LEGISLATIVE BUDGET AND FINANCE COMMITTEE

A JOINT COMMITTEE OF THE PENNSYLVANIA GENERAL ASSEMBLY

Barriers to Career and Technical Education

March 2026

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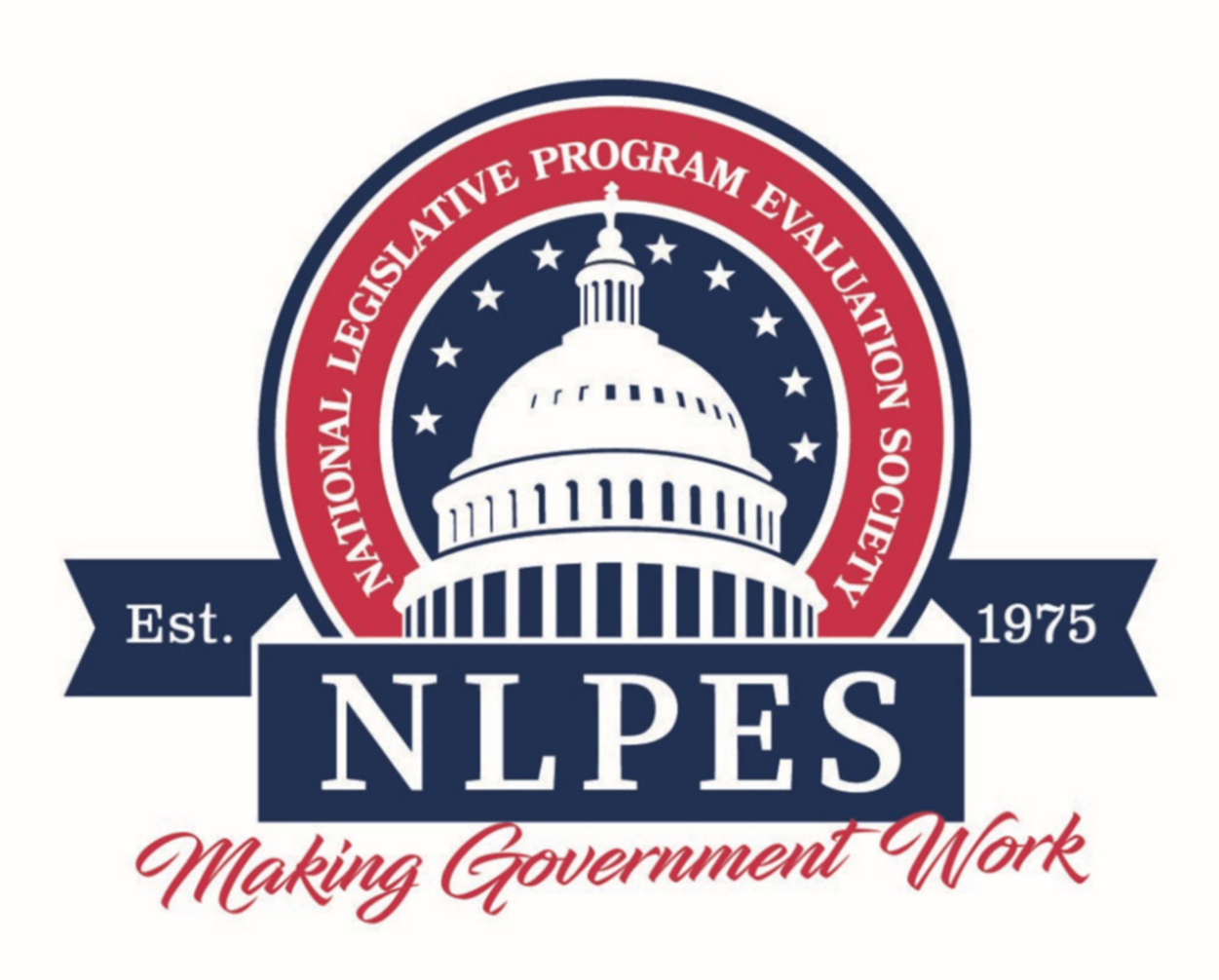

For the tenth straight year, the National Legislative Program Evaluation Society (NLPES) awarded the Legislative Budget and Finance Committee a Certificate of Impact. NLPES presents the Certificate of Impact to legislative offices that produce evaluations or audit reports that result in documented public policy changes, program improvements, dollar savings, or other public impacts.

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REPORT SUMMARY

Study Objectives

1. *Identify the number of students on waitlists or turned away due to capacity, conditions of facilities, or staffing by area of study and by career and technical center and high school-based programs.*
2. *Determine the extent to which students lack access to career and technical education programming due to the unavailability of such programs in their home districts.*
3. *Analyze the career and technical education subsidy formula and its impact on districts.*
4. *Evaluate the approaches used in other states for career and technical instructor credentialing to address educator workforce shortages.*

Overview

In Pennsylvania, the secondary Career and Technical Education (CTE) system encompasses a network of over 80 Career and Technical Centers (CTCs) and over 100 high schools across the state, offering more than 1,800 approved programs of study. CTE programs combine academic knowledge with technical and practical skills tailored to specific industries.

The House of Representatives adopted House Resolution 2024-481 on July 9, 2024, directing the LBFC to conduct a study on barriers to CTE programming in Pennsylvania. Our study objectives in response to this directive are summarized in the text box to the left.

Our report is organized as follows:

Section I – Objectives, Scope, and Methodology
Section II – Background Information
Section III – Barriers to Career and Technical Education
Section IV – Access to Career and Technical Education
Section V – Secondary Career and Technical Education Subsidy (SCTES)
Section VI – Initiatives in Pennsylvania and Other States to Address Teacher Shortages

Section III - Barriers to Career and Technical Education

We requested data on the number of students on waitlists for CTE programs from PDE; however, the department does not collect this information, and subsequently lacks a statewide view of program demand and capacity.

To collect data on barriers to CTE in Pennsylvania, the LBFC surveyed administrators at CTCs and school districts that offer CTE. The survey was available from April 7th, 2025, to May 30th, 2025, and was followed by several follow-up phone calls and emails from LBFC and PDE staff to maximize the number of responses.

In total, the LBFC requested survey responses from 73 CTCs and 123 school districts that offer CTE programs, including two charter schools, for a total of 196 survey recipients. The LBFC received 128 responses from 65 CTCs and 63 school districts, resulting in a response rate of 89.0 percent from CTCs, 51.2 percent from school districts, and an overall survey response rate of 65.3 percent.

Of 128 survey respondents, 67 (52.3 percent) indicated that they had a waitlist for at least one of their CTE programs, and collectively reported 7,343 students on CTE waitlists in the most recent school year, a 150.6 percent increase from FY 2019-20.

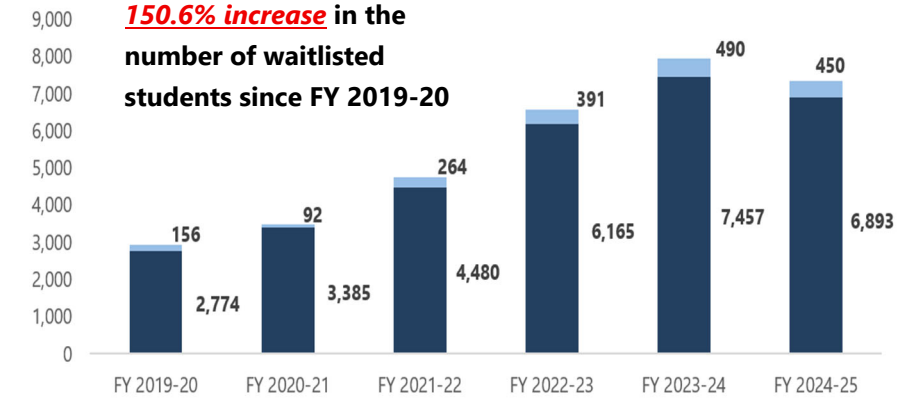

Figure 1: Survey Respondents' Total Number of Students on Waitlists for CTE Programs by Delivery

In Pennsylvania, career clusters are categories of CTE that organize programs into broad industry areas that share similar skills, knowledge, and career pathways. Pennsylvania recognizes 14 career clusters that align with the state's workforce needs and educational standards.

In FY 2024-25, programs in the Architecture and Construction cluster had the highest number of waitlisted students, with 1,750, followed by the Human Services and Health Science clusters, with 1,407 and 1,361, respectively.

Our survey asked respondents to identify any contributing factors to their waitlists. We included four options on our survey, of which respondents could select one or more factors:

- Facility/Facility Conditions.
- Physical Capacity.
- CTE Instructor Shortage.
- None of the above/Other.

Of the 67 respondents with waitlists, 65 (97.0 percent) indicated that physical capacity limitations were a contributing factor, with 26 (38.8 percent) citing facility conditions and 14 (21.0 percent) citing instructor shortages or vacancies.

It may be necessary for CTE providers to have access to additional state grants to fund facility expansion to meet program demand. If CTE

providers with demonstrated capacity issues had greater access to financial resources specifically for expansion, they could offer more programs, admit more students, and reduce waitlists.

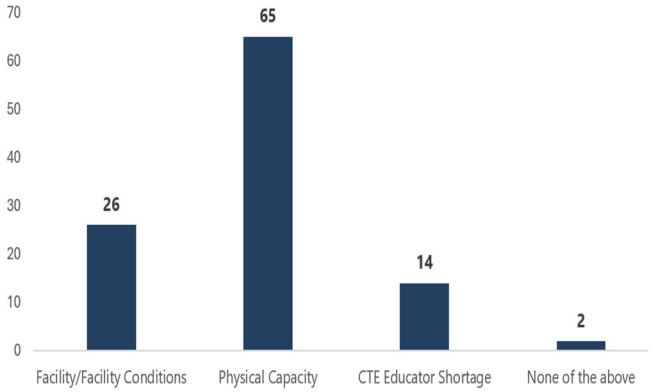

Figure 2: Respondents' Contributing Factors to Waitlists FY 2024-25

Section IV - Access to Career and Technical Education

Twenty-two Pa. Code § 4.31(a) requires that CTE programs be accessible to all high school students in the commonwealth. However, "accessible" is not defined in statute or regulation, leaving the term open to interpretation. While almost all students may be able to enroll in at least one CTE course, the number and variety of programs in which a student can participate differ among school districts, resulting in some students having greater access than others.

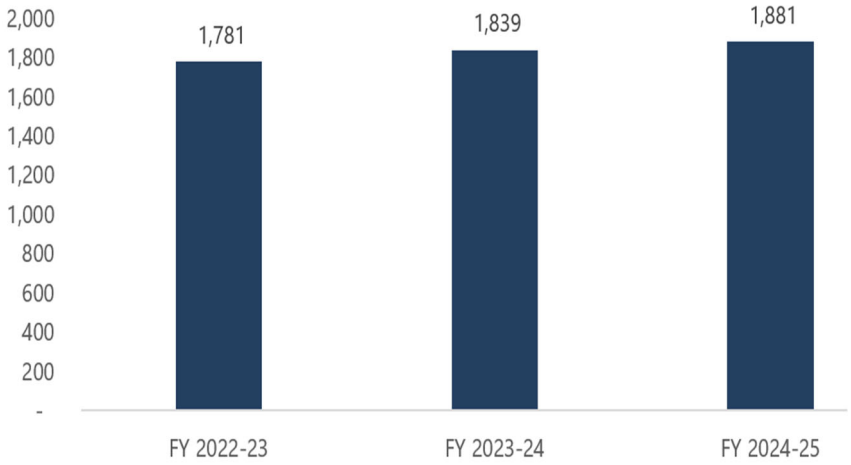

Figure 3: Total Approved CTE Programs FY 2022-23 to FY 2024-25

Secondary students primarily access CTE programs through CTCs, which administer 79 percent of CTE programs. In addition to CTC programming, students can enroll in CTE programs at their high schools, if offered.[1]

In FY 2024-25, CTE providers offered 1,881 programs to secondary students in Pennsylvania. The number of CTE programs increased by 42 (2.3 percent) since FY 2023-24 and 100 (5.6 percent) since FY 2022-23.

[1] Some school districts send students to a neighboring high school to participate in CTE programs. For example, South Williamsport High School students may enroll in CTE programs offered at Williamsport High School.

Career Cluster	Approved Programs	SDs Without Programs	HS Enrollment Without Access	% of Total HS Enrollment Without Access
Agriculture, Food, and Natural Resources	193	183	138,097	30%
Architecture and Construction	320	5	2,912	1
Arts, A/V Technology, and Communications	108	145	66,089	14
Business, Management, and Administration	45	421	339,264	74
Education and Training	30	400	324,296	71
Health Science	187	5	2,504	1
Hospitality and Tourism	122	10	4,783	1
Human Services	204	7	3,721	1
Information Technology	109	34	16,552	4
Law, Public Safety, and Security	61	161	112,595	25
Manufacturing	176	35	28,941	6
Marketing, Sales, and Service	30	414	313,248	69
STEM	48	347	263,561	58
Transportation, Distribution, and Logistics	248	8	4,413	1

Figure 4: School District's Program Availability and Student Access by Career Cluster FY 2024-25

Figure 4 summarizes program availability for Pennsylvania's 500 school districts and 456,556 high school students across career clusters.

The three career clusters with the least access for secondary students were Business, Management, and Administration, Education and Training and Marketing, Sales, and Service:

Section V - Secondary Career and Technical Education Subsidy (SCTES)

Pennsylvania supports secondary CTE through the Secondary Career and Technical Education Subsidy (SCTES). Created under Section 2502.8 of the Public School Code, this state-funded subsidy is designed to help offset the higher costs associated with approved CTE programs driven by specialized equipment, smaller class sizes, and the need for credentialed instructors with industry experience.

The subsidy is distributed annually through a statutory formula that considers factors such as weighted average daily membership (WADM), district wealth (aid ratio), and a benchmark cost calculation (Base Earned for Reimbursement).[2]

Between FYs 2019–20 and 2023–24, the SCTES line item increased by more than 50 percent, from around $69 million to over $105 million statewide, reflecting legislative changes, such as incremental increases in the student weighting factors.

Figure 5 shows the annual SCTES funding distributed to CTCs and school districts.

[2] Average Daily Membership for CTCs refers to the average number of students enrolled and attending a CTC daily over a specific reporting period. ADM for those in school district CTE programs has the same definition.

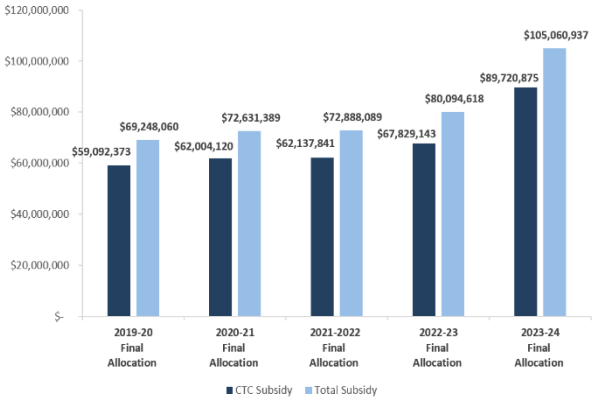

Figure 5: CTC SCTES Subsidy (FY 2019-20 to 2023-24)

The total SCTES subsidy increased 51.7 percent from FYs 2019-20 to 2023-24, from $69.2 million to $105 million overall, reflecting legislative changes, such as incremental increases in the student weighting factors, and higher CTE enrollment.

Section VI - Initiatives in Pennsylvania and Other States to Address Teacher Shortages

According to the US Department of Education, CTE instructor shortages occur nationwide.[3] In FY 2023-24, 28 states reported experiencing CTE instructor shortages in secondary education.

Pennsylvania had 59,973 secondary CTE participants and 4,110 secondary CTE instructors in 2019-20. In FY 2022-23, the state had 64,258 secondary CTE participants and 3,310 secondary CTE instructors. This reflects an increase of 7.1 percent for secondary CTE participants, but a decrease of 19.5 percent for secondary CTE instructors.

Of the 29 survey respondents who reported CTE instructor shortages during FY 2024-25, 25 (86.2 percent) noted teacher salary as a factor, 23 (79.3 percent) indicated issues with the certification process, and 12 (41.4 percent) indicated certification costs.

Individuals must complete a certification process to teach CTE programs, which follows guidelines and procedures established by the Pennsylvania Department of Education (PDE) and is managed by Career and Technical Educator Preparation Programs (EPPs). Four institutions offer CTE EPPs: Temple University, Pennsylvania State University, Indiana University of Pennsylvania (IUP), and Point Park University.

The types of CTE instructor certificates offered in Pennsylvania are:

- Career and Technical Experience Based Certificate.

[3] This report uses the term "fiscal year" to refer to Pennsylvania's fiscal year, which runs from July 1 through June 30. The USDE also refers to the fiscal year as "school year," but this can be misleading, as the term "school year" may informally refer to the months when students are in school.

- Career and Technical Instructional I Certificate.
- Career and Technical Instructional II Certificate.

Pennsylvania has implemented various initiatives to support the CTE instructor workforce:

- Act 55 of 2022 expanded the teacher certification process to include an option for out-of-state teachers to obtain a CTE Instructional I Certificate in Pennsylvania.

- Act 35 of 2023 authorized Pennsylvania to join the Interstate Teacher Mobility Compact (ITMC), which aims to enable teachers with an eligible license in one state to obtain an equivalent license in another. However, Pennsylvania is not a member of the compact.

- Supporting Certified Teacher Registered Apprenticeship (CTRA) Program Grants, administered by the Department of Labor and Industry (L&I) and funded through the Workforce Innovation Opportunity Act, are designed to help Pennsylvania schools facing barriers to staffing qualified teachers in rural, suburban, and urban areas by promoting on-the-job learning to develop skills and experience. L&I awarded the first grants in 2025.

