and avoid making direct comparisons to the core figures.

## RACIAL AND SOCIOECONOMIC INEQUITIES IN CTE ACCESS

The average student in Washtenaw County has access to approximately nine programs, as shown in Figure 1. There is significant variation across racial and socioeconomic groups. Whereas the average White student has 9.7 programs available, their Asian, Black, and Hispanic peers have 8.1,

6.1, and 7.1 programs available on average. The average student who does not qualify for free or reduced-price lunch (FRL; our proxy for socioeconomic status) can access roughly 2.7 more programs than students who do qualify for FRL (9.6 vs 6.9, respectively).

**FIGURE 1:** White and More Affluent Students Have Greater Access to CTE



There are a few notable departures from the statewide numbers. First, **all students from every demographic group in Washtenaw County have access to fewer programs than the statewide average of 13.8 programs**. Second, although the size of the socioeconomic gap is roughly consistent, there are greater racial disparities in Washtenaw County. Whereas Black students were the only group in the statewide analysis to have below-average access, in Washtenaw County White students are the only racial group who exceed the overall average. Furthermore, while Black students across the state average 1.6 fewer programs than all students combined, that gap widens to 2.8 fewer programs in Washtenaw County (where there are also fewer programs available overall).

Group averages can hide important sources of variation. Figures 2 and 3 show the distribution of program availability for different groups across five bins. As noted on the bottom axes, each bin (or bar) corresponds to a different number of available CTE programs; the height of each bar represents the share of students from each group who can access a number of programs within that bin's range. These figures help to explain whether the group differences in Figure 1 come from inequities across the distribution or whether there are differences concentrated at either end of the availability spectrum.

**FIGURE 2:** Economically Disadvantaged Students More Likely to Have Access to Three or Fewer Programs

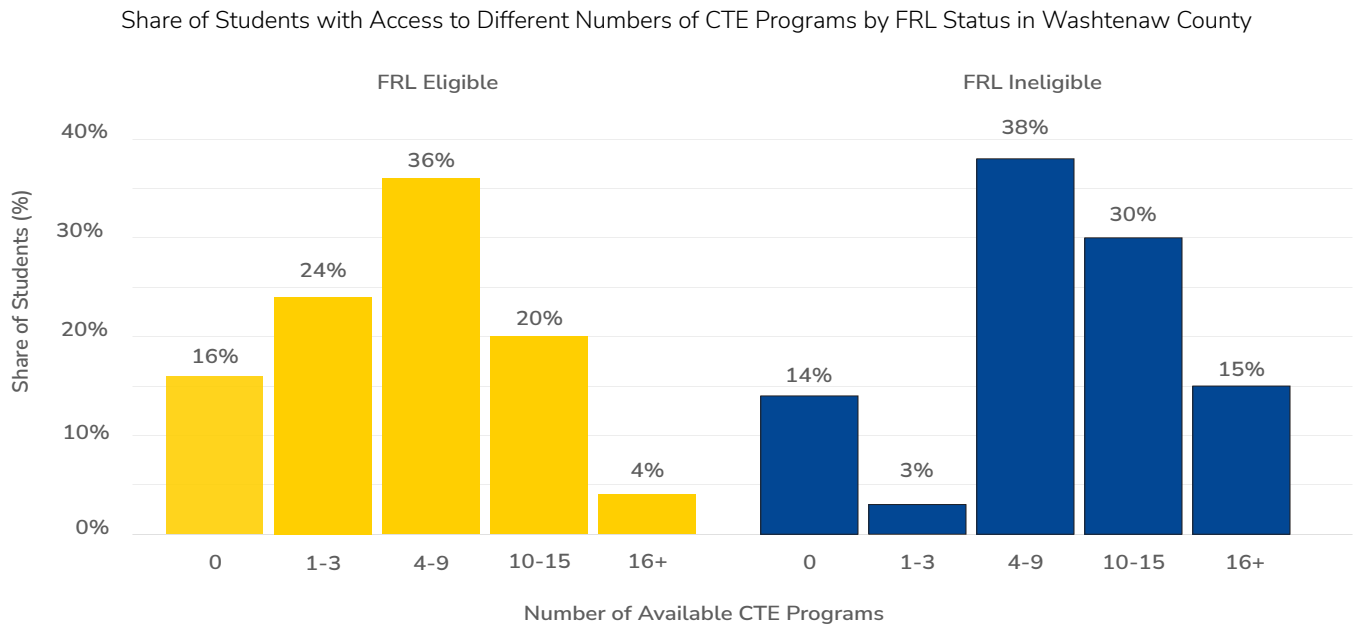
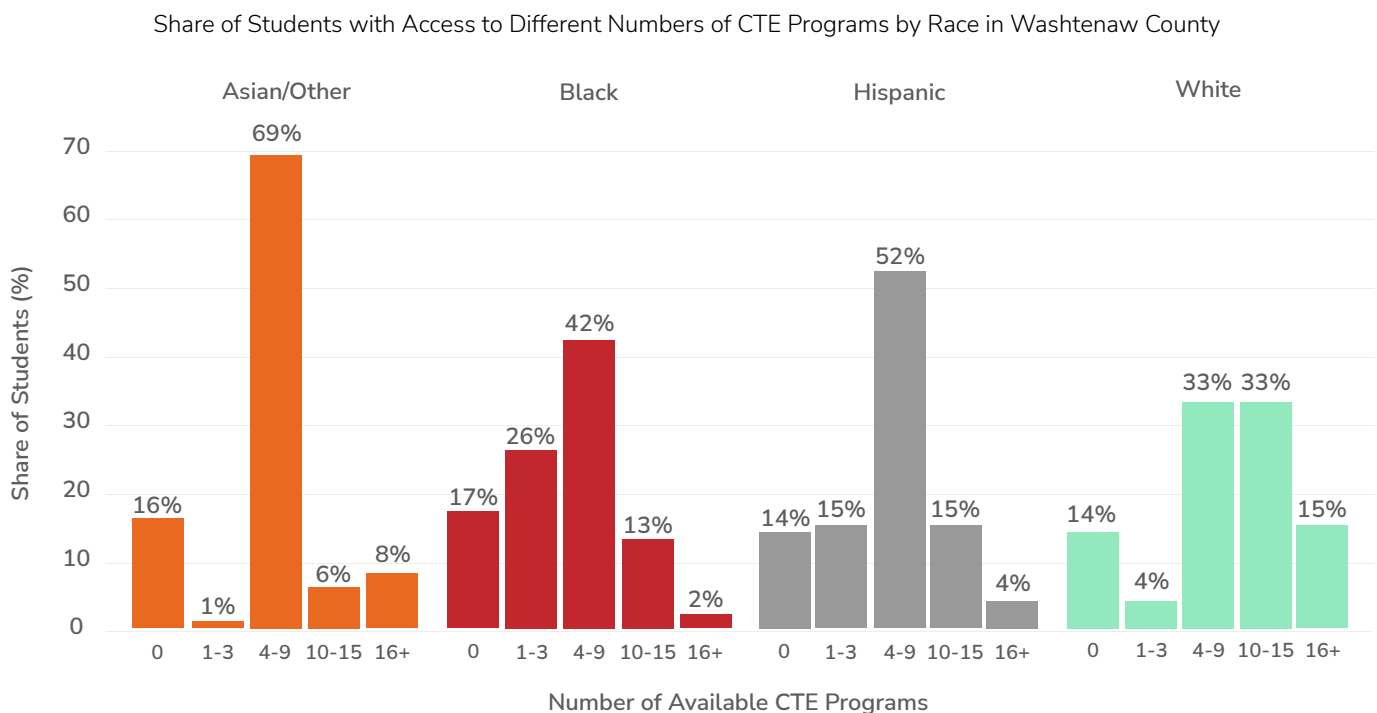


Figure 2 shows that the **socioeconomic gap is largely driven by differences at the highest and lowest levels of availability**. FRL-eligible students are approximately 2.5 times as likely as their more affluent peers to have access to

three or fewer programs. Conversely, students who do not qualify for FRL are nearly four times as likely to have access to 16 or more programs.