- In May 2025, PDE launched the Teach in PA website, which allows CTCs to publish instructor vacancies and provides resources for individuals interested in a career in education.

HR 481 directed us to review approaches used in other states for CTE instructor credentialing to address educator workforce shortages. These include:

- Colorado.
- Delaware.
- Maryland.
- New York.
- New Jersey.
- Ohio.
- West Virginia.

Four of the eight states, including Pennsylvania, saw decreases in the number of CTE instructors. New Jersey and West Virginia experienced increases of over 100 percent.

State	2020	2021	2022	2023	2024	% Change 2020 to 2024
Colorado	670	730	810	770	-	14.9%
Delaware	-	580	510	430	560	3.4
Maryland	680	740	660	650	450	33.8
New Jersey	960	950	1,710	1,540	2,370	146.9
New York	4,740	5,380	5,680	6,070	6,260	32.1
Ohio	5,250	4,390	4,490	2,960	4,960	5.5
Pennsylvania	*4,110*	*4,110*	*3,530*	*4,390*	*3,310*	*19.5*
West Virginia	340	790	960	960	780	129.4
National Total	**73,530**	**84,360**	**88,280**	**90,070**	**104,450**	**42.1**

Figure 6: Total Number of Secondary CTE Instructors in Pennsylvania and Selected States and Nationally

Colorado. In 2021, Colorado Senate Bill 185 (SB21-185) established the Educator Recruitment and Retention Financial Assistance Program (ERR). The ERR was created to reduce a financial barrier to entering the education profession by offering grants of up to $10,000 to applicants who are enrolled in an educator preparation program (or an institute of higher education for CTE educators).[4]According to a November 2024 report, out of the 699 educators who received grants from the ERR program, only one has a CTE authorization.[5]

Colorado saw a 14.9 percent increase in secondary CTE teachers, from 670 to 770, between 2020 and 2023.

New York. In 2016, New York updated Regulation 80-3.5 (8 CRR-NY 80-3.5), establishing three new pathways for a Transitional A CTE teaching certificate. Transitional A certificates are provided to applicants with the requisite occupational experience but who do not meet the requirements for an initial certificate. These certificates are valid for three years, provided the holder maintains employment in a school district or Board of Cooperative Educational Services (BOCES) and completes the requirements for the Initial Certificate.[6]

Before the Regulation 80-3.5 update, available pathways for Transitional A certificates included meeting the required education requirements (e.g., associate's degree) and work experience. The regulation added three new pathways to earn certification to teach CTE subject areas by satisfying one of the following requirements:

- Have at least two years of work experience in the CTE subject area of the certificate sought and hold an industry-related credential, where available, or pass an industry-accepted examination and have an employment and support commitment.

- Enrolled in an approved CTE teacher preparation program and have either a minimum of one year of related work experience or

[4] Colorado Department of Education, *Educator Recruitment and Retention Program,* https://www.cde.state.co.us/educatortalent/errprogram, Accessed 10/24/2025.
[5] Colorado Department of Education, *Educator Recruitment and Retention Financial Assistance Program 2023-24,* 2024, pg. 11.
[6] There are 37 boards of cooperative educational services in New York.

passed an industry-accepted examination and an employment and support commitment.

- Currently certified as a 7th- to 12th-grade teacher in any CTE subject area with two years of documented work experience or holds industry-recognized credentials, where available, in the related CTE area, and has an employment and support commitment.

Though Regulation 80-3.5 has been updated since 2016, data showing the number of Transitional A applicants under these three new is unavailable.

In 2022, New York announced the launch of the Empire State Teacher Residency Program, piloted through the state's Department of Labor. The first funds were awarded in January 2024. The program is designed to partially or fully cover the costs of master's degrees or teacher certification programs for graduate-level K-12 teacher candidates who complete a two-year residency within a public school district or BOCES program. At its launch, $30 million was available, with a second round providing an additional $21 million.

New York's CTE instructor count has risen yearly since 2020, from 4,740 to 6,260 in 2024 (32.1 percent), indicating positive effects from the state's initiatives.

West Virginia. The State Board of Education Policy 5202 outlines CTE educator licensure and certification requirements in West Virginia. In 2019, the policy was updated to accept a broader range of coursework for CTE certificate renewal.

Data from the West Virginia Department of Education regarding the number of CTE certificate renewals was unavailable; however, the state increased the number of CTE instructors by 129.4 percent since 2020, from 340 to 780 in 2024, indicating that the state's efforts, including teacher apprenticeship programs and Policy 5202 revisions, have been effective.

New Jersey. To help resolve a teacher shortage, New Jersey enacted Senate Bill 2826 in its 2020-21 legislative session. It directed the New Jersey Department of Education to create a five-year pilot program for issuing a limited certificate of eligibility (CE), with or without advanced standing.

In March 2025, the New Jersey Department of Education issued a progress report on the pilot program. Data shows that 1,120 educators participated between July 1, 2022, and October 14, 2023. Of these, 1,073

educators received 1,277 CEs, and 47 received 63 CEs with advanced standing. Notably, the department states that 35.0 percent of CE holders have certificates in subjects considered teacher shortage areas and are working in those areas, including CTE.

The pilot program has proven effective in increasing the number of educators in teaching shortage areas, adding 204 educators during the data collection period. However, only four of these teachers were in CTE, indicating it has been less successful in producing CTE educators than other subjects.

Delaware. Under 14 Del.C § 1210(e), "an initial license may be issued for a period of up to six years for applicants in a vocational trade and industry (skilled and technical sciences or STS) area to complete specified college-level coursework required for certification." Previously, skilled and technical sciences licensure applicants had to pass an approved performance assessment before their initial licenses expired. However, in 2021, the law was amended to eliminate this requirement.

The number of CTE instructors in Delaware decreased by 3.4 percent since 2021, despite the aim of 14 Del.C § 1210(e) to lower barriers for CTE licensure applicants.

Ohio. In Ohio, House Bill 98 was signed into law in 2018, updating the state's rules for CTE instructor licensure. The bill replaced the professional career-technical teacher license with a two-year initial license and a five-year advanced career-technical workforce development educator license.

In the same year, Senate Bill 216 was enacted, allowing instructors to teach subjects outside their licensed fields. Individuals may qualify for a supplemental teaching license if they meet the criteria outlined in the bill. In 2024, Ohio created two new alternative pathways to earn a career-technical educator license. The first pathway involves completing a modified educator preparation program developed by one or more lead districts within a career-technical planning district. The program must align with CTE and workforce development competencies set by the Ohio Department of Education and Workforce.

The second alternative pathway involves completing a mentoring program, aligned with CTE and workforce development competencies, developed by the Ohio Department of Education and Workforce.

Maryland. In 2023, Maryland passed the Educator Shortage Reduction Act (House Bill 1219, 2023 session), creating the Teacher Development and Retention Program as a pilot initiative (lasting until June 30, 2029) to motivate college students to choose teaching careers.

Under the bill, recipients chosen for support through the program receive an initial stipend to assist their participation in an experiential learning opportunity at a public school or publicly funded prekindergarten classroom. Subsequently, recipients are eligible for a stipend of up to $20,000 for a 10-month educator internship if they meet certain requirements.

Currently, one graduate and 11 undergraduate students have received stipends, totaling $221,940 for the pilot program.

Overall, from 2020 to 2024, the number of CTE teachers in Maryland declined, dropping from 680 in 2020 to 450 in 2024, a nearly 34.0 percent decrease.

Report Recommendations

1. The Pennsylvania Department of Education should require CTE providers to report the waitlists for each program by classification of instructional program (CIP) code within the Career and Technical Information System (CATS) to allow for future analysis of waitlist trends by program and career cluster.

2. The General Assembly should consider a competitive needs-based grant program for CTE facility expansion to help address rising waitlists for high-demand programs.

3. The General Assembly should consider passing legislation to create tiered SCTES allocations based on in-demand career clusters.

4. Joint operating committees should consider covering CTE instructor certification costs to reduce the financial burden on prospective CTE instructors.

5. Given that the Pennsylvania Department of Education allows a candidate to have multiple years of teaching experience with Emergency and Intern Certifications, the Department should establish an option for CTE instructors for in-demand careers that allows them to replace some educational credits for years of teaching experience for an Instructional II Certificate, as determined by PDE, to ensure the candidate has sufficient education in pedagogy while reducing some of the 42 credit hour requirement.

SECTION I
OBJECTIVES, SCOPE, AND METHODOLOGY

Why we conducted this study…

This study is in response to House Resolution 2024-481, adopted by the House of Representatives on July 9, 2024.

Objectives

Our objectives for this study were to:

1. Identify the number of students on waitlists or turned away due to capacity, conditions of facilities, or staffing by area of study, and by career and technical center and high school-based programs.

2. Determine the extent to which students lack access to career and technical education programming due to the unavailability of such programs in their home districts.

3. Analyze the career and technical education subsidy formula and its impact on districts.

4. Evaluate the approaches used in other states for career and technical instructor credentialing to address educator workforce shortages.

Scope

This study focused primarily on fiscal years (FY) 2019-20 through 2023-24. Our survey was based on CTE programming, funding, and enrollments from FY 2024-25.

Methodology

We conducted a comprehensive multi-method study integrating stakeholder engagement, survey research, document review, and comparative analysis to investigate barriers to career and technical education (CTE) in Pennsylvania.

We met with the Pennsylvania Department of Education and stakeholder groups and visited Career and Technical Centers (CTCs). Through these engagements, we discussed and gained insights into the various issues affecting career and technical education in Pennsylvania.

To quantify the number of students on waitlists or turned away due to capacity, facility conditions, or staffing by area of study, and by CTC and high school-based programs, we surveyed CTE administrators at CTCs and school districts with CTE programming. The survey opened on April 7th, 2025, and closed on May 30th, 2025. The LBFC sent the survey via email to contacts provided by PDE for 121 school districts and 72 CTCs. We made follow-up phone calls and emails to ensure the LBFC captured as much data as possible.

Our survey instrument (see Appendix B), vetted by PDE, included questions concerning waitlists, the underlying reasons for waitlists, whether the facilities were experiencing teacher shortages, the potential factors contributing to such shortages, and, in the case of CTCs, several inquiries related to funding.

Given that stakeholders' funding-related inquiries identified the CTE teacher certification process as a barrier to pursuing a teaching career, we conducted a review of the procedures necessary to attain permanent certification as a CTE teacher in Pennsylvania.

To determine the extent to which students lack access to CTE programming due to its unavailability in their home districts, we reviewed CTE programming in all CTCs and high schools, by career cluster and school district. We developed density maps by assigning the total number of CTE programs for each of the 14 career clusters to a set of coordinates representing a central location (administrative building, primary high school, etc.) within the district. We then combined this data with each school district's 9-12 enrollment figures to determine the number of students who lack access to CTE due to the unavailability of programming.

We examined the formula's components and any historical modifications to analyze the state career and technical education subsidy formula (SCTES) and its impact on districts. Additionally, we presented trends in the formula's outcomes in relation to student enrollments in career and technical education (CTE) over time.

We examined initiatives across Colorado, Delaware, Maryland, New Jersey, New York, Ohio, and West Virginia to assess the strategies employed by these states concerning career and technical education instructor credentialing, aimed at mitigating educator workforce shortages. In our analysis, we scrutinized trends in data related to the number of Career and Technical Education (CTE) instructors and CTE enrollments per instructor. Additionally, we reviewed initiatives already implemented within Pennsylvania.

Acknowledgments

We acknowledge and appreciate the cooperation and assistance we received from officials from the Pennsylvania Department of Education, including Dr. Rob Steimetz, Assistant to the Secretary; Judd Pittman, Director, Bureau of Career and Technical Education; Steve Latanishen, Director, Government Relations Office; and Marc Ramson, Legislative Specialist II.

Important Note

This report was developed by the Legislative Budget and Finance Committee staff, including Project Specialist Anne Witkonis and Analysts James Wynne, Josh Ballard, Anthony Choi, and Mitch Macek. The release of this report should not be construed as an indication that the LBFC as a whole or its individual members necessarily concur with the report's findings, conclusions, or recommendations.

Any questions or comments regarding the contents of this report should be directed to:

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SECTION II
BACKGROUND INFORMATION

Fast Facts...

- *CTE is funded with a combination of federal, state, and local funds.*
- *CTE is provided with several delivery models at over 80 career and technical centers and over 100 high schools.*
- *The PA Department of Education is responsible for oversight of career and technical education.*

Pennsylvania's Career and Technical Education (CTE) system encompasses a network of over 80 Career and Technical Centers (CTCs) and over 100 high schools across the state, offering more than 1,800 approved programs of study. CTE programs combine academic knowledge with technical and practical skills tailored to specific industries.

High school-based CTE programs are integrated within traditional high schools, allowing students to take academic and technical courses in the same building. CTCs are regional facilities that serve multiple school districts. While attending occupational, or part-time, CTCs, students typically split their days between their home high school for academic courses and the CTC for technical training. CTCs offer a broader array of programs, including high-tech and labor-intensive trades such as welding, HVAC, cybersecurity, automotive technology, healthcare, and cosmetology. These centers have specialized equipment and facilities, providing in-depth, hands-on training, often leading to industry-recognized certifications and apprenticeships.

Full-time, or comprehensive, CTCs integrate academic and technical education within a single institution. Students enroll on a full-time basis, receiving an education that combines academic coursework with specialized technical training. This approach facilitates a more cohesive curriculum and frequently provides opportunities for dual enrollment, allowing students to accrue college credits concurrently with high school studies.

Federal Career and Technical Education Laws and Regulations

The federal policy on technical education has concentrated on broadening access, enhancing program quality, and aligning educational initiatives with workforce requirements.

Carl D. Perkins Career and Technical Education Act and the Strengthening Career and Technical Education for the 21st Century Act (Perkins V)

The Carl D. Perkins Career and Technical Education Act, initially enacted in 1984, reauthorized multiple times and amended by the Strengthening Career and Technical Education for the 21st Century Act (Perkins V) in 2018, is designed to provide funding, guidance, and accountability for CTE programs.[7] The Pennsylvania Department of Education (PDE) measures goals through various performance indicators determined by the Pennsylvania Four-Year Perkins State Plan. The Perkins State Plan outlines Pennsylvania's strategic approach to enhancing CTE under Perkins V.

Workforce Innovation and Opportunity Act (WIOA)

The Workforce Innovation and Opportunity Act (WIOA), enacted in 2014, supports and enhances CTE by promoting alignment among education, workforce development, and economic needs.[8]

Through WIOA, funding is allocated for job training, youth employment initiatives, career counseling, and work-based learning opportunities that frequently complement or are integrated with CTE programs. It promotes the development of career pathways and supports apprenticeships and internships that provide CTE students with practical, real-world experience. Additionally, WIOA emphasizes services for out-of-school youth and underserved populations, facilitating increased access to technical education and skill development for individuals facing employment barriers.

Every Student Succeeds Act (ESSA)

The Every Student Succeeds Act (ESSA), enacted in 2015 as the federal law governing K–12 education, supports CTE by promoting the

[7] The Carl D. Perkins Vocational Education Act, Pub. L. 98-524, 98 Stat. 2435 as amended by the Strengthening Career and Technical Education for the 21st Century Act, Pub. L. 115-224, 132 Stat. 1563; 20 U.S.C. § 2301 *et seq*. The Carl D. Perkins Vocational Education Act amended the Vocational Education Act of 1963 (VEA), renaming it and extending and revising VEA programs, and establishing programs emphasizing the acquisition of job skills through technical and vocational education.

[8] The Workforce Innovation and Opportunity Act, Pub. L. 113-128, 128 Stat. 1425; 29 U.S.C. § 3101 *et seq*.

incorporation of career readiness into academic curricula and ensuring equitable access to high-quality educational opportunities.[9] While ESSA primarily emphasizes academic success and accountability, it acknowledges the significance of equipping students for higher education and employment. Under ESSA, states are permitted to incorporate career readiness indicators, including CTE program participation, industry certifications, and postsecondary enrollment, into their accountability frameworks.

Additionally, ESSA authorizes Perkins Title IV funds to support CTE-related activities, creating a safer learning environment through compliance with safety standards and offering career counseling services. The law also requires schools to provide students and families with information about CTE pathways.

State Career and Technical Education Legislation and Regulations

CTE in Pennsylvania is governed by a combination of statutes, regulations, and funding designed to ensure high-quality vocational training and workforce readiness. State statutory law provides the framework for CTE program development, funding allocation, instructor certification, and student access. These laws align with federal policies such as the Carl D. Perkins Career and Technical Education Act, but address Pennsylvania-specific educational and workforce needs.

Pennsylvania Public School Code of 1949

Articles 18 and 25 of the Public School Code of 1949 provide Pennsylvania's statutory framework for CTE.[10]

Article 18 emphasizes vocational education and grants authority to school districts, whether individually or collaboratively, to establish career and technical schools or departments aimed at providing instruction in skilled trades, technical disciplines, and other occupational areas. It empowers the Pennsylvania Department of Education (PDE) to approve programs and establish minimum standards regarding instruction quality, facilities, and instructor qualifications. Furthermore, Article 18 underscores the importance of aligning programs with the economic and workforce needs of the commonwealth, ensuring that students receive an education conducive to practical employment opportunities.