**FIGURE 3:** A Greater Share of Black and Hispanic Students Have Access to Three or Fewer Programs



We observe notable racial disparities in Figure 3 as well.

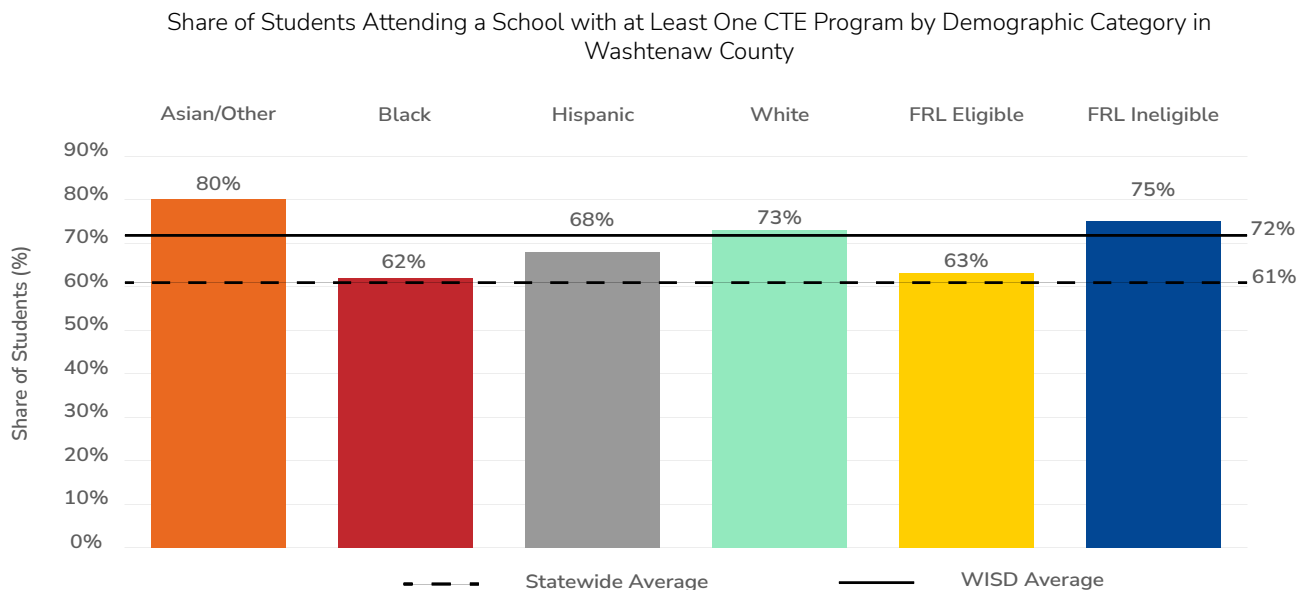
**White students are roughly three times as likely as any other group to have access to 10 or more programs. Black and Hispanic students are much more likely to have access to three or fewer programs on average.** That said, the plurality of students from each racial group can access between 4-9 programs.

As is the case with the socioeconomic groups in Figure 2, all racial groups in Washtenaw County are significantly more likely to have access to three or fewer programs than their

same-group peers throughout the state, and much less likely to have access to 10 or more programs.

The previous three figures describe CTE availability in any location (i.e., a student's own school, another comprehensive high school, or an off-site contracted program). However, there is evidence to suggest that the availability of CTE in a student's own school strongly predicts whether they will ultimately participate in a program. Figure 4 shows the share of students in Washtenaw County who have access to at least one CTE program in their home school.

**FIGURE 4: Black and Economically Disadvantaged Students are Less Likely to Attend Schools Offering On-Campus CTE Programs**



As there is no CTE millage in Washtenaw County, a greater share of comprehensive high schools offer on-campus CTE programs relative to the state as a whole. Thus, **Figure 4 shows that all students in Washtenaw County are more likely than students across the state to attend a school that offers at least one on-campus CTE program, regardless of their race or socioeconomic status.** That said, we observe similar racial and socioeconomic disparities to those we see for the state as a whole.

Up to this point, we have grouped all CTE programs together with no concern for program type or career cluster. However, Michigan offers more than 60 CTE programs across 17 career clusters. We can therefore analyze access by program type to determine the most common types of occupations students in Washtenaw County have the opportunity to begin exploring through CTE.<sup>7</sup>



**TABLE 2:** Students Outside of the SWWC Face Limited CTE Enrollment Options

Average Number of Available CTE Programs by Program Type, Location, and Delivery Model							
	All	Arts & Communications	Business, Management, Marketing & Technology	Engineering, Manufacturing, & Industrial Technology	Health Sciences	Human Services	Natural Resources, & Agriscience
% students with at least one on-campus program	72%	19%	49%	56%	41%	35%	19%
Average number of programs available at any distance – Washtenaw County (All)	8.9	0.9	2.0	2.9	0.8	1.9	0.4
Average number of programs available at any distance - SWWC	14.6	2.2	2.0	5.1	1.1	3.2	1.0
Average number of programs available at any distance – Non-SWWC	4.9	0.0	1.9	1.4	0.6	1.0	0.0

Table 2 describes CTE availability across common career fields in Washtenaw County. **Relative to the rest of the state, Washtenaw County students are more likely to have programs available in their own schools from every career zone except Business, Management, Marketing & Technology.**<sup>8</sup> (Again, this stems from the fact that comprehensive high schools host most CTE programs in Washtenaw County due to its lack of a CTE millage).<sup>9</sup>

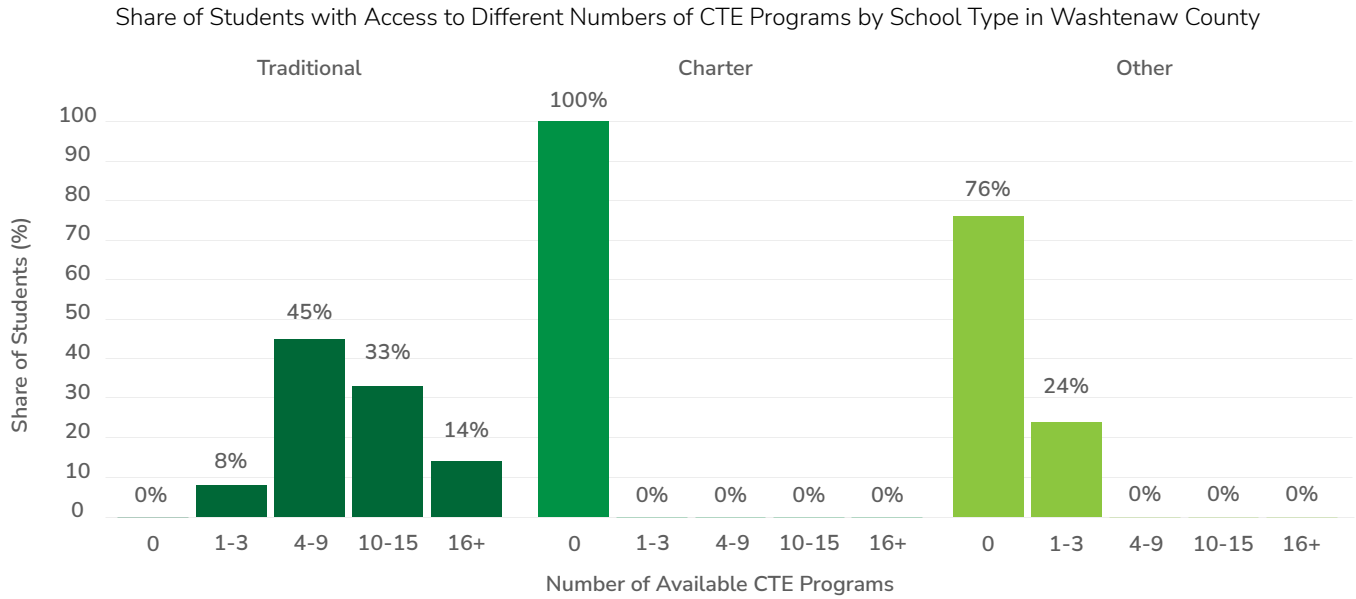
Table 2 also highlights an important fact about the distribution of CTE programs across Washtenaw County – namely, districts that are part of the SWW Consortium have substantially greater access to programs than students in the three districts that are not part of the consortium. **Overall, students in SWWC have access to 14.6 programs while non-SWWC students have access to only 4.9 programs.** This disparity is largely driven by the small number of programs offered by Ypsilanti Community Schools (4 programs) and Whitmore Lake Public Schools (3 programs), which are less than half the number of programs offered by the third non-SWWC district, Ann Arbor Public Schools, which offers 11 programs (see Appendix 1).

The difference is particularly pronounced in the areas of Arts and Communication, Engineering, Manufacturing and Industrial Technology, and Human Services. Students in the SWWC have access to 5.1 programs in Engineering and Manufacturing related areas while students outside the consortium only have access to 1.4 such programs.

In our statewide analysis, we found that public charter schools, schools exclusively serving students with disabilities, and others that are not traditional comprehensive high schools have significantly lower access to CTE. In fact, the plurality of Michigan students enrolled in these schools have access to no CTE programs whatsoever. That said, we observe a moderate number of students with access to as many as 16 or more programs in the statewide data.



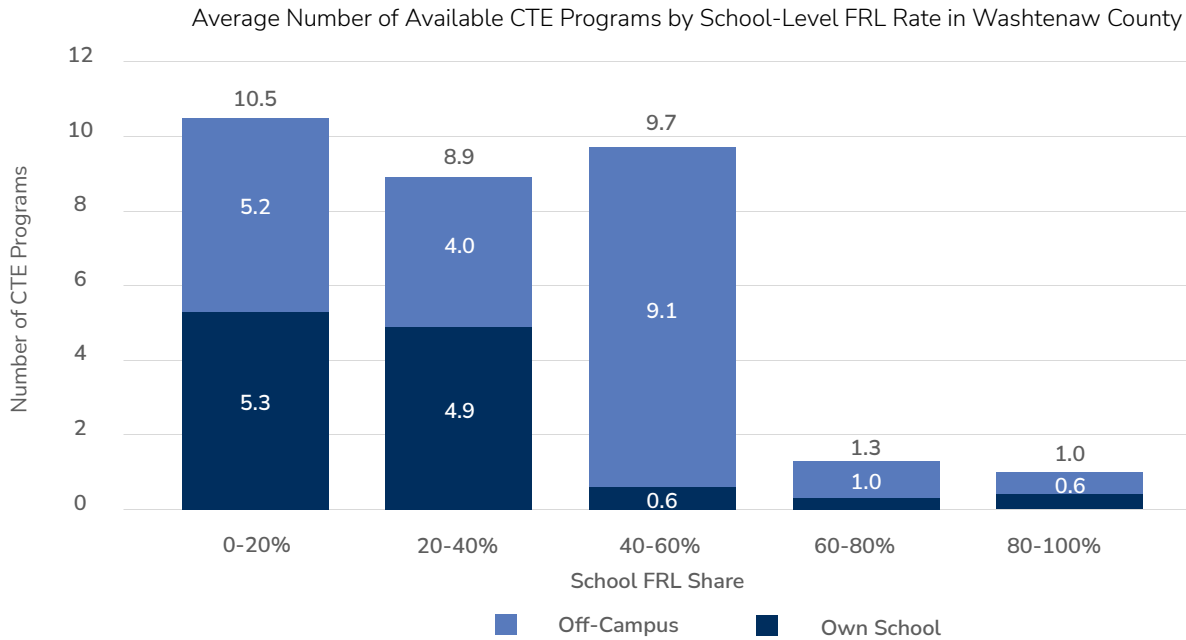
**FIGURE 5:** CTE Access is Severely Limited Outside of Traditional Comprehensive High Schools



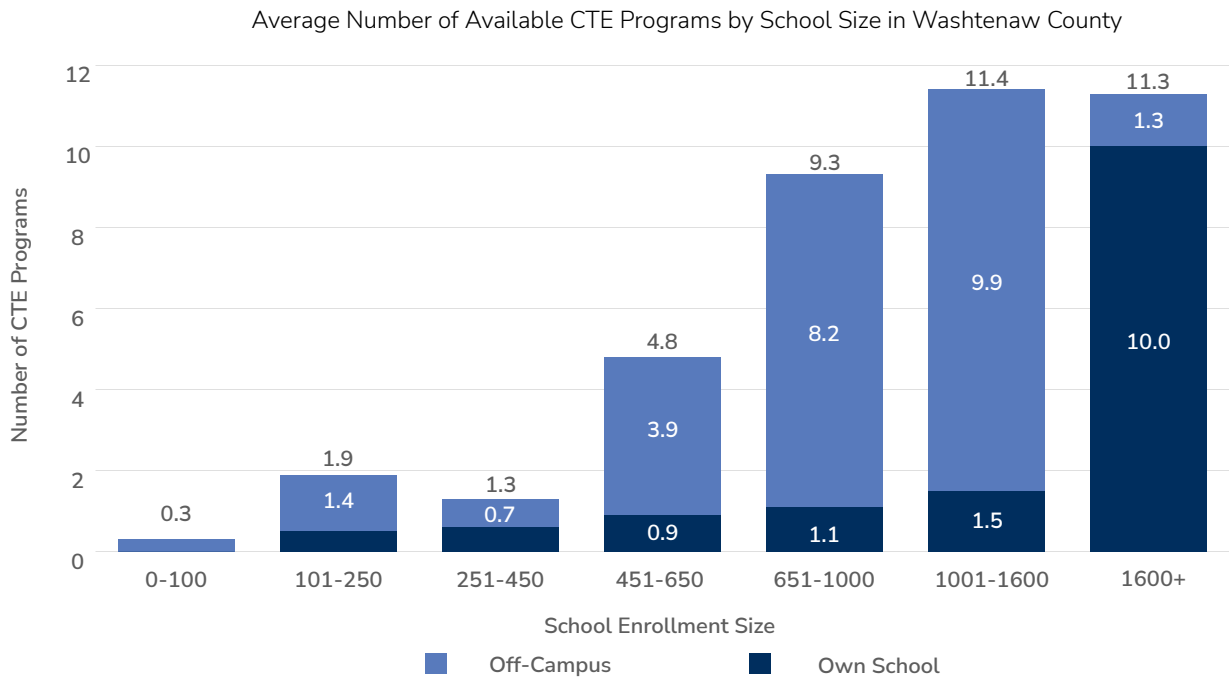
The differences are much starker in Washtenaw County, as shown in Figure 5. **No students in our cohort of interest enrolled in charter schools have access to any regular high school CTE programs.**<sup>10</sup> (Readers should note that these categories are fairly small in Washtenaw County. In this data set there are four charter schools enrolling 1,744 students.) The same is true of approximately three-quarters of those students enrolled in other non-traditional comprehensive high schools; the remaining quarter can access between one and three programs.

Figures 6 and 7 show the relationship between CTE access and FRL eligibility and enrollment size, respectively. **The trends in Washtenaw County generally mirror those for the state as a whole, with larger and higher socioeconomic status schools both offering greater access to CTE.** While we observe a significant drop-off in access among the smallest and most impoverished schools, this is largely due to the fact that these schools are also the non-traditional schools discussed in Figure 5. Note, however, that Ypsilanti is the exception as it ranks among the schools with the highest share of students who qualify for FRL.