[9] The Every Student Succeeds Act, Pub. L. 114-95, 129 Stat. 1802; 20 U.S.C. § 6301 *et seq*.
[10] Act of March 10, 1949 (P.L.30, No.14), known as the Public School Code of 1949, as amended 24 P.S. § 1-101 *et seq.*

Article 25 addresses school subsidies and reimbursements, including the funding structure for CTE programs. It outlines how the state reimburses school districts for operating approved CTE programs and sending students to regional CTCs.[11] The provision also encompasses state subsidies allocated for instructional expenses, acquisition of equipment, and maintenance of facilities. Subsidies are determined based on factors such as enrollment figures, program classifications, and student attendance rates. The funding provisions outlined in Article 25 support CTE offerings across various school districts, particularly those with restricted local financial resources.[12]

Articles 18 and 25 form the legal and financial backbone of Pennsylvania's CTE system, ensuring the availability of vocational programs and the equitable distribution of state support to maintain them.

Pennsylvania Code Title 22 (Education)

The Pennsylvania Code Title 22 (Education) outlines the rules and standards for public and private schools, post-secondary institutions, and CTE programs. Key sections of the code that govern CTE include:

- **Chapter 4 Academic Standards and Assessment:** This chapter outlines the academic standards and assessment regulations for public education in the commonwealth, including provisions relevant to CTE. While the chapter primarily governs the establishment of statewide academic standards in core subject areas such as English language arts, mathematics, science, and social studies, it also incorporates requirements that directly affect the operation of CTE programs.[13]

- **Chapter 49 Certification of Professional Personnel:** Subchapter C of Chapter 49 covers the certification of CTE instructors. It details the requirements, qualifications, and professional development expectations for those teaching in Pennsylvania's CTE programs.[14]

- **Chapter 339 Vocational Education Standards:** This chapter sets the standards and requirements that school districts, CTCs, and other organizations must meet to offer state-approved CTE programs. The purpose of Chapter 339 is to ensure students

[11] *Ibid*., art. XVIII, § 2507; 24 P.S. § 25-2507.
[12] *Ibid.,* art. XXV, §§ 2508 – 2508.5; 24 P.S. §§ 25-2508 - 2508.5.
[13] 22 Pa. Code § 4.31.
[14] 22 Pa. Code §§ 49.141 – 49.163.

receive high-quality technical education that aligns with workforce demands and prepares them for post-secondary education or immediate employment.[15]

Act 117 of 1986: Area Career and Technical Education Schools Report

Act 117 of 1986 requires PDE to prepare and submit an annual report on CTE schools to the State Board of Education and the General Assembly. The report evaluates the effectiveness, accessibility, and funding of CTE programs across Pennsylvania.[16]

The report assesses enrollment trends, program availability, workforce alignment, and funding allocations. Additionally, it reviews state and local funding for area CTE schools and evaluates the cost-effectiveness and sustainability of programs.

Stakeholders

CTE in Pennsylvania operates through a network of state agencies, regional workforce boards, and local education providers, each with distinct roles and responsibilities.

Pennsylvania Department of Education (PDE)

PDE oversees public education, including CTE programs. To sustain CTE programs across Pennsylvania, PDE sets policies, provides funding, and ensures compliance with federal and state regulations. PDE also approves and monitors CTE programs in school districts, CTCs, and community colleges.

PDE administers state funding for CTE programs through the Secondary Career and Technical Education Subsidy (SCTES) and distributes federal Perkins V funding to support program expansion, equipment upgrades, and teacher training. PDE collaborates with local workforce development boards (LWDBs) and industry partners to incorporate real-world, relevant skills into CTE coursework.

[15] 22 Pa. Code §§ 339.1 – 339.62.
[16] Act of July 10, 1986 (P.L.1270, No.117), § 11; 24 P.S. § 18-1803.1.

PDE's Bureau of Career and Technical Education develops curriculum and standards related to CTCs, formerly known as area vocational-technical schools (AVTS). Specifically, PDE aims to enhance the delivery of CTE programs by engaging school districts and expanding industry-relevant occupational training programs. PDE collaborates with the Department of Labor and Industry to conduct occupational gap analysis (OGA) to identify workforce needs and customize programs for specific professions based on labor market trends.

Local Workforce Development Boards (LWFDBs)

Local workforce development boards (LWDB) work to align CTE programs with regional labor market needs in Pennsylvania. These boards operate under WIOA and are responsible for developing strategies, funding workforce programs, and fostering industry partnerships to improve career training opportunities.[17]

LWDBs perform labor market analyses to identify their region's high-demand jobs and skills shortages. They work with local businesses, industry leaders, and educational institutions to develop work-based learning opportunities, such as internships, apprenticeships, and job shadowing.[18]

LWDBs attempt to connect CTE programs with industry needs by aligning education with workforce priorities, securing funding, and building employer partnerships.

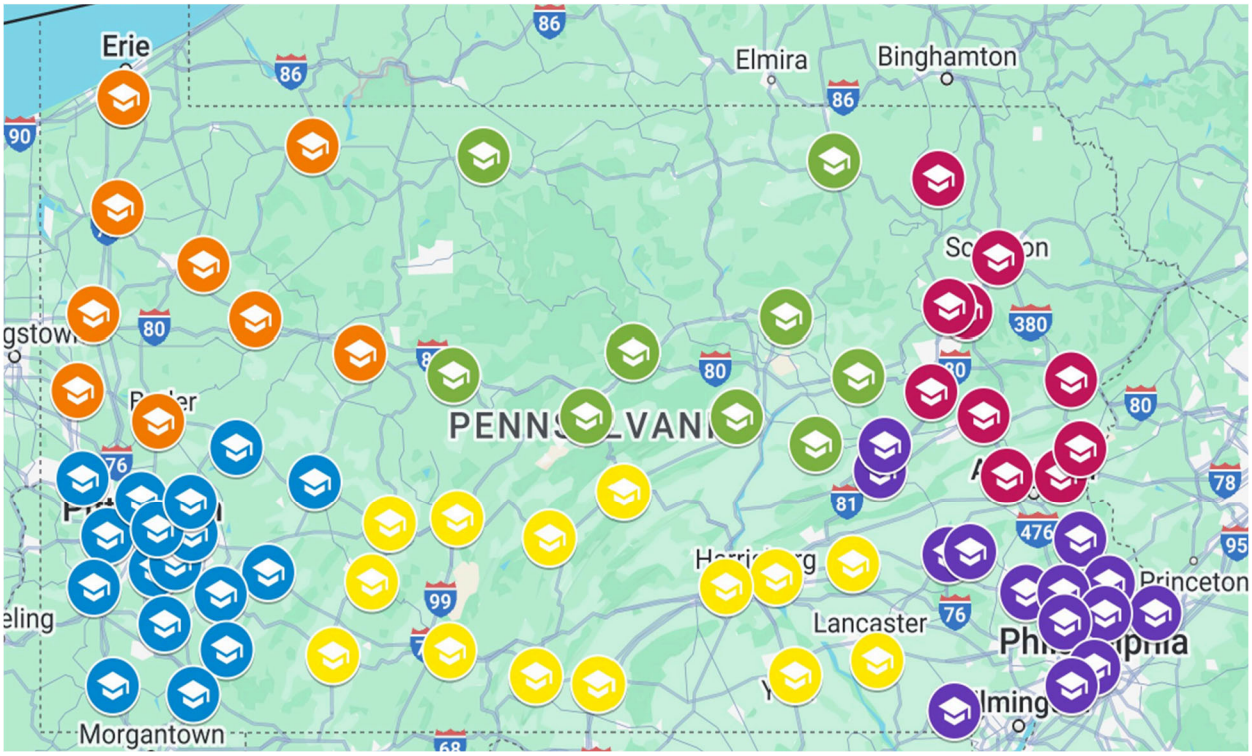
Career and Technical Education Centers (CTCs)

Pennsylvania's CTCs offer hands-on, career-focused education for high school and adult learners. The state has eighty-eight occupational and comprehensive CTCs that provide CTE to secondary students. Exhibit 1 displays a map of these CTCs in Pennsylvania.

[17] 29 U.S.C. § 3122(d)(5).
[18] 29 U.S.C. § 3122(d)(2).

Exhibit 1

Map of Career and Technical Centers in Pennsylvania[a/]



Note:
[a/] The colors denote the different regions of Pennsylvania: northwest (orange), north-central (green), northeast (red), southwest (blue), south-central (yellow), southeast (purple).

Source: Obtained from the Pennsylvania Department of Education.

CTCs offer specialized training programs that prepare students for skilled trades, such as healthcare, technology, manufacturing, and other in-demand industries. The centers provide practical, hands-on experience to prepare students for employment or further education. Additionally, CTCs work with local businesses and industries to offer internships, apprenticeships, and cooperative education opportunities.

CTCs are funded through state, federal, and local sources. The Pennsylvania Career and Technical Education Subsidy provides state financial support, while federal Perkins V funding helps enhance offerings, equipment, and teacher training. Local school districts that send students to CTCs also contribute to operational costs. Beyond government funding, CTCs receive financial support from workforce development grants, industry partnerships, and employer-sponsored programs that help align training with regional labor market needs.

Area Career and Technical Committees. Article XVIII, § 1850.1 of the Public School Code of 1949 grants authority and responsibility to area career and technical boards, which can delegate authority to joint committees under § 1850.1(d). These committees, often called joint operating committees (JOCs), include representatives from participating school districts and oversee the governance of CTCs. To ensure fair representation, a JOC's composition usually reflects the size or student enrollment of the member districts. JOCs approve budgets, establish policies, hire administrative staff, and make strategic decisions regarding program offerings, facility improvements, and long-term planning. They work closely with CTCs' administrative directors and ensure operations align with state regulations and educational goals.[19]

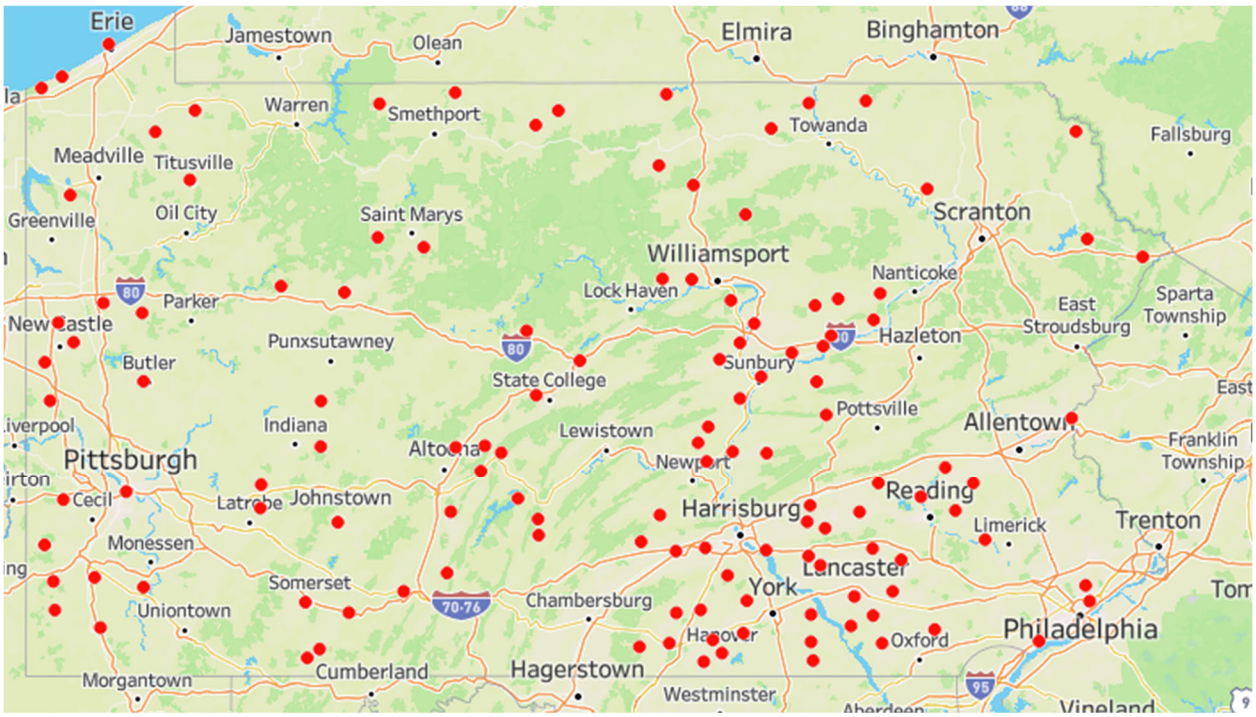
High-School-Based CTE Programs

Pennsylvania's high school-based CTE programs are incorporated within conventional high schools, enabling students to enroll in academic and technical courses within the same facility. However, these programs frequently encounter limitations related to scope, primarily due to space, equipment, and staffing constraints. Exhibit 2 provides a map illustrating all school districts that offer in-district CTE programs.

[19] Public School Code of 1949, art. XVIII, § 1850.3; 24 P.S. § 18-1850.3.

Exhibit 2

Map of School District CTE Programming in Pennsylvania



Source: Obtained from the Pennsylvania Department of Education.

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SECTION III
BARRIERS AND ACCESS TO CAREER AND TECHNICAL EDUCATION

Fast Facts…

- *Survey respondents collectively reported 7,343 students on waitlists for CTE programs for FY 2024-25, with 67 out of 128 (52.3 percent) of LBFC's survey respondents having a waitlist for CTE programs.*
- *Of the respondents with waitlists, 97 percent indicated that physical capacity limitations were a contributing factor to their waitlists.*
- *Programs in the Architecture & Construction career cluster had waitlists with the greatest number of students, with a total of 1,750 (23.8 percent) students across LBFC survey respondents.*

Overview

Career and technical education (CTE) programs prepare students for trade careers critical to Pennsylvania's workforce. At the secondary level, these programs combine academic knowledge with technical skills tailored to specific trades, such as carpentry, auto-mechanic repair, and construction. Students leave these programs with in-demand industry credentials and, in some cases, paid work experience at local businesses that allow them to directly transition into the workforce upon graduation. With rising college tuition rates and a growing demand for skilled trade workers, students have become more interested in career pathways that utilize CTE. According to the Pennsylvania Department of Education (PDE), enrollment in secondary CTE programs increased by about 15.0 percent, or roughly 10,000 students, from 2015 to 2024.

Despite growing interest in CTE programs, access remains limited for some students due to barriers that hinder enrollment, expansion, and staffing. Factors such as physical capacity, facility conditions, and instructor shortages can restrict schools' abilities to meet student demand. These challenges suggest that structural and administrative limitations may create barriers to students' access to available programs and prevent CTE providers from implementing new programs to meet demand.

House Resolution 2024-481 directed us to conduct a study on barriers to CTE programming in Pennsylvania. This section of our study examines potential barriers to CTE, drawing on quantitative and qualitative data collected through a statewide survey of CTE administrators conducted by the Legislative Budget and Finance Committee (LBFC) between April and May 2025 (see Appendix B).

Key Findings

1. The Pennsylvania Department of Education (PDE) does not collect waitlist data for CTE programs and subsequently lacks a statewide view of program demand and capacity.

2. Of 128 respondents, 67 (52.3 percent) indicated that they had a waitlist for at least one of their CTE programs. Survey respondents collectively reported 7,343 students on waitlists for

CTE programs in the most recent school year, a 150.6 percent increase from FY 2019-20.

3. In FY 2024-25, programs in the Architecture and Construction cluster had the most waitlisted students with 1,750, followed by the Human Services and Health Science clusters with 1,407 and 1,361, respectively.

4. Of the 67 respondents with waitlists, 65 (97.0 percent) indicated that physical capacity limitations were a contributing factor to their waitlist, with 26 (38.8 percent) citing facility conditions, and 14 (21.0 percent) citing instructor shortages or vacancies.

Recommendations

1. The Pennsylvania Department of Education should require CTE providers to report the waitlists for each program by classification of instructional program (CIP) code within the Career and Technical Information System (CATS) to allow for future analysis of waitlist trends by program and career cluster.

2. The General Assembly should consider a competitive needs-based grant program for CTE facility expansion to help address rising waitlists for high-demand programs.

A. LBFC CTE Survey Overview

To collect data on barriers to CTE in Pennsylvania, the LBFC surveyed administrators at CTCs and school districts that offer CTE.[20] The survey was available from April 7th, 2025, to May 30th, 2025, with several follow-up phone calls and emails from LBFC and PDE staff to maximize the number of responses.

In total, the LBFC requested survey responses from 73 CTCs and 123 school districts that offer CTE programs, including two charter schools, for a total of 196 survey recipients. The LBFC received 128 responses from 65 CTCs and 63 school districts, resulting in a response rate of 89.0 percent from CTCs, 51.2 percent from school districts, and an overall survey response rate of 65.3 percent.[21]

[20] The LBFC's CTE Survey is in Appendix B of this report.

[21] For administrative purposes, PDE designates Philadelphia, Pittsburgh, and Erie City school districts as "single-district CTCs." For our study, since these schools operate district-based CTE programs and self-identified as school districts in LBFC's survey, we considered them school districts.

Exhibit 3 shows more information on survey response rates.

Exhibit 3

LBFC CTE Survey Response Rate

Survey Recipients	Survey Response Rate	Comment
73 Career and Technical Centers (CTCs)	**65 CTCs (89.0%)**	PDE's statewide total of 87 CTCs count satellite campuses as individual centers. We asked administrators at appropriate centers to include data for *all campuses* in a single response.[a/]
+	+	
123 School Districts	**63 School Districts (51.2%)**	Although 145 *high schools* offer CTE programs as of FY 2024-25, surveys were sent to CTE administrators *at the district level*. Some districts contain multiple high schools that offer CTE programs, accounting for the difference.
=	=	
196 Total Recipients	**128 Total Respondents (65.3%)**	In total, the LBFC sent 196 surveys: 73 to CTCs and 123 to school districts.

Note:
[a/]Centers with multiple campuses include Berks CTC, Chester County Technical College HS, Delaware County Technical HS, Lancaster County CTC, and Schuylkill Technology Center.

Source: Developed by LBFC staff from the LBFC Survey on CTE Barriers.

B. Student Waitlists

We requested data on the number of students on waitlists for CTE programs from PDE; however, the department does not collect this information and subsequently lacks a statewide view of program demand and capacity.

There is an established data-sharing infrastructure between PDE and individual CTE providers in the form of the Career and Technical Information System (CATS). CATS contains information that CTE providers report on their programming, including program titles,

enrollment, and unique Classification of Instructional Program (CIP) codes.[22]

Without comprehensive waitlist data, it is challenging to determine where student interest exceeds capacity or whether access to programs aligns with workforce needs. Collecting waitlist figures through existing data-sharing infrastructure would allow for more efficient reporting and support more informed decisions regarding CTE in Pennsylvania.

Recommendation: The Pennsylvania Department of Education should require CTE providers to report the waitlists for each program within the Career and Technical Information System (CATS) to allow for future analysis of waitlist trends by program and career cluster.

Overall Waitlist

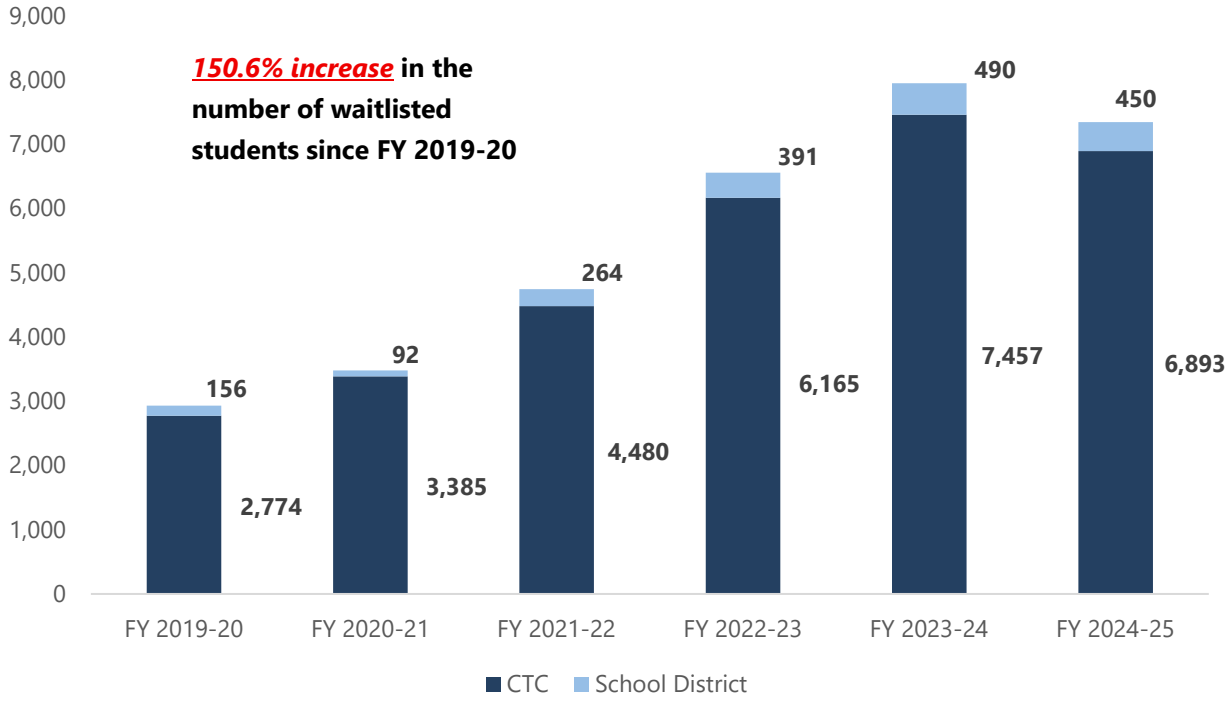
HR 481 directed us to report the total number of students on waitlists for CTE programs. Of 128 survey respondents, 67 (52.3 percent) indicated that they had a waitlist for at least one of their CTE programs. These respondents collectively reported 7,343 students on waitlists for CTE programs in the most recent school year, a 150.6 percent increase from FY 2019-20.

Exhibit 4 shows the total number of students on waitlists for CTE programs as reported by survey respondents from FY 2019-20 to FY 2024-25.

[22] PDE assigns all CTE programs a CIP Code based on their areas of study. These CIP codes correlate to 14 career clusters that categorize each program into its appropriate sector or industry.

Exhibit 4

Survey Respondents' Total Number of Students on Waitlists for CTE Programs by Delivery
FY 2019-20 to 2024-25



Source: Developed by LBFC staff from the LBFC Survey on CTE Barriers.

In FY 2024-25, 93.9 percent of waitlisted students were for programs offered by CTCs. From FY 2019-20 to FY 2024-25, the total number of students on waitlists for CTC programs increased from 2,774 to 6,893, or 148.5 percent. In the same year, 6.1 percent of waitlisted students were for programs offered by school districts. The total number of students on waitlists for school district programs increased from 156 to 450, or 188.5 percent.

CTCs likely have the largest share of waitlists because they are the primary provider of CTE in the state, accounting for almost 80.0 percent of all CTE programming.

Waitlist by Career Cluster

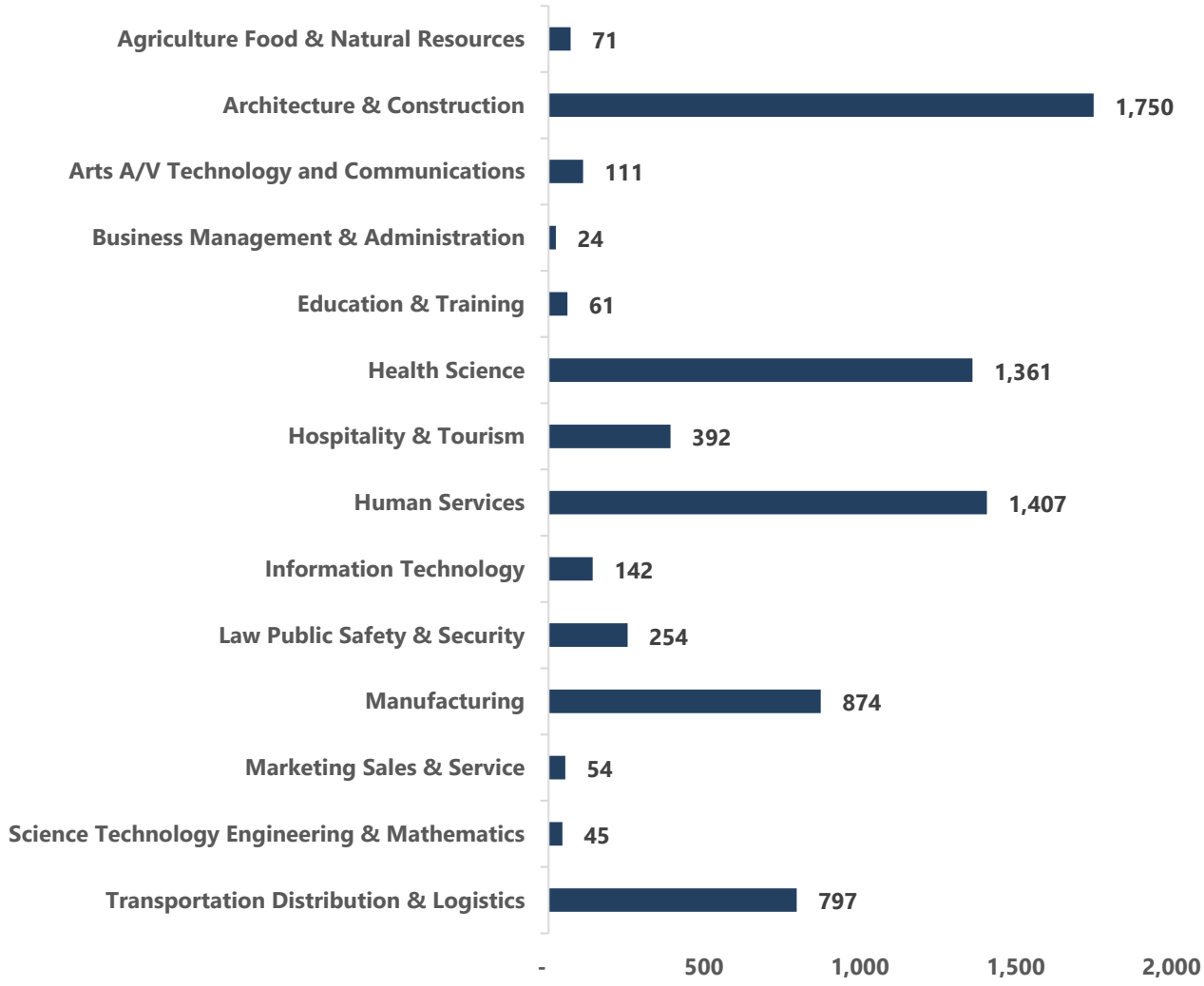
In Pennsylvania, career clusters are categorizations of CTE that organize programs into broad industry areas that share similar skills, knowledge,

and career pathways. Pennsylvania recognizes 14 career clusters that align with the state's workforce needs and educational standards.

Exhibit 5 displays the total number of students on waitlists by career cluster for FY 2024-25.

Exhibit 5

Survey Respondents' Combined Total Waitlists by Career Cluster
FY 2024-25



Source: Developed by LBFC staff from information obtained from the LBFC Survey on CTE Barriers

In FY 2024-25, programs in the Architecture and Construction cluster had the highest number of waitlisted students, with 1,750, followed by the

Human Services and Health Science clusters, with 1,407 and 1,361, respectively.

C. Contributing Factors to Student Waitlists

Our survey asked respondents to identify contributing factors to their waitlists, if any were applicable. We included four options on our survey, of which respondents could select one or more factors:

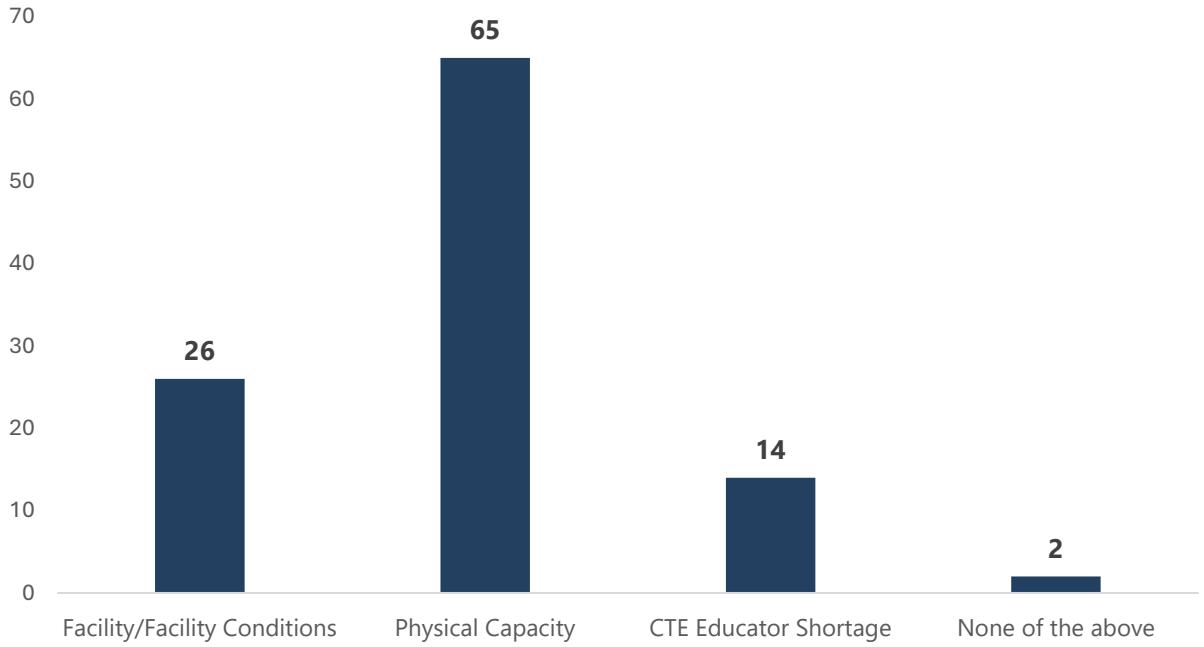
- Facility/Facility Conditions.
- Physical Capacity.
- CTE Instructor Shortage.
- None of the above/Other.

Contributing Factors Data

Respondents provided information about factors that contribute to waitlists and create barriers to CTE. Exhibit 6 shows which factors CTE providers with waitlists cited.

Exhibit 6

Respondents' Contributing Factors to Waitlists
FY 2024-25



Factor	Number of Respondents	Percentage of Respondents with Waitlist[a/]
Facility Conditions	26	38.8%
Physical Capacity	65	97.0
CTE Educator Shortage	14	21.0
None of the Above/Other	2	3.0

Note:
[a/]Figures do not total 100 percent because respondents could select multiple answers.

Source: Developed by LBFC staff from the LBFC Survey on CTE Barriers

Two respondents selected "None of the Above/Other" and cited strategic coordination with participating school districts and budgetary constraints as the contributing factors to their waitlists.

Facility Conditions. Poor facility conditions can restrict a CTE provider's ability to provide high-quality and safe technical education and can potentially cause schools to limit enrollment and place more students on waitlists.

Of the 67 respondents with waitlists in FY 2024-25, 26 (38.8 percent) indicated that their facility conditions were a contributing factor to their waitlists.

Physical Capacity. When facing physical capacity limitations, including classrooms and labs that cannot accommodate the number of interested students, providers may reduce class sizes or limit the number of course offerings, which can lead to additional students being placed on waitlists.

Of the 67 respondents with waitlists in FY 2024-25, 65 (97.0 percent) indicated that physical capacity was a contributing factor to their waitlists.

Physical capacity was the most frequently cited contributing factor to waitlists among survey respondents, with all but two providers indicating capacity limitations. Many respondents reiterated their concerns with capacity in the survey's comments:

- "The only way we can make room for the students on our waitlists is to add on to our programs. We do not have the physical space or funds for an addition."
- "As CTE education becomes more relevant to both students and parents, the increased interest is more than the capacity of our facility. New construction for the addition of space and shop offerings is needed to facilitate the influx of student interest."
- "Due to strong interest and limited space, many programs have developed waitlists."
- "New construction for the addition of space and shop offerings is needed to facilitate the influx of student interest."

While Section V of this study further discusses the fiscal challenges that CTE providers face, respondents with capacity limitations commonly indicated that they would be able to expand their space and program offerings to meet student demand if they had additional funding.

It may be necessary for CTE providers to have access to additional state grants to fund facility expansion to meet program demand. If CTE providers with demonstrated capacity issues had more access to financial resources specifically for expansion, they could offer more programs, accept more students into their programs, and reduce waitlists.

The state subsidizes CTE providers' operating costs, in part, through supplemental and competitive equipment grants. These grants help fund new equipment purchases, as it is important that CTE students train with the same technology used by employers in their industries.

Similarly, a competitive grant for CTE facility expansion for applicants that can demonstrate unmet student demand due to a lack of physical capacity could help expand available programming and reduce the number of students on waitlists.

Recommendation: The General Assembly should consider a competitive needs-based grant program for CTE facility expansion to help address rising waitlists in high-demand programs.

CTE Instructor Shortages/Vacancies. CTE instructor shortages can also affect program availability when schools are unable to staff all approved course sections or expand offerings to meet student interest. When qualified instructors are unavailable, particularly in high-demand trades, providers may reduce the number of classes offered or delay opening new sections, which can result in more students being placed on waitlists.

Of the 67 survey respondents with waitlists in FY 2024-25, 14 (21.0 percent) indicated that CTE instructor shortages and vacancies contributed to their waitlists. An additional 15 respondents indicated that they had instructor vacancies but no waitlists in the most recent school year.

Our survey requested CTE providers with instructor vacancies to identify potential contributing factors. Based on our meetings with stakeholders and CTCs, we provided four options on our survey, of which multiple options could be chosen:

- Certification Process.
- Certification Costs.
- Teacher Salary.
- Other.

Of the 29 survey respondents who reported CTE instructor shortages during FY 2024-25, 25 (86.2 percent) noted teacher salary as a factor, 23 (79.3 percent) indicated issues with the certification process, and 12 (41.4 percent) indicated certification costs.

Limitations to Survey Data

There are several limitations to the waitlist data the LBFC survey presents in this report. The three limitations include survey instrument constraints, varying waitlist policies, and challenges in estimating demand for CTE programs.

Survey Instrument Constraints. Some limitations to our collected data are due to inherent issues associated with survey administration, which include:

- With an overall response rate of 65.3 percent, our survey data is not representative of all CTE providers in the state, however, CTCs administer almost 80.0 percent of all CTE programming. With a CTC response rate of 90.3 percent, the survey provides insight into the barriers to CTE for a large share of programs and students across Pennsylvania.[23]

- Some responses included errors and conflicting answers to survey questions. These issues ranged from respondents incorrectly identifying whether their facility was a district-based or CTC program, to commenting on factors contributing to their waitlists without reporting any waitlisted students in the previous six years. In some cases, LBFC staff contacted respondents to provide corrected responses. Otherwise, we omitted inconsistent responses from our analysis when appropriate.

Varying Waitlist Policies. Approaches to waitlist policy and definitions vary across CTE providers in Pennsylvania:

- Most providers attempt to enroll students into their second or third choice of program if their first choice is at capacity. Some providers included these students as a part of their waitlist totals, while some did not.