**FIGURE 6:** Highest Poverty Schools Have Almost No CTE Access



**FIGURE 7:** Access Increases with School Enrollment Size



For context, Table 3 shows the number of schools and total number of students in each FRL rate and school size bin.

**TABLE 3:** 2017-18 Enrollment and School Counts by School Size and FRL Bins in Washtenaw County

Category	Number of Students	Number of Schools
<b>School Size</b>		
Enroll 0 - 100	260	8
Enroll 101 - 250	466	3
Enroll 251 - 450	1852	5
Enroll 451 - 650	2200	4
Enroll 651 - 1000	2277	3
Enroll 1001 - 1600	3660	3
Enroll 1601 or higher	5174	3
<b>FRL Rate</b>		
FRL 0-20%	5391	7
FRL 20-40%	6594	7
FRL 40-60%	1858	6
FRL 60-80%	690	5
FRL 80-100%	1356	4

## CTE MILLAGES OFFER PROMISE AND INVOLVE TRADE-OFFS

The penultimate analytic section of our statewide report compares districts with and without CTE millages. The first table in that section of the report shows the demographic composition of each group of districts. (See Appendix 3 for a current map of CTE millages throughout the state.) We find that districts that levy CTE millages are more racially homogenous on average and exhibit slightly lower levels of FRL eligibility. In other words, **districts that enroll higher concentrations of students of color and students who face greater economic disadvantage are less likely to have a system in place that standardizes CTE access for all students.**

Table 4 below adds the demographic composition of WISD high school students for comparison. **We see that the racial composition of students is somewhere between millage and non-millage districts, and WISD students are significantly less likely to qualify for FRL or have a disability.**

**TABLE 4:** Demographic Characteristics of Students Enrolled in Washtenaw ISD and Other Districts Across Michigan with and without CTE Millages

Student Demographic Group	Demographic Enrollment in Districts with CTE Millages	Demographic Enrollment in Districts without CTE Millages	Demographic Enrollment in WISD
Asian/Other	4%	3%	9%
Black	14%	29%	19%
Hispanic	8%	6%	5%
White	81%	66%	72%
FRL-Eligible	56%	61%	30%
Students with Disabilities	20%	19%	13%
Limited English Proficiency	3%	4%	5%

Note: Racial categories in this table sum to slightly more than 100% because of the nature of Hispanic ethnicity in our data. Some students are identified as Hispanic alone while others are included in both Hispanic and another racial category as well.

Our previous work also reports that on average, students in districts that levy CTE millages have access to a greater number of CTE programs compared to students whose districts do not levy a millage (16 compared to 11, respectively). This is true for all students regardless of their race or socioeconomic status. Moreover, our analyses reveal that racial and socioeconomic access gaps are smaller – and sometimes reversed – in places with CTE millages. As we discussed in the statewide report, these results suggest that millages can help accomplish multiple policy goals that could satisfy stakeholders with various priorities.

First, by increasing the amount of funds to support CTE programs, they allow districts to offer students a larger set of CTE choices. On average, districts with millages offer more programs from all career zones. This means students have the option to begin exploring – and developing skills in – a wider variety of potential career paths during high school.

Second, millages help ensure these opportunities are accessible to all students regardless of their race or socioeconomic background. By pooling resources across an entire ISD and decoupling access from ad hoc negotiations between districts, these policies reduce access gaps that we observe in other locations.

**Publicly available information indicates that Washtenaw County could raise approximately \$20M in revenue with one mill<sup>11</sup>, which leaders could decide to use in various ways.<sup>12</sup> Some potential options include:**

- Providing transportation so students can enroll in existing programs at locations to which they are presently unable to travel
- Opening new programs on campuses that currently lack sufficient CTE programming
- Purchasing specialized equipment for new and existing programs
- Building a central countywide CTE center (along with the aforementioned investments in transportation) that is available to all WISD students
- Expand programming in small schools and in schools that primarily support low income and students of color
- Address racialized inequities through targeted programming

It is beyond the scope of this report to advocate for any of these – or other – possibilities. That said, we can offer some guidance for thinking through policy tradeoffs. First, it is important to clarify a specific goal when weighing decisions like whether to pursue a CTE millage and how to allocate the revenue. Is the objective to increase access or enrollment (the former does not necessarily guarantee the latter)? Are decision-makers concerned with rates or gaps? For example, it is possible to increase CTE access/participation rates across groups without decreasing the gaps between them. Second, millages have limitations just as they offer new

possibilities. While they can raise additional funds to, for example, provide a broader set of program options in a countywide center, this arrangement requires students to travel from their home school. Anecdotal evidence as well as analyses not presented here suggests that mandatory travel is a salient barrier for many students. Providing transportation can help ameliorate this somewhat, but this can still leave obstacles such as scheduling conflicts and socio-cultural barriers (i.e., a lack of a sense of belonging for some students depending on the location and demographic composition of a CTE programming site).

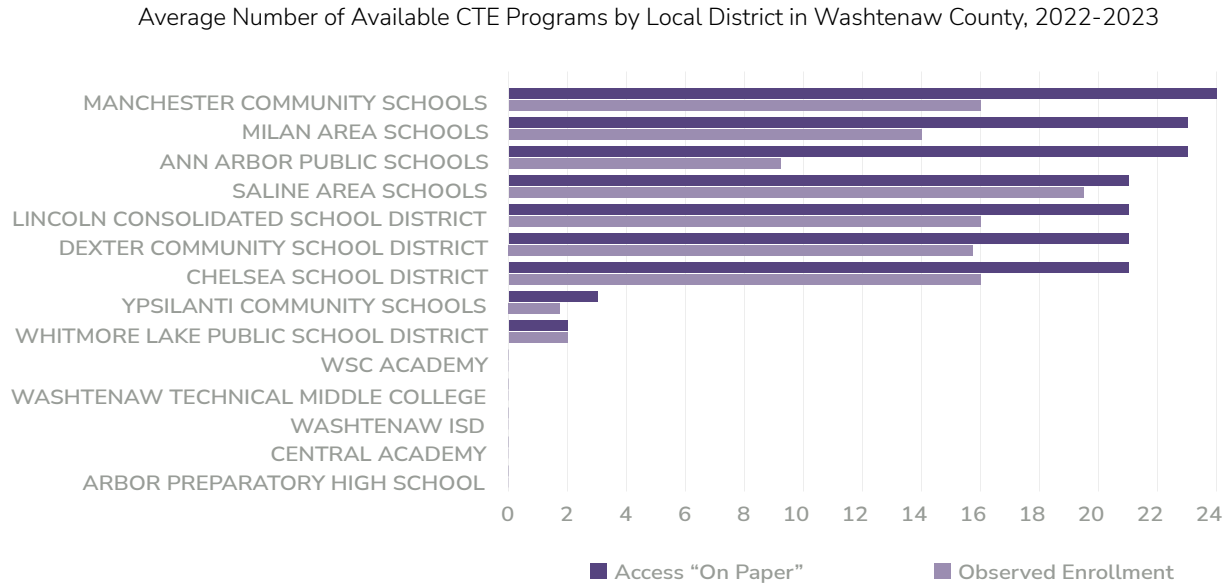
## ACCESS DISPARITIES REMAIN IN PLACE (2022-23 UPDATES)

As described above, the preceding analyses use data from the 2017-18 academic year. The COVID-19 pandemic makes it difficult to study changes in CTE access during the subsequent three academic years since public health measures limited in-person instruction and inter-campus travel during the 2019-2020 academic year. That said, schools had returned to normal operations by the 2022-23 academic year. We use CTE participation data provided by Superintendent Norman and Director Rowe combined with administrative student enrollment data from the Michigan Department of Education to provide a high-level summary of CTE access in Washtenaw County during the most recent academic year.<sup>13</sup>

Figure 8 shows the average number of total CTE programs accessible to students enrolled in each local district throughout Washtenaw County (note that public charters are coded as their own district). We represent access in two distinct ways. First (the dark purple bars), what is available to students “on paper” – that is, the total number of programs students from each sending district may access according to the various agreements in place between districts.