- Some providers, primarily CTCs, place limits on the number of students that can be placed on a program's waitlist. Based on survey responses, waitlist limits are primarily determined from a provider's estimation of how many students could realistically enroll in a program. Other providers do not use limits, with some waitlists reaching hundreds of students.

Challenges Estimating Demand for CTE Programs. Issues that arise from varying waitlist policies also complicate estimating total demand. While analyzing waitlist data is key to understanding unmet demand, CTE providers sometimes exclude students who enroll in their second choice program or cannot access programs due to administrative caps on enrollment and waitlists.

[23] The Pennsylvania Association of Carrer and Technical Administrators (PACTA) conducted a similar survey of only CTCs in June 2023 and had a survey response rate of 54.0 percent.

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SECTION IV
ACCESS TO CAREER AND TECHNICAL EDUCATION

Fast Facts...

- *In FY 2024-25, 87 CTCs and 127 school districts offered over 1,800 CTE programs to Pennsylvania secondary students.*
- *The Philadelphia City School District offered the most CTE programs with 116.*
- *We found that, for each of the following career clusters, over 80 percent of school districts had no available programs: Business, Management, and Administration; Education and Training; and Marketing, Sales, and Service.*

Overview

Twenty-two Pa. Code § 4.31(a) requires Career and Technical Education (CTE) programs to be accessible to all high school students in the commonwealth. However, "accessible" is not formally defined in either regulation or statute, leaving the term open to interpretation. While nearly all students may be able to enroll in at least one CTE course, the number and variety of programs in which a student can participate differs between school districts, resulting in some students having greater access than others.

CTE programming is largely based on demand, as all new approved programs must be related to jobs listed on the In-Demand Occupations List (IDOL) created by the Department of Labor and Industry. However, the availability of all program types ensures students have access to the courses they are most interested in and allows them to take full advantage of CTE opportunities.

This section examines the extent to which students lack access to CTE programming because their home school districts do not offer such opportunities, either directly or through partnerships with career and technical centers (CTCs). Understanding these gaps in program availability is key to assessing equity in educational opportunities and ensuring that students have access to a variety of career pathways.

Key Findings

1. Pennsylvania's number of CTE programs increased by 5.6 percent, from 1,781 in FY 2022-23 to 1,881 in FY 2024-25.

2. The Architecture and Construction career cluster had the most programs, totaling 320. Of these, 86.0 percent were offered by CTCs, while high schools provided 14.0 percent.

3. The Marketing, Sales, and Service career cluster had the fewest programs, with 30. CTCs offered 43.0 percent of these programs, and high schools provided 57.0 percent.

4. CTCs offered the highest percentage of Transportation, Distribution, and Logistics programs, at 87.0 percent, and high

schools provided the highest percentage of Business, Management, and Administration programs, at 84.0 percent.

5. We identified three counties—Cameron, Forest, and Sullivan—that do not offer CTE programming in any high schools or CTCs within their borders. However, students may access CTE programs in other counties.

6. The three career clusters with the least access for secondary students were:

    - Business, Management, and Administration: 339,364 students in 421 school districts with no programs.
    - Education and Training: 324,296 students in 400 school districts with no programs.
    - Marketing, Sales, and Service: 313,248 students in 414 school districts with no programs.

A. Statewide Career and Technical Education Programming

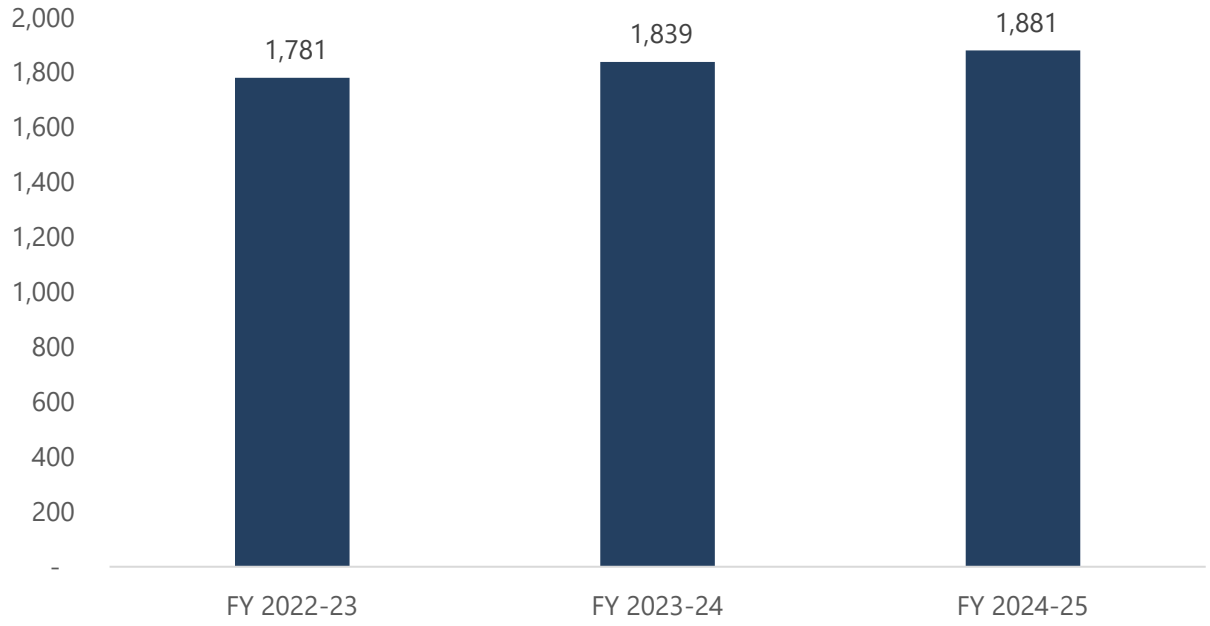
Secondary students primarily access CTE programs through CTCs, which administer about 80.0 percent of these programs. CTCs accept students from their participating districts, ranging from one to 30 districts. In addition to CTC programs, students can enroll in CTE programs at their high schools if they offer them.[24]

In FY 2024-25, 87 CTCs and 123 school districts offered 1,881 CTE programs to secondary students in Pennsylvania. As shown in Exhibit 7, the number of CTE programs increased by 42 (2.2 percent) since FY 2023-24 and 100 (5.6 percent) since FY 2022-23.

[24] Some school districts send students to a neighboring high school to participate in CTE programs. South Williamsport High School students, for example, may enroll in CTE programs offered at Williamsport High School, which is in a different school district.

Exhibit 7

Total Approved CTE Programs
FY 2022-23 to FY 2024-25

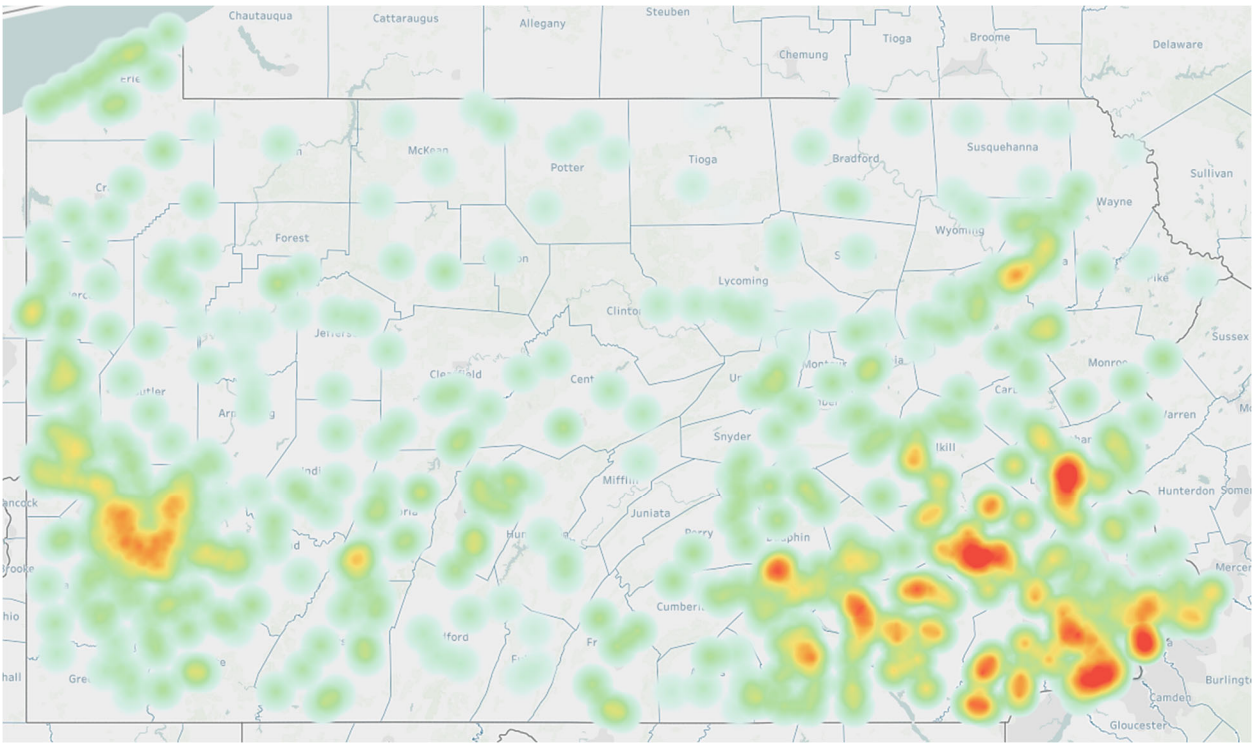


Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

CTE programs are offered at CTCs and high schools across the state, but some areas have more programs available than others. Exhibit 8 shows a density map of all CTE programs by school district.

Exhibit 8

Density Map of All CTE Programming by School District

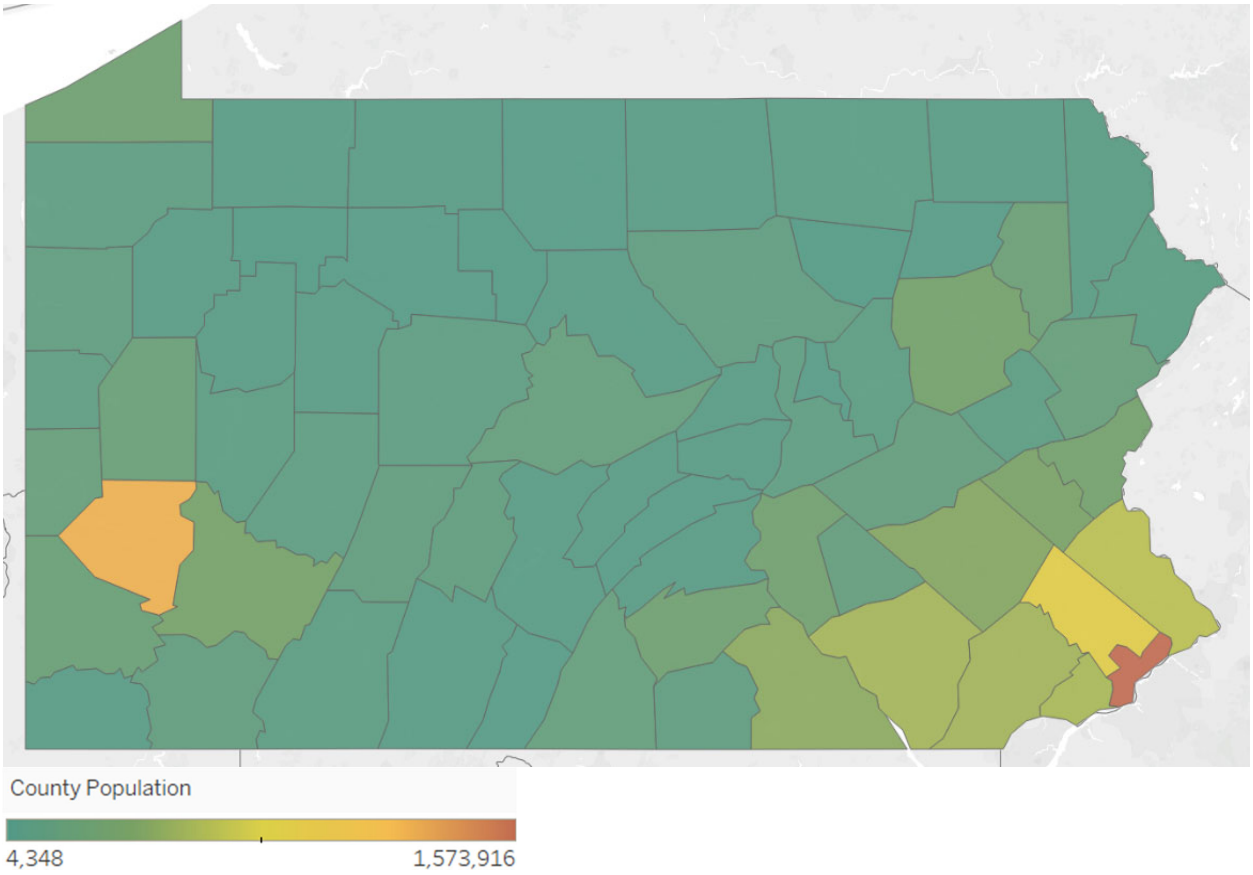


Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

The Philadelphia City School District offered the most CTE programs, with a total of 116. Because higher concentrations of CTCs and high schools are found in more populated areas of the state, the distribution of CTE programming roughly aligns with the state's population density, as shown in Exhibit 9.

Exhibit 9

Pennsylvania Population by County
FY 2024-25



Source: Developed by LBFC staff from information obtained from the US Census Bureau.

Under 22 Pa. Code § 339.4, the Secretary of Education must review new, expanded, or revised CTE programs and reapprove existing programs at least every five years. Applications must demonstrate alignment with industry standards, preparation for high-priority occupations, certified instructors, sufficient instructional hours and equipment, and articulation agreements with postsecondary institutions.

Programs must also meet state-defined performance targets for skill attainment, academic achievement, graduation, and student placement. Failure to meet these standards within three years or ongoing low enrollment can result in program termination.

PDE assigns all CTE programs a Classification of Instructional Program (CIP) Code based on their areas of study. These CIP codes correlate to 14

career clusters that categorize each program into its appropriate sector or industry.[25] Some CIP Codes include, for example:

- **01.0401:** Agricultural & Food Products Processing.
- **12.0501:** Cosmetology.
- **46.0101:** Masonry.
- **51.9999:** Health Care Technology.

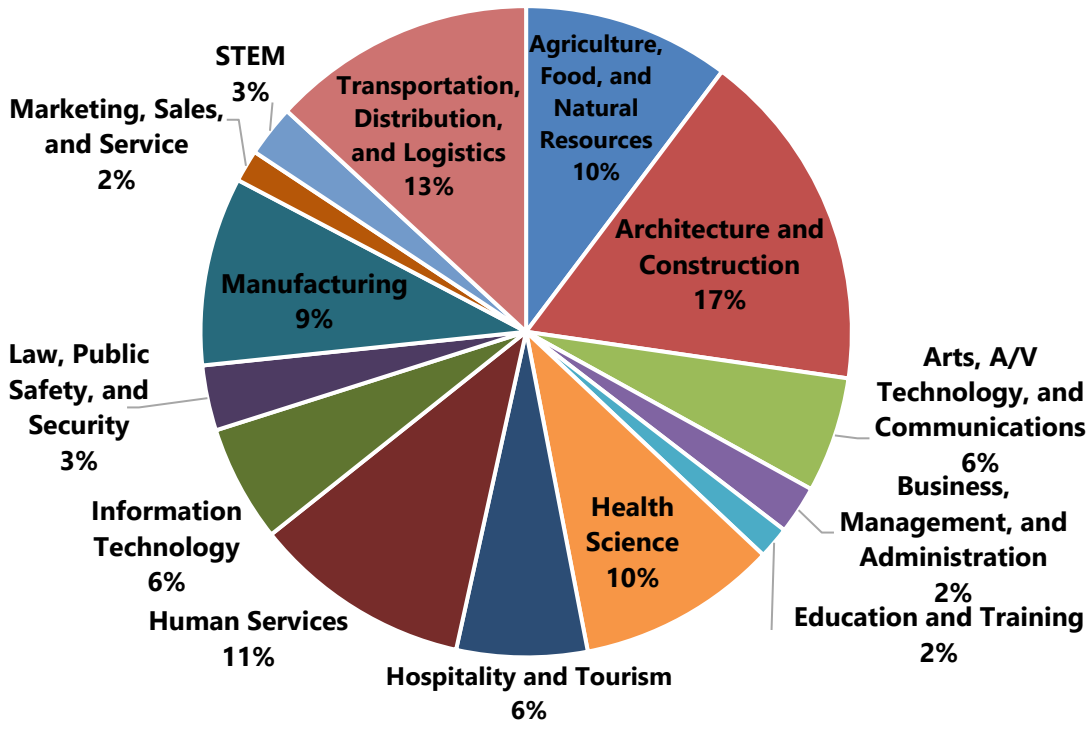
Exhibit 10 shows the number of approved CTE programs within each career cluster and the distribution of programs across career clusters.

[25] PDE defines 15 available career clusters, but there are currently no programs within the Finance cluster.

Exhibit 10

Approved CTE Programs by Career Cluster
FY 2024-25

Career Cluster	Number of Approved Programs	% CTC	% HS
Agriculture, Food, and Natural Resources	193	26.0%	74.0%
Architecture and Construction	320	86.0	14.0
Arts, A/V Technology, and Communications	108	69.0	31.0
Business, Management, and Administration	45	16.0	84.0
Education and Training	30	33.0	67.0
Health Science	187	75.0	25.0
Hospitality and Tourism	122	76.0	24.0
Human Services	204	70.0	30.0
Information Technology	109	83.0	17.0
Law, Public Safety, and Security	61	85.0	15.0
Manufacturing	176	86.0	14.0
Marketing, Sales, and Service	30	43.0	57.0
STEM	48	42.0	58.0
Transportation, Distribution, and Logistics	248	87.0	13.0
Total	**1,881**	**79.0%**	**21.0%**



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

The Architecture and Construction career cluster had the most programs, with 320. The Marketing, Sales, and Service and Education and Training career clusters had the fewest programs, both totaling 30.