The second set of bars (light purple) shows the average number of programs available to students based on observed enrollment patterns from the 2022-23 school year. In other words, the light purple bars represent the number of programs that students from each district actually accessed regardless of what may be available to them “on paper.”

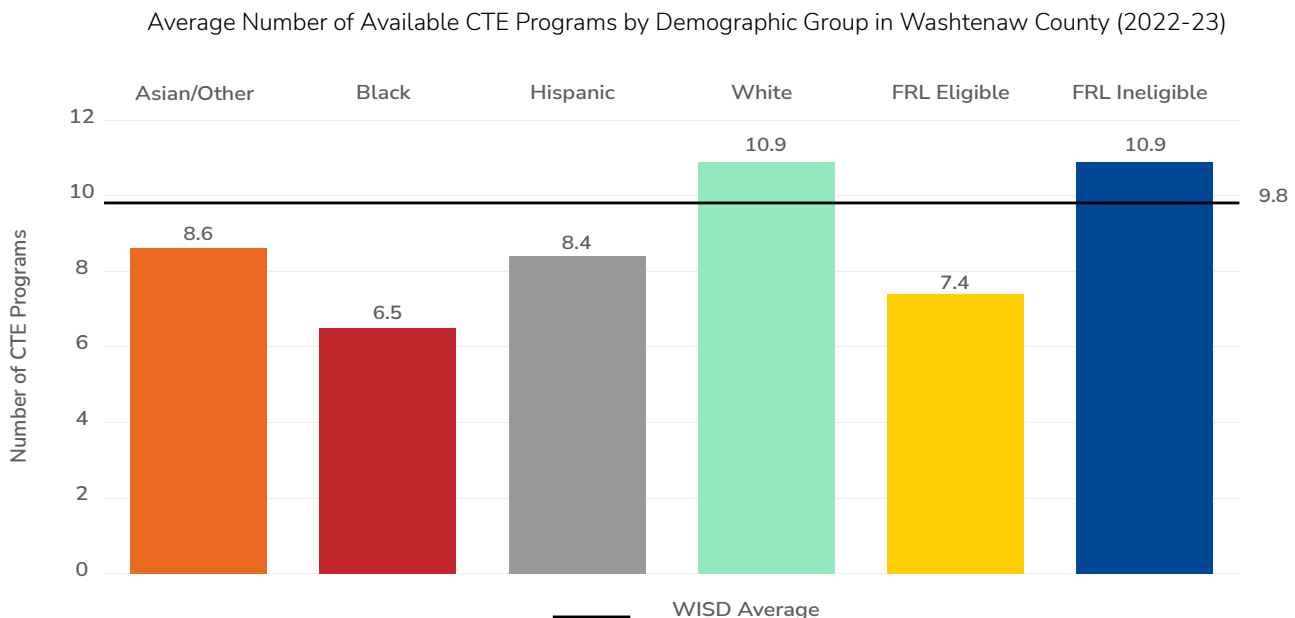
**FIGURE 8:** CTE Access Varies Greatly Across Districts



The results show that although students from each district do not participate in the full suite of programs available to them, most are able to access between 10 and 15 programs in practice. Ypsilanti, Whitmore Lake, and districts that represent non-traditional schools are the clear exceptions. Students from these schools can and do access few, if any, programs.

Figure 9 repackages these data to show the average number of accessible programs by race and socioeconomic status for all students throughout Washtenaw County. Noting the aforementioned caveat that the underlying data are different, we find that the patterns largely mirror those from the 2017-18 analyses, all groups have access to more programs in the 2022-23 year on average.

**FIGURE 9:** Racial and Socioeconomic Access Disparities from 2017-18 Persist in 2022-23

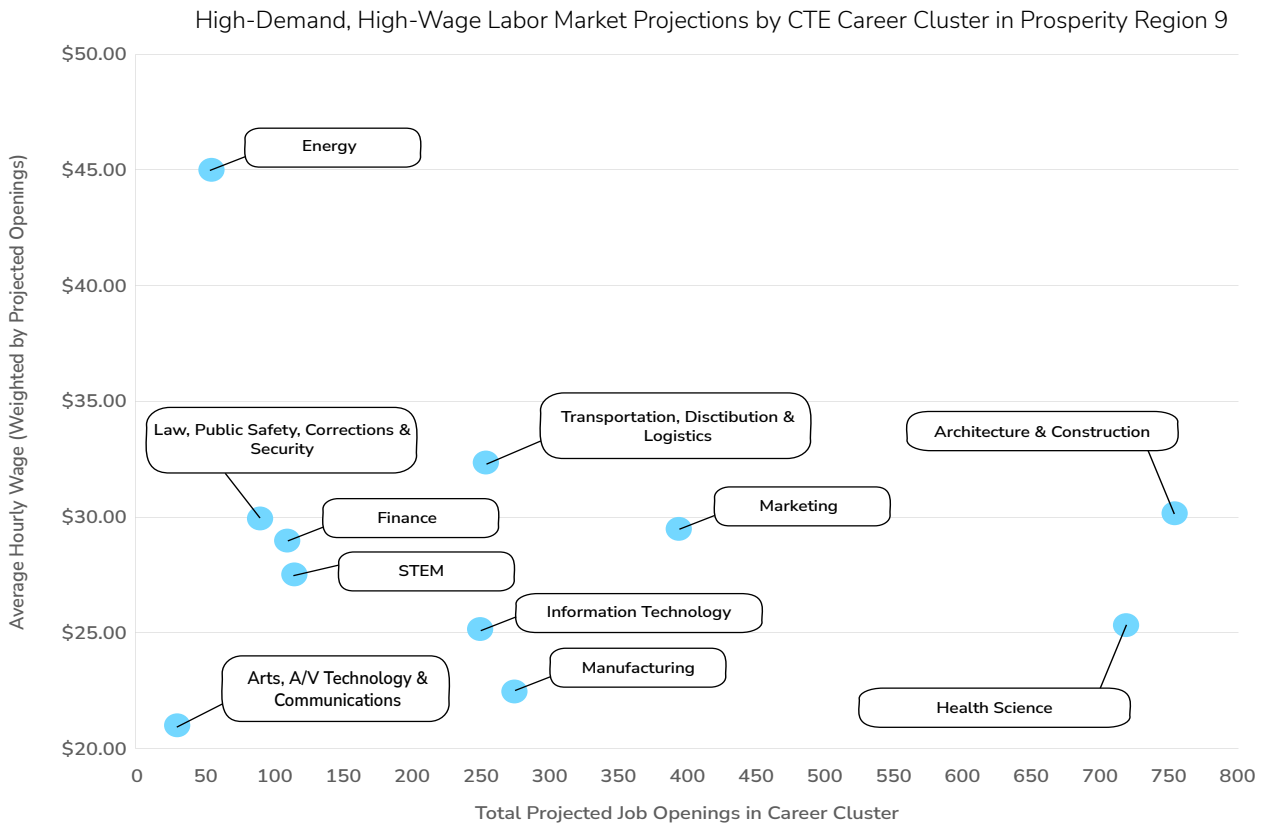


# SEGREGATED ACCESS TO HIGH DEMAND, HIGH WAGE OCCUPATION TRAINING

Lastly, we describe the alignment between CTE programming in Washtenaw County and the regional labor market. The Michigan Department of Technology, Management, and Budget (DTMB) produces lists of projected high-demand, high-wage (HDHW) occupations for the state and each Prosperity Region.<sup>14</sup> For this analysis we focused on the HDHW occupations that require more than a high school diploma but less than a four-year college degree, because most CTE programs are designed to prepare students for occupations in this range of education. (For more detail about our methodology, see Appendix 4).

Figure 10 groups CTE programs in Washtenaw County into career clusters and shows the total number of projected job openings (x-axis) and the average hourly wage (y-axis) of the HDHW occupations in Southeast Michigan (Region 9) that correspond to each CTE cluster. Some of the clusters have only one corresponding HDHW occupation and some have multiple aligned occupations. The two clusters with the largest number of aligned occupations are Health Science, which includes 10 of the 32 HDHW occupations, and Architecture & Construction, which has 9 of the HDHW occupations. We see that the Architecture & Construction

**FIGURE 10:** Architecture & Construction and Health Science CTE Programs Align with the Greatest Number of Projected HDHW Job Openings in the Region





and Health Science clusters have by far the largest number of projected job openings and the Architecture & Construction occupations have a higher average hourly wage. The career cluster with the highest average hourly wage is Energy, but there are only 55 projected job openings in those occupations in Region 9.

While Figure 10 provides a high-level summary of the relationship between CTE programming and the regional labor market, it does not indicate which of these programs

are available in Washtenaw County or how they are distributed across districts. To address these important questions, Table 5 shows the following:

- All Michigan CTE programs that train students to work in Prosperity Region 9 HDHW occupations.
- Whether each program is offered in Washtenaw County
- If a program is offered in Washtenaw County, which local districts can access it.

**TABLE 5: Whitmore Lake and Ypsilanti Have Almost No Access to High-Demand, High-Wage CTE Training**

HDHW Occupation	Aligned CTE Program	WISD	Districts
Audio and Video Equipment Technicians	Radio & TV Broadcasting Technology	Yes	SWWC
Audio and Video Equipment Technicians	Visual & Performing Arts	No	
Carpenters	Construction Trades	Yes	AAPS, SWWC
Commercial Pilots	Aeronautics/Aviation/Aerospace Science & Technology	No	
Computer User Support Specialists	Computer Programming/Programmer	Yes	Whitmore Lake
Computer User Support Specialists	Health Informatics	No	
Computer User Support Specialists	Health Information/Medical Records Technology/Technician	No	
Construction and Building Inspectors	Construction Trades	Yes	AAPS, SWWC
Dental Assistants	Health Sciences/Allied Health/Health Sciences, General	Yes	AAPS, SWWC
Dental Hygienists	Health Sciences/Allied Health/Health Sciences, General	Yes	AAPS, SWWC
Dental Laboratory Technicians	Therapeutic Services	Yes	AAPS, SWWC
Diagnostic Medical Sonographers	Clinical/Medical Laboratory Science/Research and Allied Professions	No	
Electrical Power-Line Installers and Repairers	Electrical and Power Transmission Installation	No	
Electrical Power-Line Installers and Repairers	Electric Lineman	No	
Electrical Power-Line Installers and Repairers	Lineworker	No	
Electrical Repairers, Power, Substation, and Relay	Electrical and Power Transmission Installation	No	
Electricians	Electrical and Power Transmission Installation	No	
Engineering Technicians, Except Drafters, All Other	Mechatronics	No	
Engineering Technicians, Except Drafters, All Other	Electro-Mechanical Technology	No	
HVAC and Refrigeration Mechanics and Installers	Heating, Air Conditioning, Ventilation and Refrigeration	No	
Industrial Engineering Technicians	Engineering Technology	Yes	AAPS, SWWC
Industrial Engineering Technicians	Industrial Production	No	
Industrial Machinery Mechanics	Heavy Industrial Equipment Maintenance Technologies	No	
Insurance Sales Agents	Insurance	No	
Licensed Practical and Licensed Vocational Nurses	Health Sciences/Allied Health/Health Sciences, General	Yes	AAPS, SWWC
Licensed Practical and Licensed Vocational Nurses	Clinical/Medical Laboratory Science/Research and Allied Professions	No	
Machinists	Machine Tool Technology/Machinist	Yes	SWWC
Massage Therapists	Health Sciences/Allied Health/Health Sciences, General	Yes	AAPS, SWWC
Mechanical Engineering Technicians	Engineering Technology	Yes	AAPS, SWWC

**TABLE 5:** Whitmore Lake and Ypsilanti Have Almost No Access to High-Demand, High-Wage CTE Training (cont.d)

HDHW Occupation	Aligned CTE Program	WISD	Districts
Physical Therapist Assistants	Health Sciences/Allied Health/Health Sciences, General	Yes	AAPS, SWWC
Plumbers, Pipefitters, and Steamfitters	Pipefitting Technology	No	
Plumbers, Pipefitters, and Steamfitters	Plumbing Technology	No	
Police and Sheriff's Patrol Officers	Public Safety/Protective Services	No	
Psychiatric Technicians	Health Sciences/Allied Health/Health Sciences, General	Yes	AAPS, SWWC
Radiologic Technologists	Diagnostic Services	No	
Sales Reps., Except Tech. and Scientific Products	Marketing, Sales and Service	Yes	AAPS, SWWC
Sales Reps., Except Tech. and Scientific Products	Specialized Merchandising, Sales, and Marketing Operations, Other	Yes	AAPS, SWWC
Web Developers	Digital/Multimedia and Information Resources Design	Yes	AAPS, SWWC

These results show that overall, **Washtenaw County offers CTE programs that train students to work in 16 of Prosperity Region 9's 28 HDHW occupations for which there are aligned CTE programs.** Importantly, however, we see that students from Whitmore Lake and Ypsilanti have essentially no access to these programs. In other words, access to training for the jobs that offer the highest labor market demand and earnings potential is extremely

segregated across the county. To the extent that participation in a CTE program might make it more likely that a student will secure a job in that field – something that, importantly, we cannot claim at this time – this suggests that **the distribution of CTE programming in Washtenaw County serves as a barrier to equitable economic opportunity.**

## CONCLUSIONS

CTE access patterns in Washtenaw County have some unique challenges:

- Access to CTE is limited. All students, from every demographic group, have access to fewer programs on average when compared to the state.
- Access to CTE is inequitable. Economically disadvantaged, Black, and Hispanic students have less overall access to CTE programming compared to their more affluent and White peers.
- Access to any program is dependent on which district and building a student attends. Economically disadvantaged, Black and Hispanic students are less likely to attend schools with at least one on-campus CTE program.
- Access to high skill, high wage, and in demand programs varies across districts and is inequitable.

The overall access to career and technical education programming is very limited compared to other counties

in Michigan and the state overall. In addition, there is less access for lower income, Black and Hispanic students. White students in Washtenaw County are three times as likely as any other group to have access to 10 or more programs. Statewide, districts that enroll higher concentrations of students of color and students who face greater economic disadvantage are less likely to have a system in place that standardizes CTE access for all students. Washtenaw County is no exception. This inequity of access is primarily due to the high number of programs available in the SWWC which are inaccessible to districts enrolling high percentages of low income and students of color. It is also due to the lower number of CTE programs in districts that serve students of color. Increasing access would require 1) identifying and enacting ways to provide access to existing programs for more students, 2) adding programs within localities, or 3) creating new shared programs available to all.