CTCs offered the highest percentage of Transportation, Distribution, and Logistics programs at 87.0 percent, while high schools had the highest percentage of Business, Management, and Administration programs at 84.0 percent.

We identified three counties—Cameron, Forest, and Sullivan—where no high schools or CTCs offered CTE programming within county limits. Students in these counties have access to CTE, as each school district within these counties sends students to a CTC. However, these centers are outside the county boundaries and are at varying distances from each county's high school, as shown in Exhibit 11.

Exhibit 11

Counties with No CTE Programs Within County Limits
FY 2024-25

County	School	9-12 Enrollment	Serving CTC	Distance (Miles)	Driving Distance (Minutes)
Cameron	Cameron County Jr/Sr High School	153	Seneca Highlands CTC	26.7	35
Forest	East Forest HS	42	Venango Technology Center	38.3	52
Forest	West Forest HS	73	Venango Technology Center	24.4	34
Sullivan	Sullivan County High School	203	Northern Tier Career Center	33.1	45

Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

B. Student Access by School District

We evaluated the availability of high school-based and CTC programs within school districts by career cluster.

Lancaster School District, for example, provides seven high school-based CTE programs. Students can also enroll in CTE programs at Lancaster County CTC, which offers 41 programs across its campuses. Altogether, Lancaster School District students have access to 48 CTE programs.

As of FY 2024-25, Pennsylvania has 500 school districts with an estimated 456,556 high school (grades 9-12) students. While not every student

chooses to participate in CTE programs, access figures estimate the number of students who lack immediate access to CTE programs within their home districts due to limited program availability.

Exhibit 12 displays the distribution of school districts with no programs, those with one to ten programs, and those with more than ten programs in each career cluster.

Exhibit 12

School District's Program Availability by Career Cluster[a/]
FY 2024-25

Career Cluster	School Districts with No Programs	School Districts with 1-10 Programs
Agriculture, Food, and Natural Resources	183 (37.0%)	317 (63.0%)
Architecture and Construction	5 (1.0)	494 (98.8)
Arts, A/V Technology, and Communications	145 (29.0)	354 (70.8)
Business, Management, and Administration	421 (84.2)	79 (15.8)
Education and Training	400 (80.0)	100 (20.0)
Health Science	5 (1.0)	494 (98.8)
Hospitality and Tourism	10 (2.0)	489 (97.8)
Human Services	7 (1.4)	493 (98.6)
Information Technology	34 (6.8)	466 (93.2)
Law, Public Safety, and Security	161 (32.2)	339 (67.8)
Manufacturing	35 (7.0)	465 (93.0)
Marketing, Sales, and Service	414 (83.0)	86 (17.0)
STEM	347 (69.4)	153 (30.6)
Transportation, Distribution, and Logistics	8 (1.6)	491 (98.2)

Note:
[a/]Figures that do not sum to 100 have a school district with more than 10 programs. These were not included since there were only five in the state.

Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

The career clusters most available to high school students were Architecture and Construction; Health Science; Transportation, Distribution, and Logistics; and Human Services. Students in approximately one percent of school districts do not have access to CTC or high school-based programs in these clusters.

The career clusters least available to high school students were Business, Management, and Administration; Marketing, Sales, and Service; Education and Training; and STEM.

Ninety-three to 98.8 percent of districts have access to between one and ten programs for Architecture and Construction; Health Science; Human Services; Transportation, Distribution, and Logistics; Information Technology; and Manufacturing career clusters. Only five districts have access to more than ten programs in any given cluster.

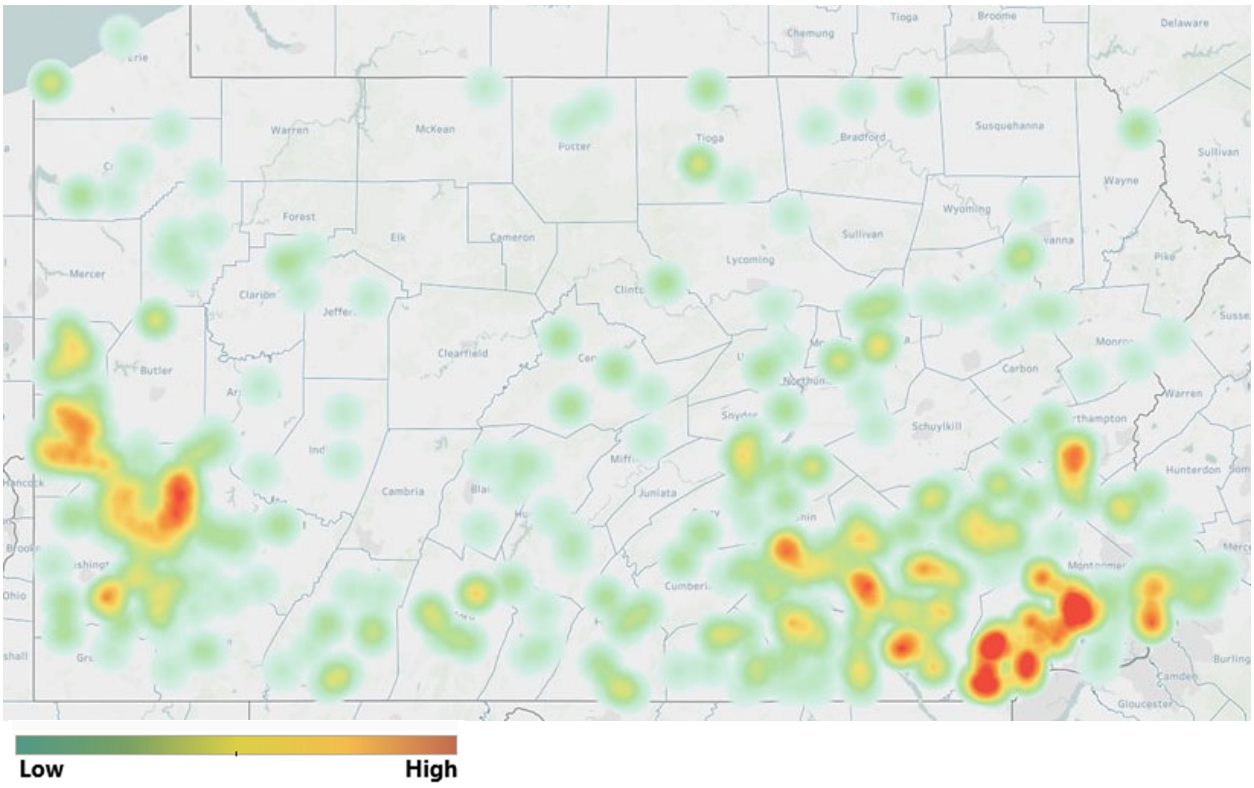
Agriculture, Food, and Natural Resources

Programs in this cluster focus on producing, processing, and managing food, fiber, and natural resources and training students in plant and animal systems, environmental science, and agricultural technology.

In FY 2024-25, 193 approved Agriculture, Food, and Natural Resources programs were available to secondary students. Exhibit 13 displays the distribution of these programs throughout the state.

Exhibit 13

Density Map of Agriculture, Food, and Natural Resources Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 317 school districts had access to at least one Agriculture, Food, and Natural Resources program. The Octorara School District had the most access, with two high school-based and six CTC-based programs.

The 183 school districts without programs in this career cluster collectively have a high school enrollment of 138,097 students.

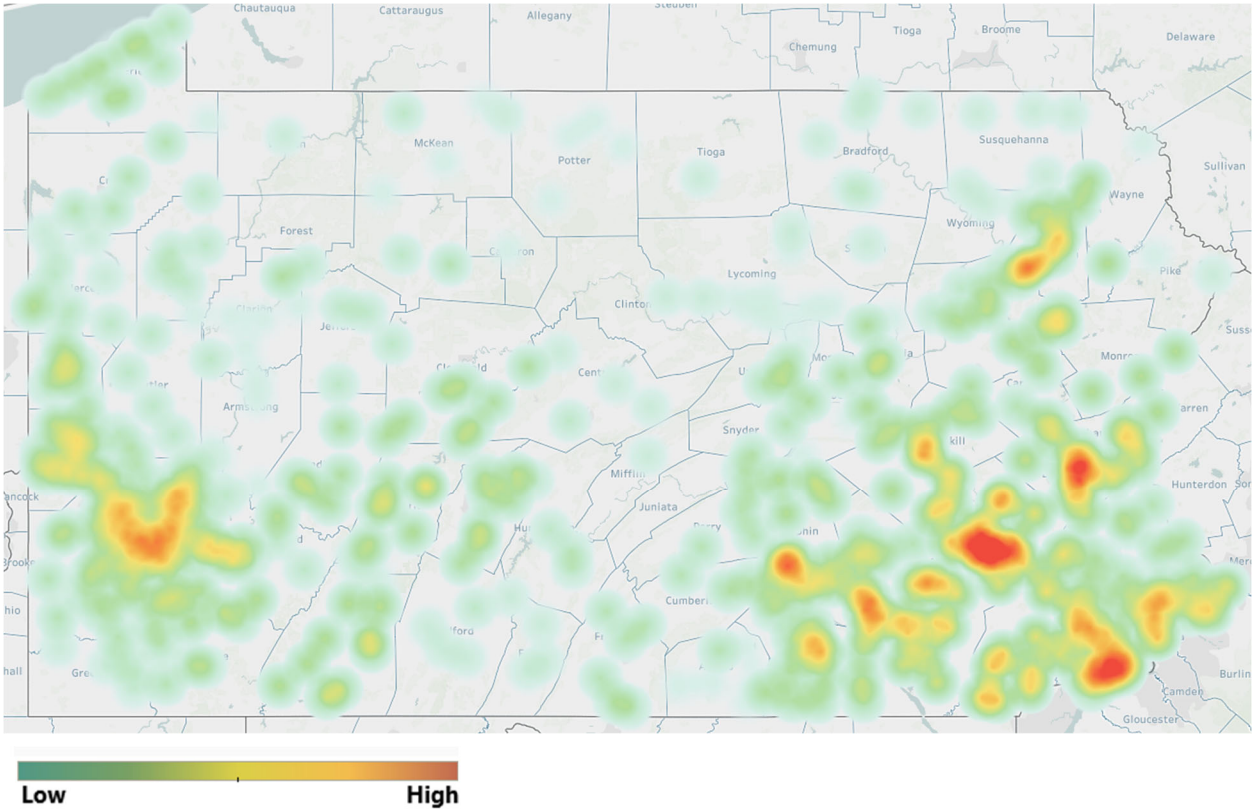
Architecture and Construction

Programs in this cluster focus on designing, planning, managing, building, and maintaining physical structures, while also training students in drafting, carpentry, electrical systems, and construction management.

In FY 2024-25, 320 approved Architecture and Construction programs were available to secondary students. Exhibit 14 shows the density of these programs across the state.

Exhibit 14

Density Map of Architecture and Construction Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 495 school districts had access to at least one Architecture and Construction program. The Philadelphia City School District had the most access to these programs, with 12 CTC and high school-based programs.

The five school districts without programs in this career cluster have a total high school enrollment of 2,912 students.

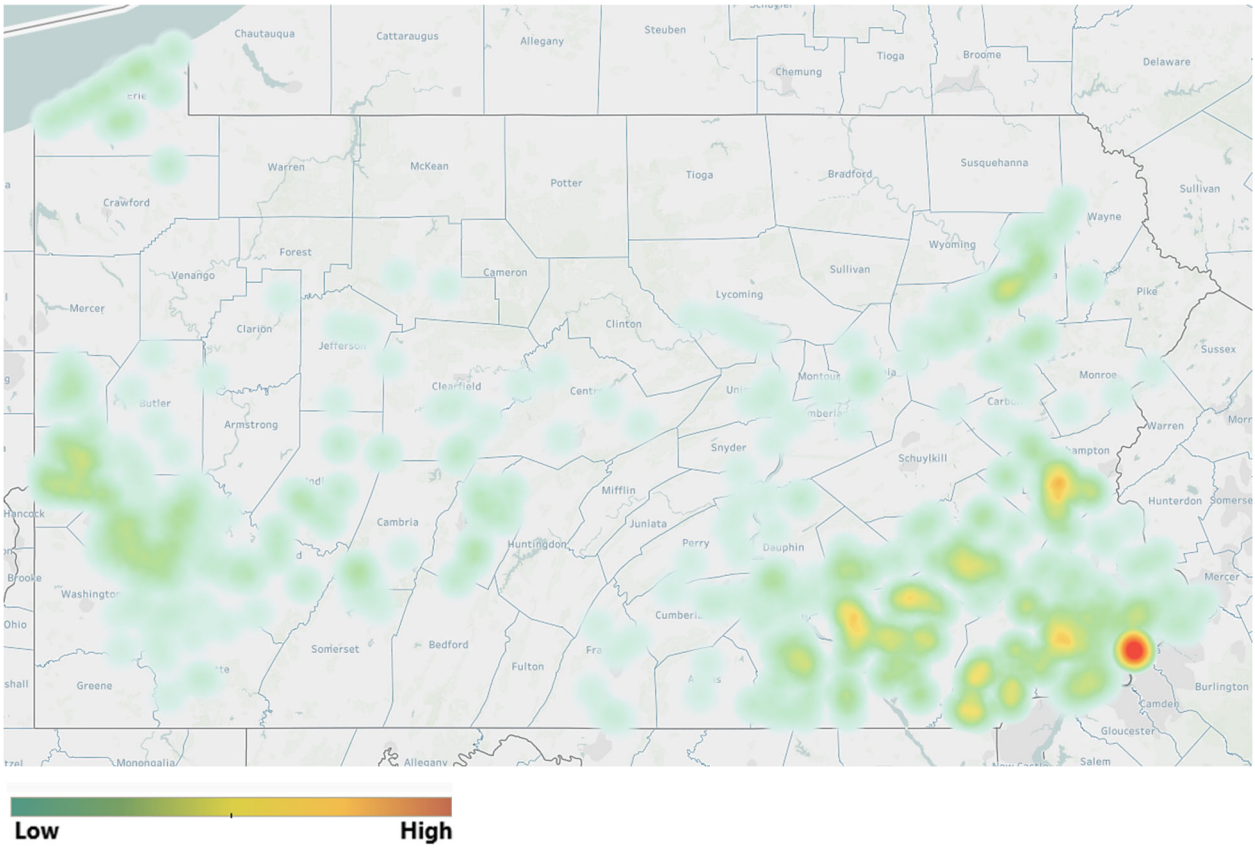
Arts, A/V Technology, and Communications

Programs within this cluster focus on the creation, production, and distribution of visual and performing arts. They provide students with training in design, multimedia production, and communication technologies.

In FY 2024-25, 108 approved Arts, A/V Technology, and Communications programs were available to secondary students. Exhibit 15 shows the density of these programs across the state.

Exhibit 15

Density Map of Arts, A/V Technology, and Communications Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 355 school districts had access to at least one Arts, A/V Technology, and Communications program. The Philadelphia City School District had the most access to these programs, with 20 CTC and high school-based programs.

The 145 school districts without programs in this career cluster collectively enroll 66,089 high school students.

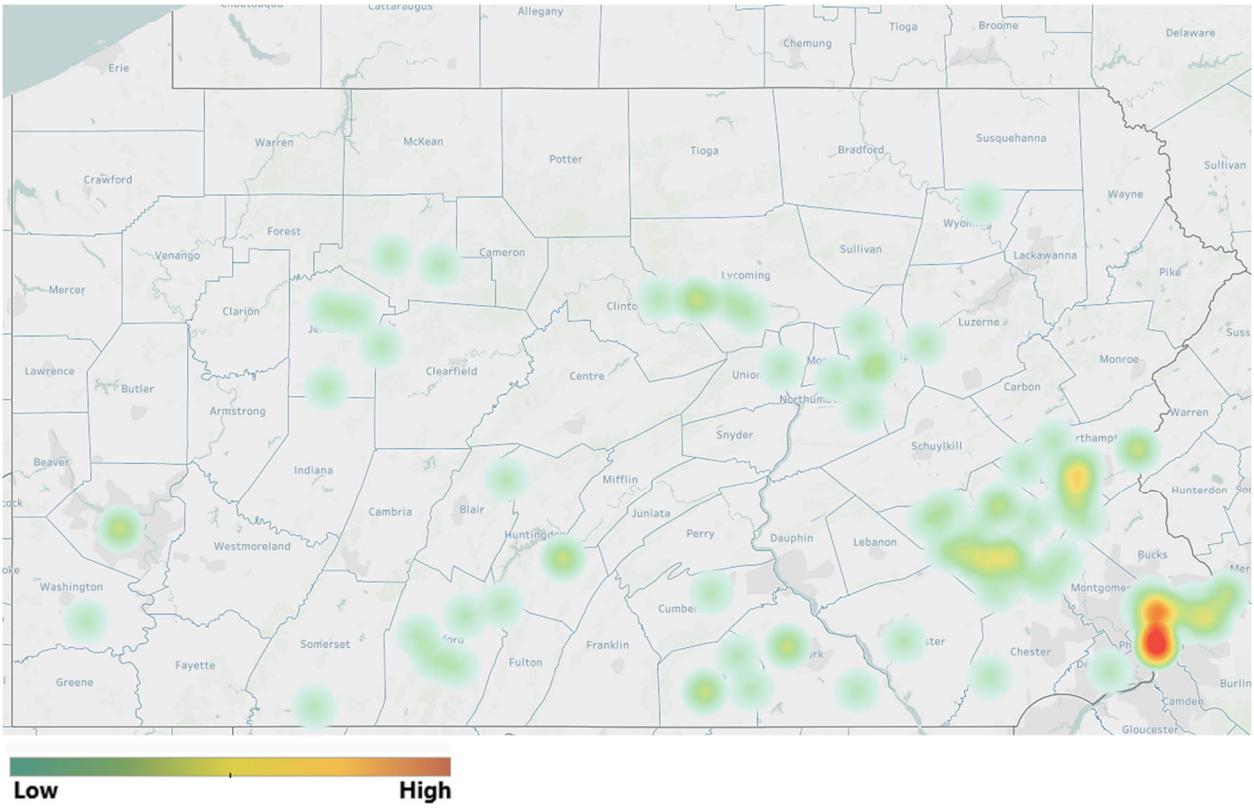
Business, Management, and Administration

Programs in this cluster focus on business operations, management, and administrative support and train students in business practices, accounting, finance, and organizational management.