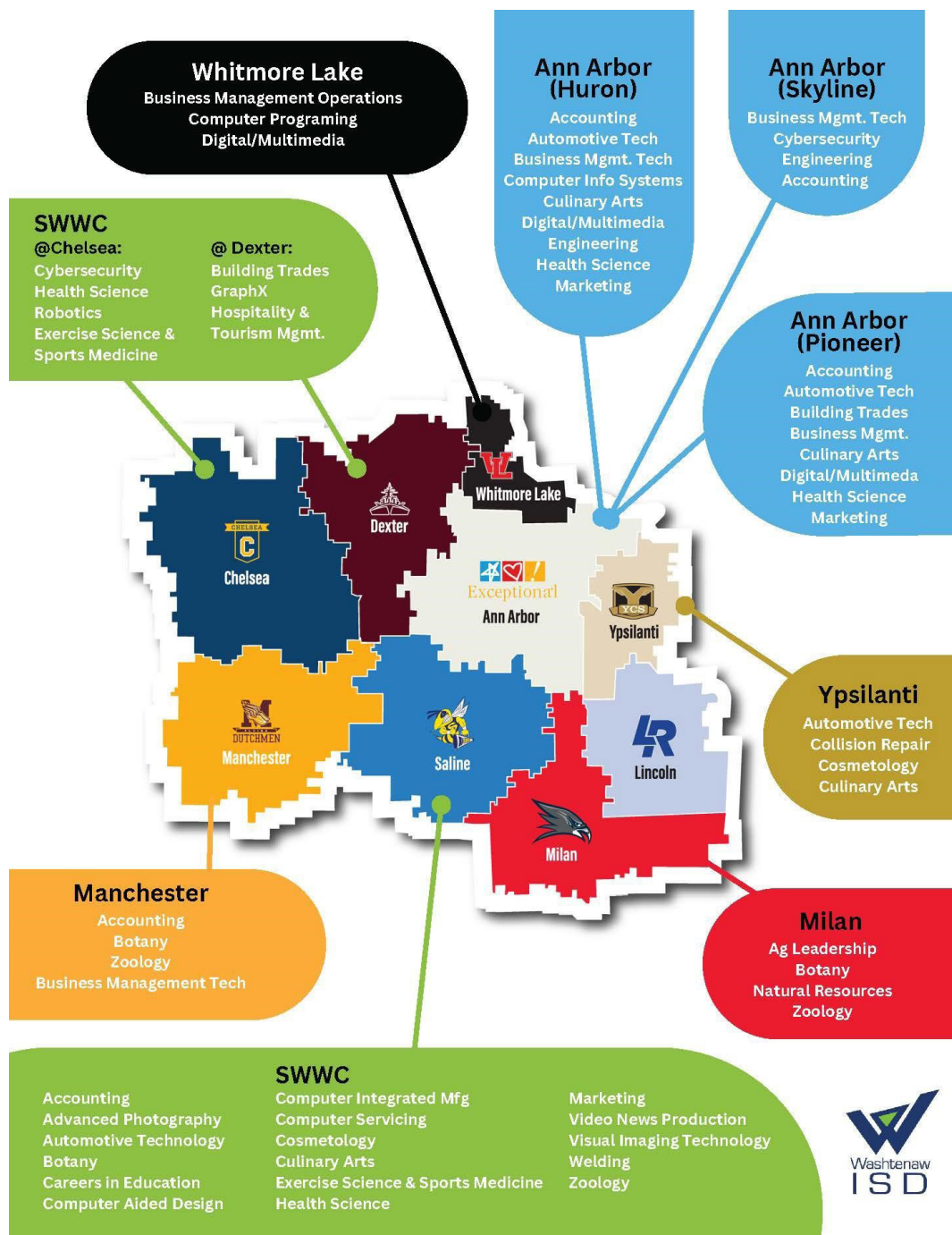
At the building level in Washtenaw County, there is 1 high school with no formal career and technical program within the walls of the school. Statewide and in Washtenaw County, enrollment in CTE programs is higher when students don't need to leave their own building. Bigger high schools have more access to CTE on site than smaller high schools in Washtenaw County. The ease of access when a program is located within a high school correlates with increased enrollment in that program.

Digging into the details for specific local districts, we find stark variation across localities. In the most recent enrollment records from the 2022-23 academic year, we see that Ypsilanti and Whitmore Lake face severely limited local CTE options. As the two districts excluded from the SWWC (other than Ann Arbor, which is well resourced enough to independently offer its own robust menu of CTE programming), this is perhaps unsurprising. Highlighting these disparities, Table 2 and Figure 8 demonstrate the difference that establishing inter-district enrollment opportunities can create for students. While it is true that on-campus opportunities increase participation more than those that require travel, clearly some number of students will travel to participate in CTE when given the chance.

We observe similar inequities when we focus on access to the subset of programs that train students to work in high wage, high skill, and in-demand occupations throughout the region. While such programs are generally well represented in Washtenaw County (there are programs that align with 16 of 28 occupations), students in Whitmore Lake and Ypsilanti have essentially no access to these programs (Whitmore Lake can access one). If one believes that CTE provides useful preparation that helps students find employment in their chosen field, the reality is that Whitmore Lake and Ypsilanti students are being denied the opportunity to begin training for careers that offer pathways to economic stability.

Looking forward, there are opportunities to mitigate the disparities we have described here that require varying levels of resources and political capital. For example, the SWWC, Ann Arbor Public Schools, Whitmore Lake and Ypsilanti Community Schools CTE consortiums could merge into one coordinated entity or system. In addition, opportunities could be facilitated within comprehensive high schools as well as at neutral site locations, depending on the career cluster/program. To further facilitate such a partnership and system, districts could search for ways to provide transportation to traveling students and/or align their class schedules to allow for inter-campus travel. Faculty could also travel to sites to mitigate challenges that have, to date, limited access to CTE opportunities. As previously mentioned, Washtenaw County is one of the last remaining counties in Michigan that does not levy a CTE millage. Statewide, on average, districts with millages offer more programs from all career zones. This means students have the option to begin exploring – and developing skills in – a wider variety of potential career paths during high school. Pursuing millage funding could open up possibilities to meet the needs of all students through self-awareness and self-discovery. By providing equitable access and opportunity to CTE-related applied learning and career exploration experiences, students may learn about themselves, establish a post-secondary plan, and better meet the demands of the workforce now and in the future.

## APPENDIX 1 - Current CTE Programs Throughout Washtenaw County



## APPENDIX 2

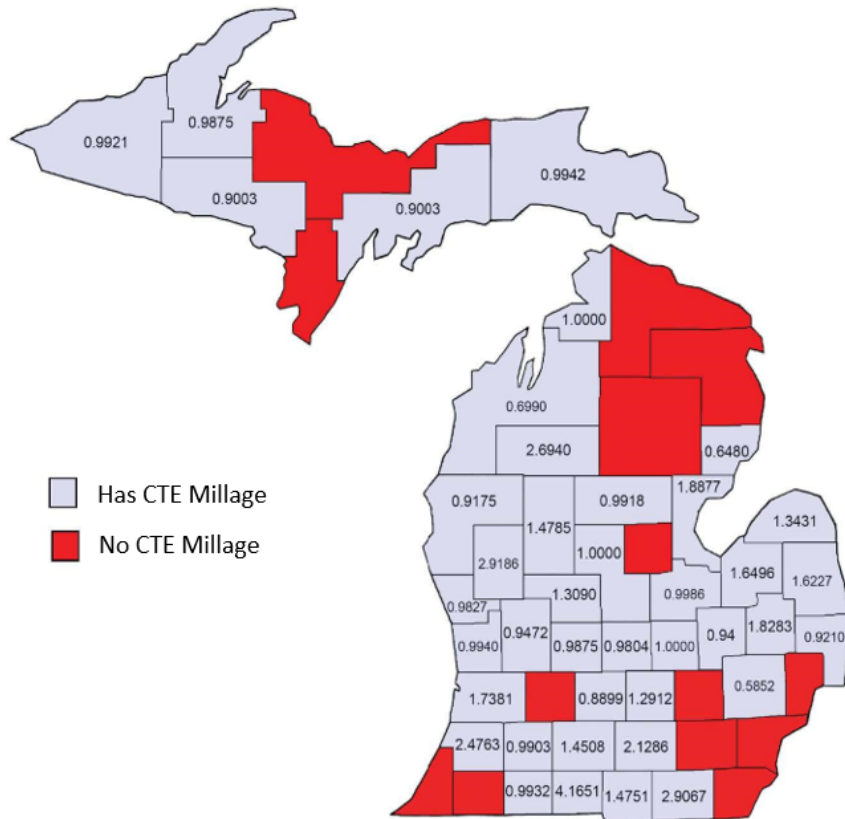
### High Schools in Washtenaw County

District Name	School Name	Type
Ann Arbor Public Schools	Community High School	Traditional
Ann Arbor Public Schools	Huron High School	Traditional
Ann Arbor Public Schools	Pioneer High School	Traditional
Ann Arbor Public Schools	Skyline High School	Traditional
Ann Arbor Public Schools	Pathways To Success Academic Campus	Other
Chelsea School District	Chelsea High School	Traditional
Dexter Community School District	Dexter High School	Traditional
Dexter Community School District	Dexter Alternative School	Other
Lincoln Consolidated School District	Lincoln Senior High School	Traditional
Manchester Community Schools	Manchester Middle/High School	Traditional
Milan Area Schools	Milan High School	Traditional
Saline Area Schools	Saline High School	Traditional
Saline Area Schools	Saline Alternative High School	Other
Washtenaw ISD	Washtenaw Alliance For Virtual Education	Traditional
Washtenaw ISD	Forest School	Special Education
Washtenaw ISD	High Point School	Special Education
Washtenaw ISD	Local-Based Speced Programs	Special Education
Washtenaw ISD	Early College Alliance	Other
Washtenaw ISD	Washtenaw Alliance For Virtual Education (Home)	Other
Washtenaw ISD	Washtenaw County Youth Center-Educational Programs	Other
Washtenaw ISD	Washtenaw International High School	Other
Whitmore Lake Public School District	Whitmore Lake High School	Traditional
Ypsilanti Community Schools	Actech High School	Traditional
Ypsilanti Community Schools	Ypsilanti Stemm Middle College	Traditional
Ypsilanti Community Schools	ACCE	Other
Arbor Preparatory High School	Arbor Preparatory High School	Charter
Central Academy	Central Academy	Charter
Washtenaw Technical Middle College	Washtenaw Technical Middle College	Charter
WSC Academy	WSC Academy-Ypsilanti Campus	Charter

Note: Public charter schools are considered as their own districts in Michigan education data.

## APPENDIX 3 – CTE Millages Across Michigan

### **2022 Millages for Career Educational Planning Districts (CEPDs)**



Source: Heritage Southwest Intermediate School District.

Note: The map shows the millage rate for each of the 41 Career Education Planning Districts (CEPDs) that levy a CTE millage. The 15 CEPDs in red do not have a CTE millage. The numbers are in mills (1/1,000 or 0.001 of a dollar). A 1 mill tax rate (1.000) translates to a \$1 tax increase for every \$1,000 increase in the taxable property value. So a 2.000 mill tax would increase the taxes on a \$100,000 property by \$200.

## APPENDIX 4 – High-Demand, High-Wage Occupation and CTE Program Alignment Methodology

The Michigan Department of Technology, Management and Budget (DTMB) produces lists of projected high-demand, high-wage (HDHW) occupations for the state and each Prosperity Region. Each list offers sub-groups organized by required level of education and presents each occupation's projected growth and hourly wage range. To identify which of these jobs align with state-recognized CTE programs, we first look up each HDHW occupation's Standard Occupational Classification (SOC). Next, we use a SOC-Classification of Instructional Program (CIP) code data crosswalk from the Michigan Department of Education Office of CTE (MDE OCTE) to limit the lists to occupations whose SOC features a corresponding CIP code. In other words, a SOC-CIP match means MDE OCTE has affirmed that a CTE program trains students for that specific occupation.

We identified 28 HDHW occupations from the DTMB list that OCTE had matched with CTE programs. These are not always 1-to-1 matches. As Table 5 shows, for example, Dental Hygienists and Physical Therapist Assistants are two separate HDHW occupations but they both correspond to the Health Sciences/Allied Health CTE program. In the other direction, Radio & TV Broadcasting Technology and Visual & Performing Arts are two separate CTE programs but they both correspond to the HDHW occupation Audio and Video Equipment Technicians. Table 5 shows all possible matches.

For Figure 10 we grouped these 28 HDHW occupations into 11 career clusters using OCTE's list of 18 career clusters that capture all CTE programs in Michigan. The 7 career clusters not included did not have any corresponding HDHW occupations that met our criteria.



## Endnotes

1. Retrieved from <https://www.census.gov/quickfacts/>, accessed October 6, 2023
2. Brunner, E., Dougherty, S., & Ross, S.L. (2021). The effects of career and technical education: Evidence from the Connecticut technical high school system. NBER Working Paper No. 28790
3. Dougherty, S.M. (2018). The effect of career and technical education on human capital accumulation: Causal evidence from Massachusetts. *Education Finance and Policy*, 13(2), 119-148.
4. Kemple, J. J. & Willner, C.J. (2008). Career academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood. MDRC. New York, NY.
5. Kreisman, D. & Stange, K. (2020). Vocational and career tech education in American high schools: The value of depth over breadth. *Education Finance and Policy*, 15, 11-44.
6. Theobald, R. J., Goldhaber, D. D., Gratz, T. M., & Holden, K. L. (2019). Career and technical education, inclusion, and postsecondary outcomes for students with learning disabilities. *Journal of Learning Disabilities*, 52(2), 109-119.
7. Note that Table 2 groups programs according to the career zones framework described in the [Michigan Career Development Model](#).
8. Jacob, B. & Guardiola, J. (2022). How access to CTE varies across Michigan schools and students. University of Michigan Youth Policy Lab. Available at: <https://youthpolicylab.umich.edu/publications/how-access-to-cte-varies-across-michigan-schools-and-students>
9. An important caveat applies regarding the second row of Table 2. Due to the way CTE data is reported in Michigan, there are only two Classification of Instructional Programs (CIP) codes for all Health Sciences programs. In other words, the same CIP code can cover various numbers of sub-specialty programs in different schools. As such, the average number of Health Sciences programs available at any distance (0.8) should be interpreted with caution.
10. Note that this figure excludes schools that explicitly serve students with significant disabilities who do not qualify for participation in CTE. This excludes a total of 20 high school aged students across 3 special programs. These schools are included in all other analyses.
11. One 1/1000 of a dollar
12. <https://www.washtenaw.org/DocumentCenter/View/30524/2023-Washtenaw-County-Equalization-Report>
13. Readers should note the caveats referenced previously in the body of this report outlining the key differences between the 2017-18 and 2022-23 data used in these analyses. 2022-23 cross-district enrollment is observed from one academic year; we relax the 2017-18 constraints described in the Data section in which we required observed patterns of students traveling to enroll in a program over multiple academic years. Additionally, the data sources are different. The 2017-18 data comes from administrative State records while the 2022-23 data were sent by Superintendent Norman and Director Rowe. Thus, the 2022-23 figures should not be directly compared to the 2017-18 figures and tables.
14. <https://milmi.org/Publication/Research/Regional-Career-Outlooks>, accessed February 2023

## DISCLAIMER

This research used data structured and maintained by the MERI-Michigan Education Data Center (MEDC). MEDC data is modified for analysis purposes using rules governed by MEDC and are not identical to the data collected and maintained by the Michigan Department of Education (MDE) and/or Michigan's Center for Educational Performance and Information (CEPI). Results, information, and opinions solely represent the analysis, information, and opinions of the authors and are not endorsed by or reflective of the views or positions of grantors, MDE, CEPI, or any employee thereof.

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Support the Youth Policy Lab's effort to use data for good.

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## Youth Policy Lab

The University of Michigan Youth Policy Lab was launched in 2016 with a vision for reducing socio-economic disparities through improvements in education and other social policies affecting youth. By developing evidence-based, policy-relevant research in partnership with local and state agencies, practitioners, and policymakers, Dr. Robin Jacob and Dr. Brian Jacob sought to build upon their exemplary careers in social science research by taking research findings out of academic journals and putting them in the hands of decision-makers. With this aim in mind, they have spent the past seven years bringing the resources and expertise of one of the nation's leading public research universities to bear on some of Michigan's most pressing social challenges.

The Youth Policy Lab envisions a world where partner-driven research drives positive social change. Our mission is to inform public policy decisions by analyzing data and evaluating programs to help our partners answer their most pressing questions.