In FY 2024-25, 45 approved Business, Management, and Administration programs were available to secondary students. Exhibit 16 shows the density of these programs throughout the state.

Exhibit 16

Density Map of Business, Management, and Administration Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 79 school districts had access to at least one Business, Management, and Administration program. The Philadelphia City School District had the most access to these programs, with seven CTC and high school-based programs.

The 421 school districts with no programs in this career cluster have a collective high school enrollment of 339,264 students.

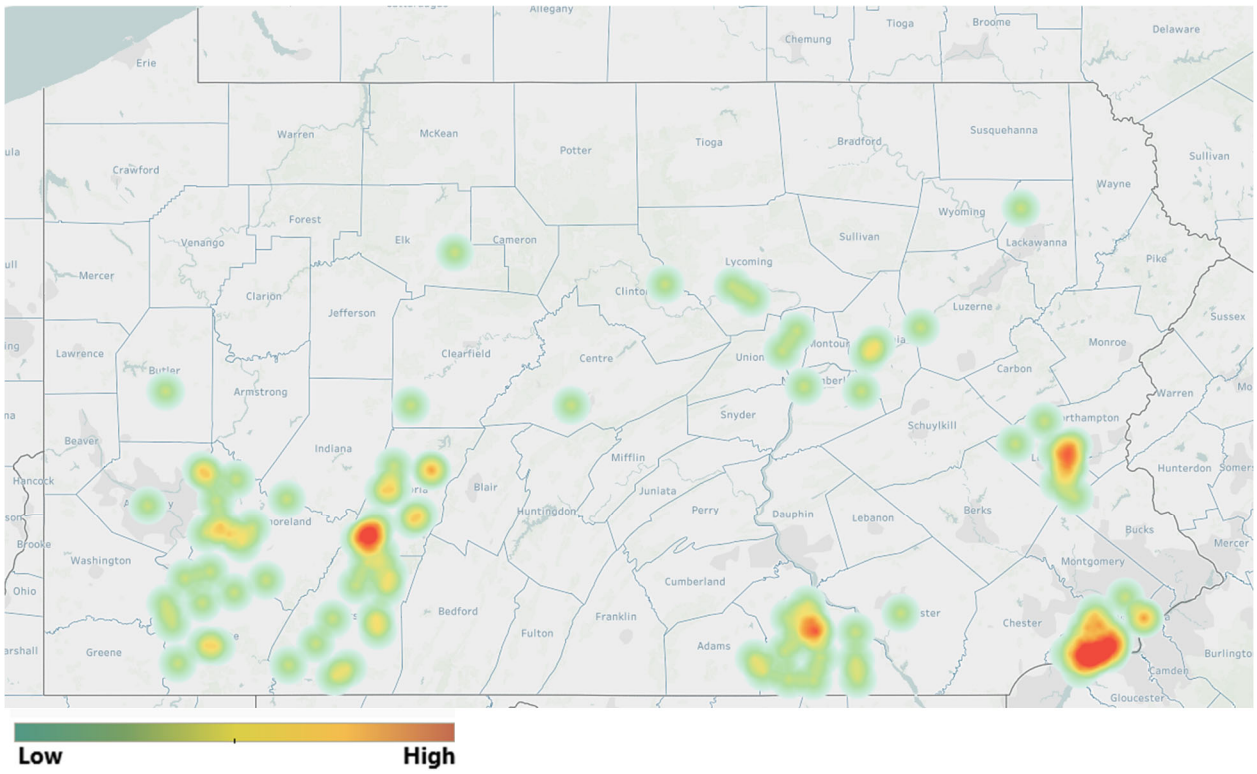
Education and Training

Programs in this cluster focus on teaching, training, and educational support services and train students in instructional practices, child development, and curriculum planning.

In FY 2024-25, there were 30 approved Education and Training programs available to secondary students. Exhibit 17 shows the density of these programs across the state.

Exhibit 17

Density Map of Education and Training Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 100 school districts had access to at least one Education and Training program. The Philadelphia City School District had the most access to these programs, with two CTC and high school-based programs.

The 400 school districts with no programs in this career cluster have a collective high school enrollment of 324,296 students.

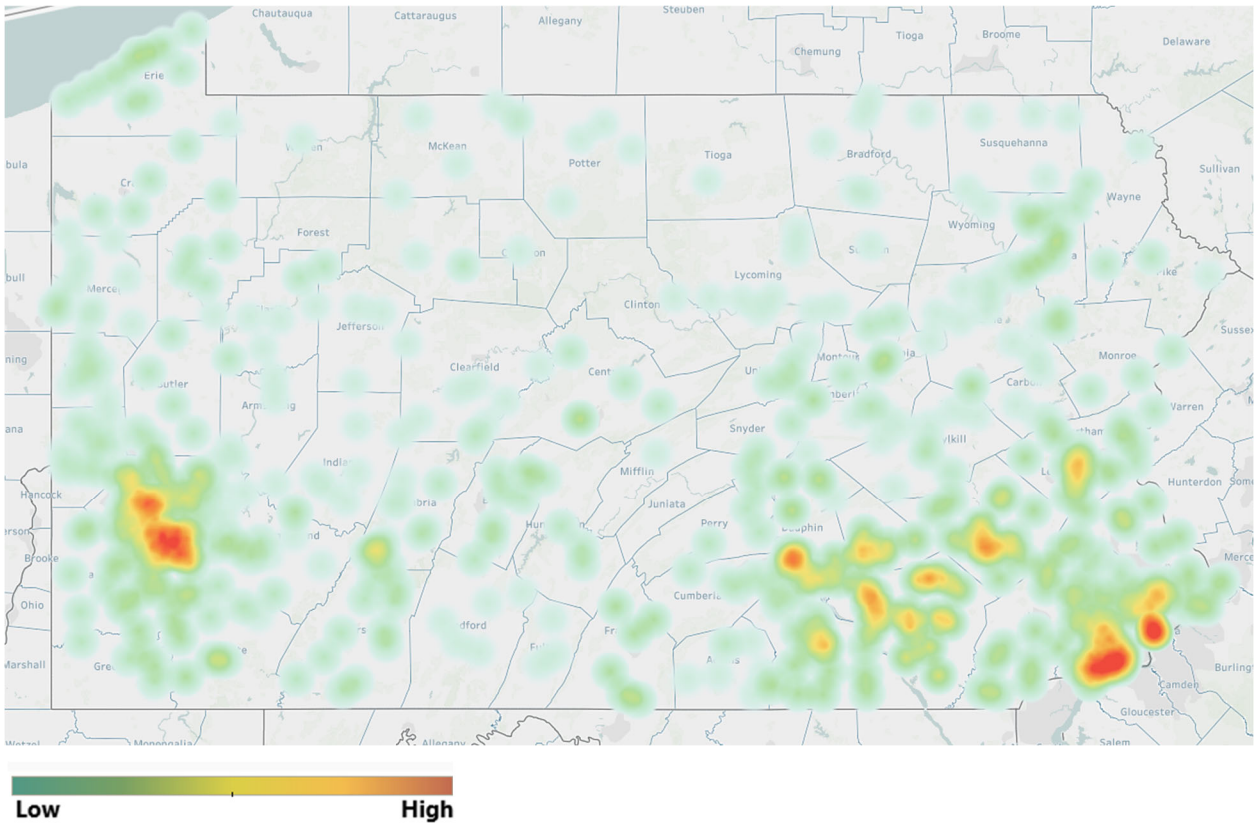
Health Science

Programs in this cluster focus on patient care, health services, and medical technology, and train students in human anatomy, healthcare practices, diagnostics, and therapeutic services.

In FY 2024-25, 187 approved Health Science programs were available to secondary students. Exhibit 18 shows the distribution of these programs across the state.

Exhibit 18

Density Map of Health Science Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 495 school districts had access to at least one Health Science program. The Philadelphia City School District had the most access to these programs, with 17 CTC and high school-based programs.

The five school districts with no programs in this career cluster have a combined high school enrollment of 2,504 students.

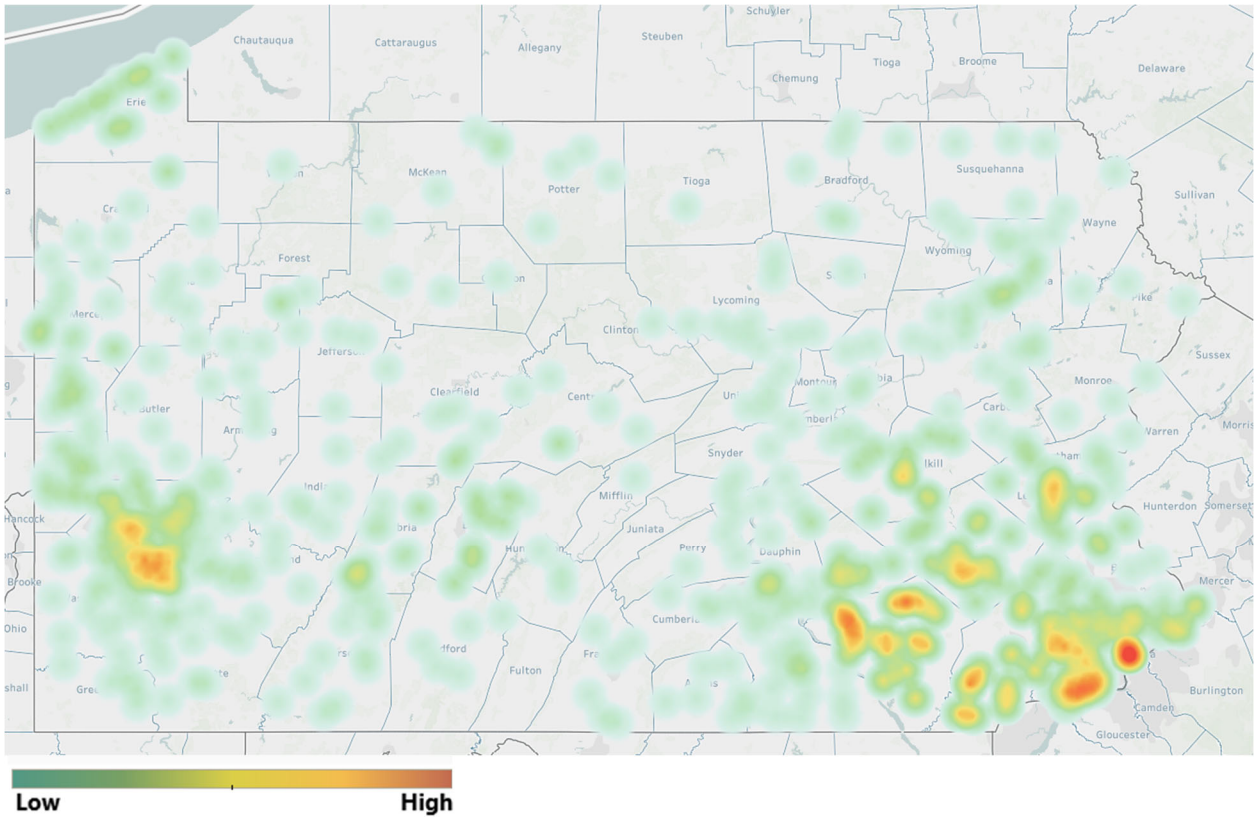
Hospitality and Tourism

Programs in this cluster focus on managing food services, lodging, travel, and recreation, and train students in customer service, culinary arts, hotel operations, and event planning.

In FY 2024-25, there were 122 approved Hospitality and Tourism programs available to secondary students. Exhibit 19 shows the density of these programs across the state.

Exhibit 19

Density Map of Hospitality and Tourism Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 490 school districts had access to at least one Hospitality and Tourism program. The Philadelphia City School District had the most access to these programs, with 12 CTC and high school-based programs.

The ten school districts without programs in this career cluster have a combined high school enrollment of 4,783 students.

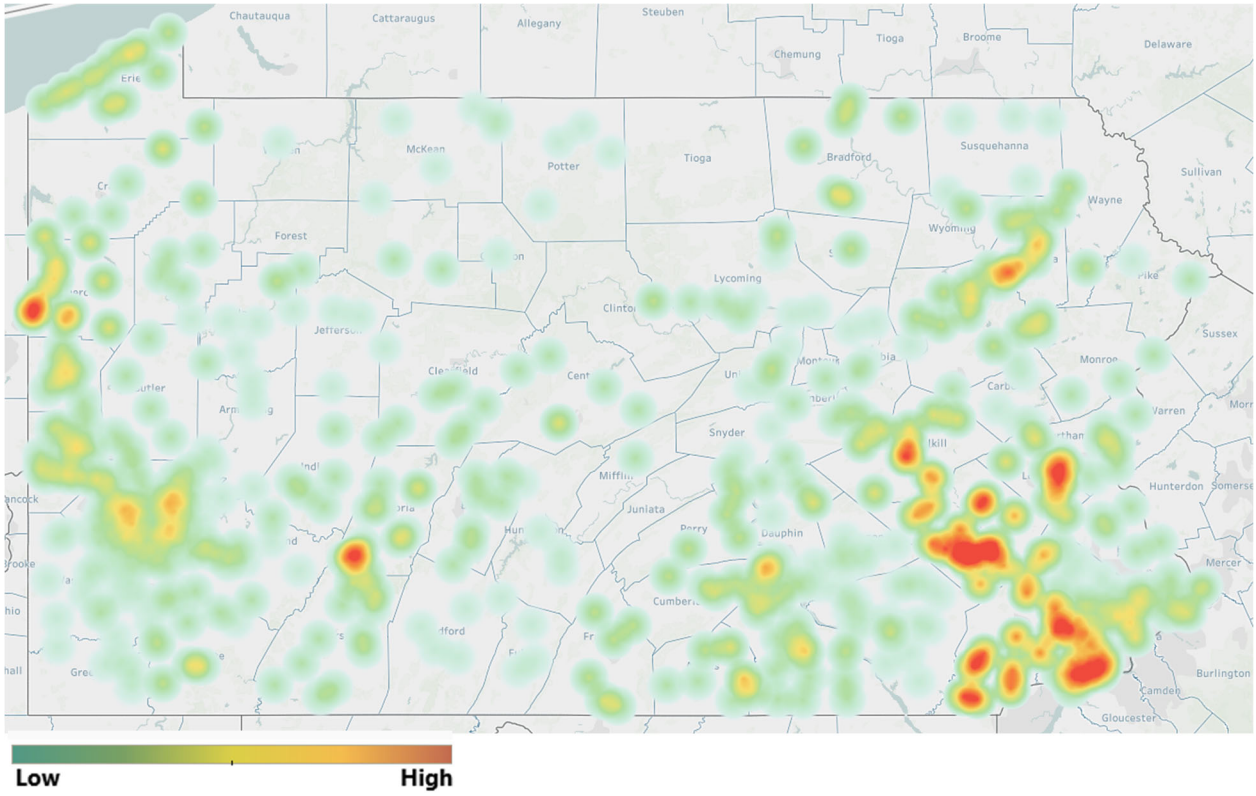
Human Services

Programs in this cluster focus on personal care services, counseling, and family and community support. They also train students in mental health services, social work, and cosmetology.

In FY 2024-25, 204 approved Human Services programs were available to secondary students. Exhibit 20 shows the density of these programs across the state.

Exhibit 20

Density Map of Human Services Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 493 school districts had access to at least one Human Services program. The Octorara School District had the most access to these programs, offering two high school-based programs and seven CTC-based programs.

The seven school districts without any programs in this career cluster collectively have a high school enrollment of 3,721 students.

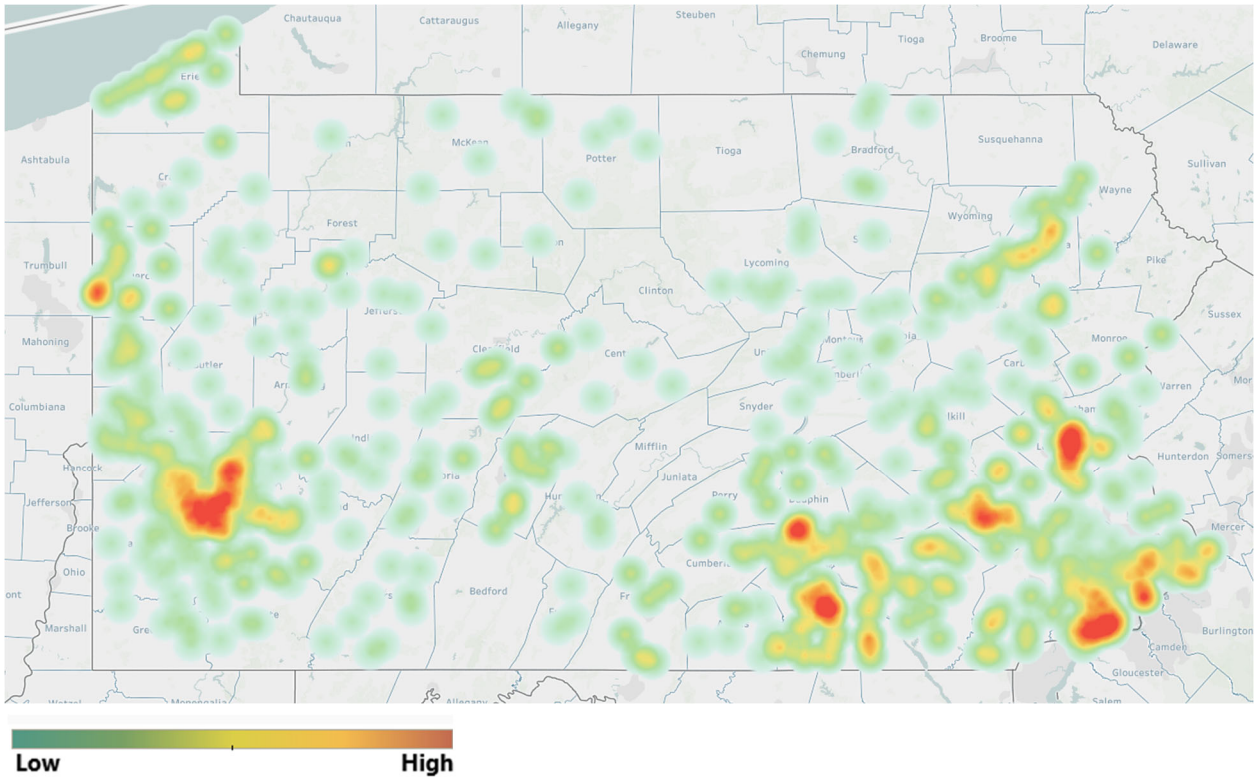
Information and Technology

Programs in this cluster focus on designing, developing, and managing computer systems and networks, while training students in programming, cybersecurity, and digital communication.

In FY 2024-25, 109 approved Information and Technology programs were available to secondary students. Exhibit 21 shows the density of these programs across the state.

Exhibit 21

Density Map of Information and Technology Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 466 school districts had access to at least one Information and Technology program. The Philadelphia City School District had the most access to these programs, with six CTC and high school-based programs.

The 34 school districts without programs in this career cluster have a combined enrollment of 16,552 students.

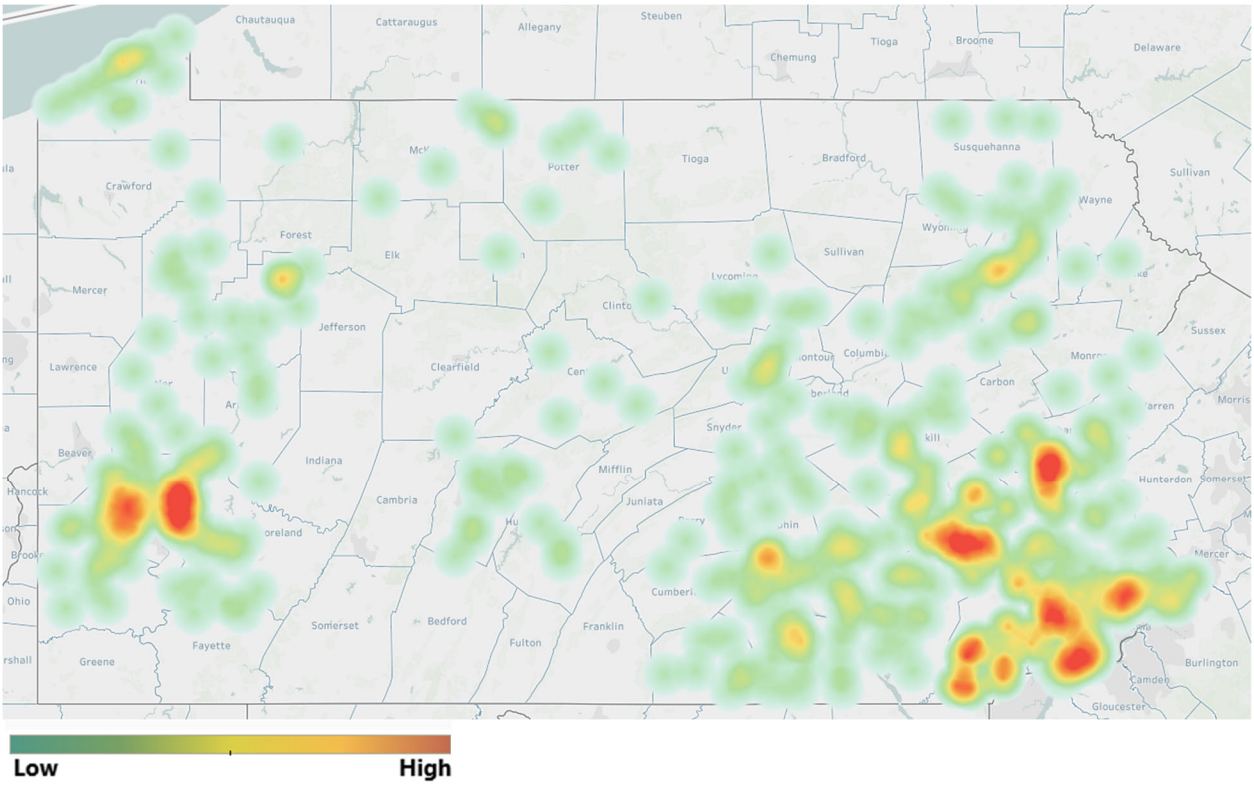
Law, Public Safety, and Security

Programs in this cluster focus on law enforcement, legal services, emergency response, and homeland security, and train students in criminal justice, forensic science, and public safety operations.

In FY 2024-25, 61 approved Law, Public Safety, and Security programs were available to secondary students. Exhibit 22 shows the density of these programs across the state.

Exhibit 22

Density Map of Law, Public Safety, and Security Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 339 school districts had access to at least one Law, Public Safety, and Security program. The Octorara School District had the most access to these programs, with one high school-based program and three CTC-based programs.

The 161 school districts without programs in this career cluster have a combined enrollment of 112,595 students.

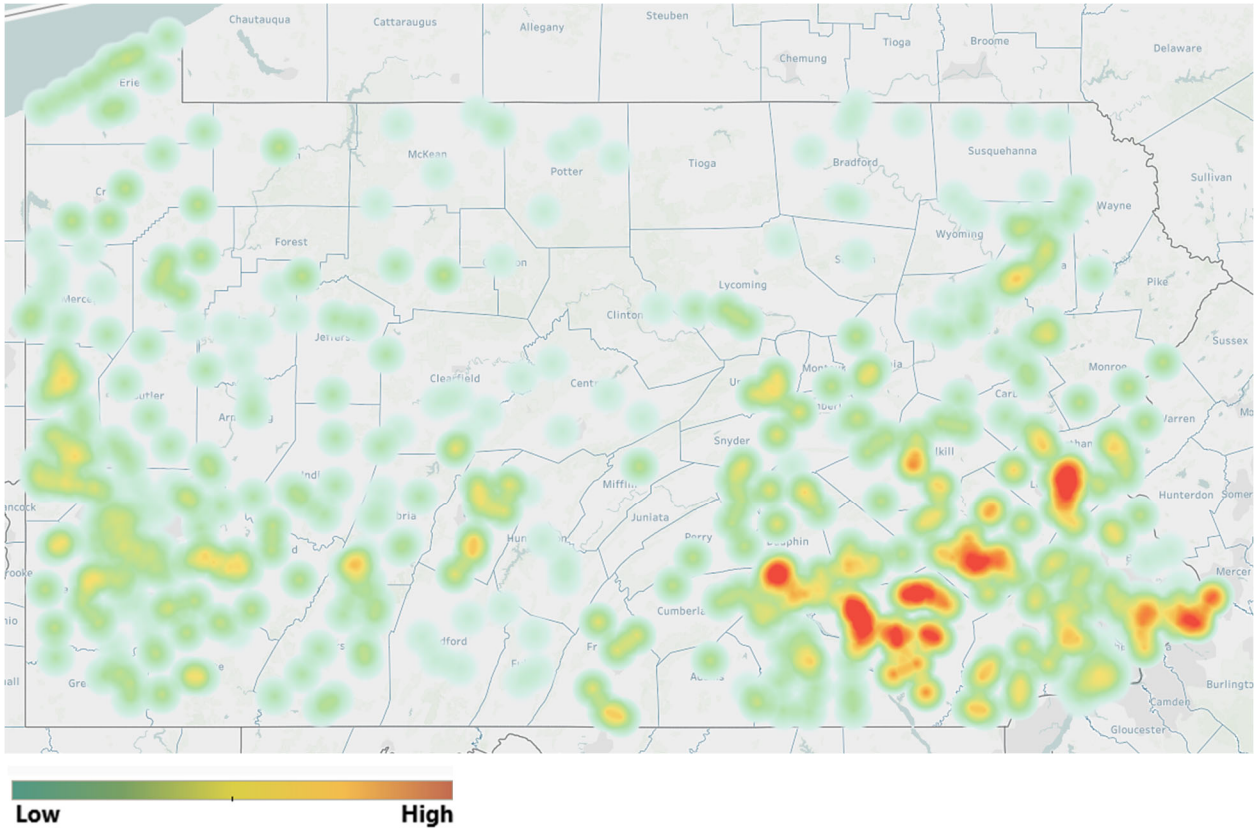
Manufacturing

Programs in this cluster focus on goods production, quality control, and manufacturing processes, and train students in machining, welding, robotics, and production management.

In FY 2024-25, 176 approved Manufacturing programs were available to secondary students. Exhibit 23 shows the density of these programs across the state.

Exhibit 23

Density Map of Manufacturing Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 465 school districts had access to at least one Manufacturing program. The Lancaster School District had the most access, with one high school-based program and seven CTC-based programs.

The 35 school districts without any programs in this career cluster have a collective enrollment of 28,941 students.

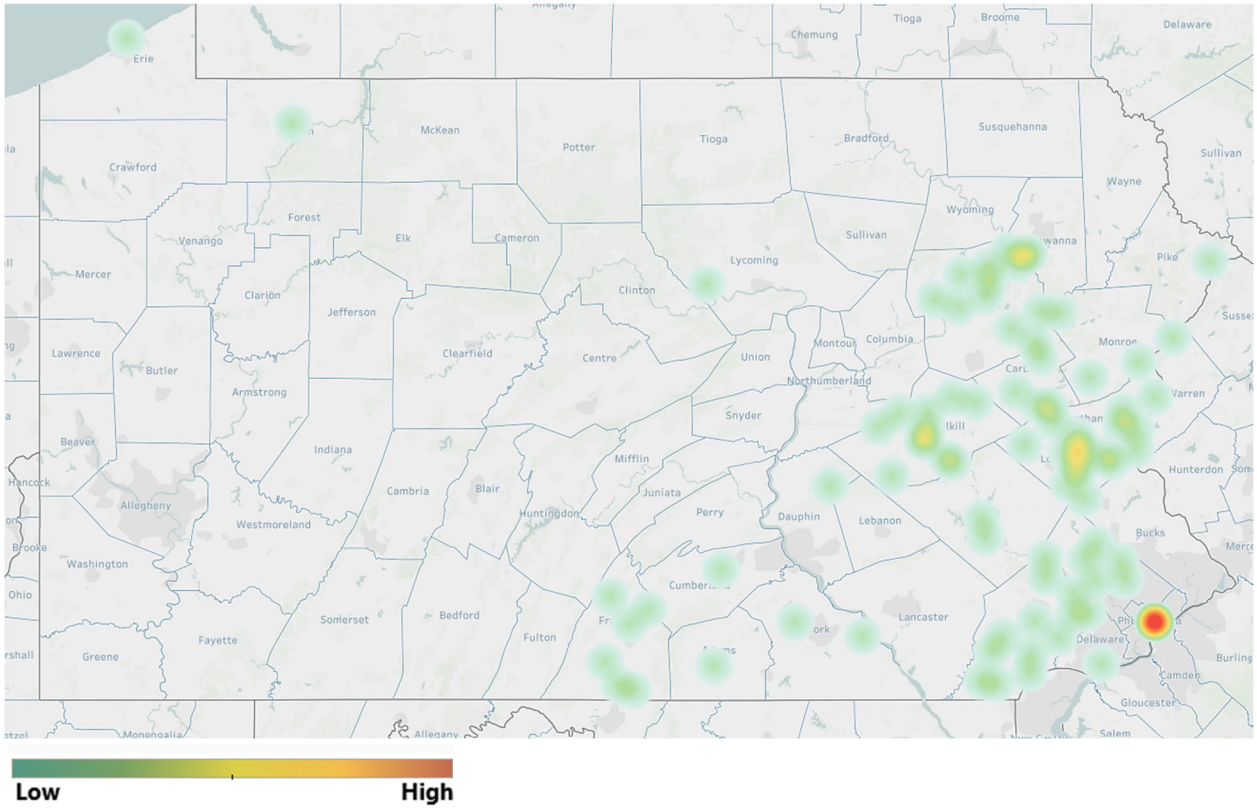
Marketing, Sales, and Service

Programs in this cluster focus on promoting, selling, and distributing products and services, while also training students in advertising, retail operations, sales strategies, and market research.

In FY 2024-25, 30 approved Marketing, Sales, and Service programs were available to secondary students. Exhibit 24 shows the density of these programs across the state.

Exhibit 24

Density Map of Marketing, Sales, and Service Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 86 school districts had access to at least one Marketing, Sales, and Service program. The Philadelphia City School District had the most access to these programs, with seven CTC and high school-based programs.

The 414 school districts with no programs in this career cluster have a collective enrollment of 313,248 students.

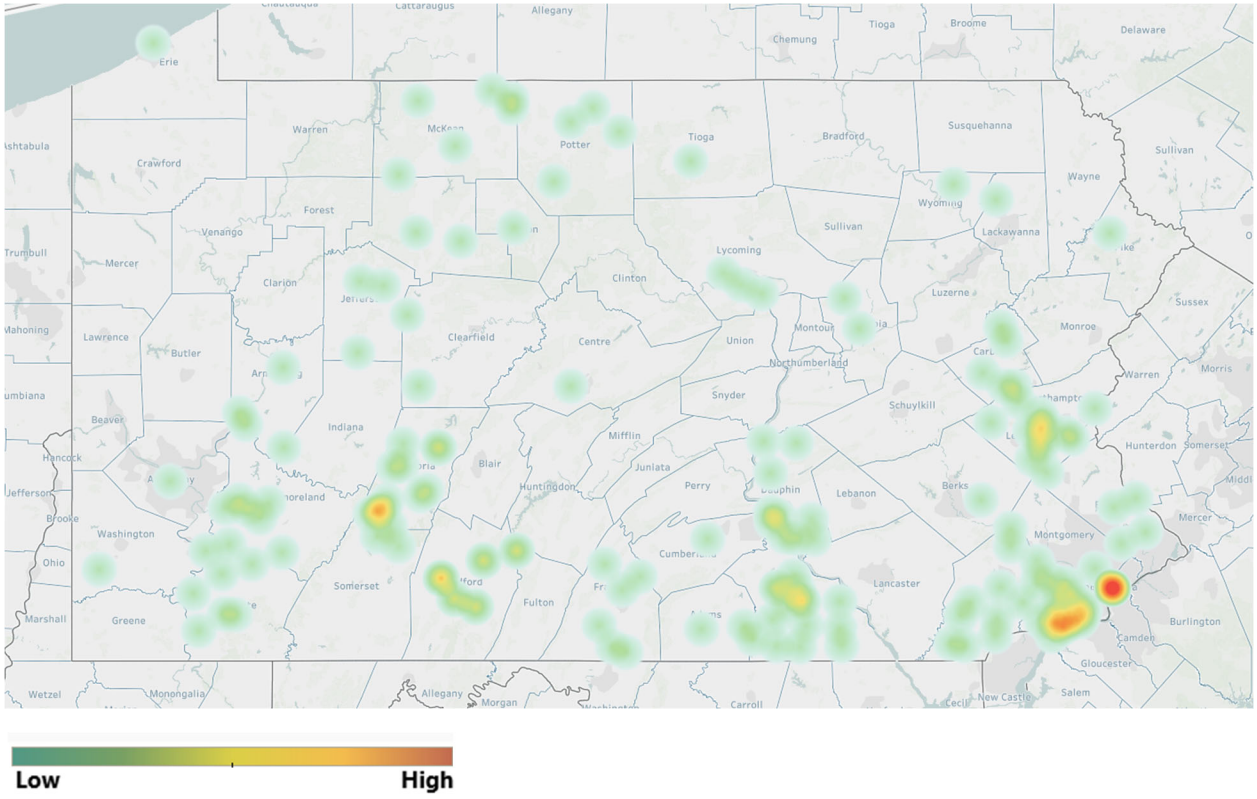
Science, Technology, Engineering, and Math (STEM)

Programs in this cluster focus on scientific research, engineering, mathematics, and technology development and train students in problem-solving, data analysis, and innovation.

In FY 2024-25, 48 approved STEM programs were available to secondary students. Exhibit 25 shows the density of these programs across the state.

Exhibit 25

Density Map of STEM Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 153 school districts had access to at least one STEM program. The Philadelphia City School District had the most access to these programs, with seven CTC and high school-based programs. The 347 school districts with no programs in this career cluster have a collective enrollment of 263,561 students.

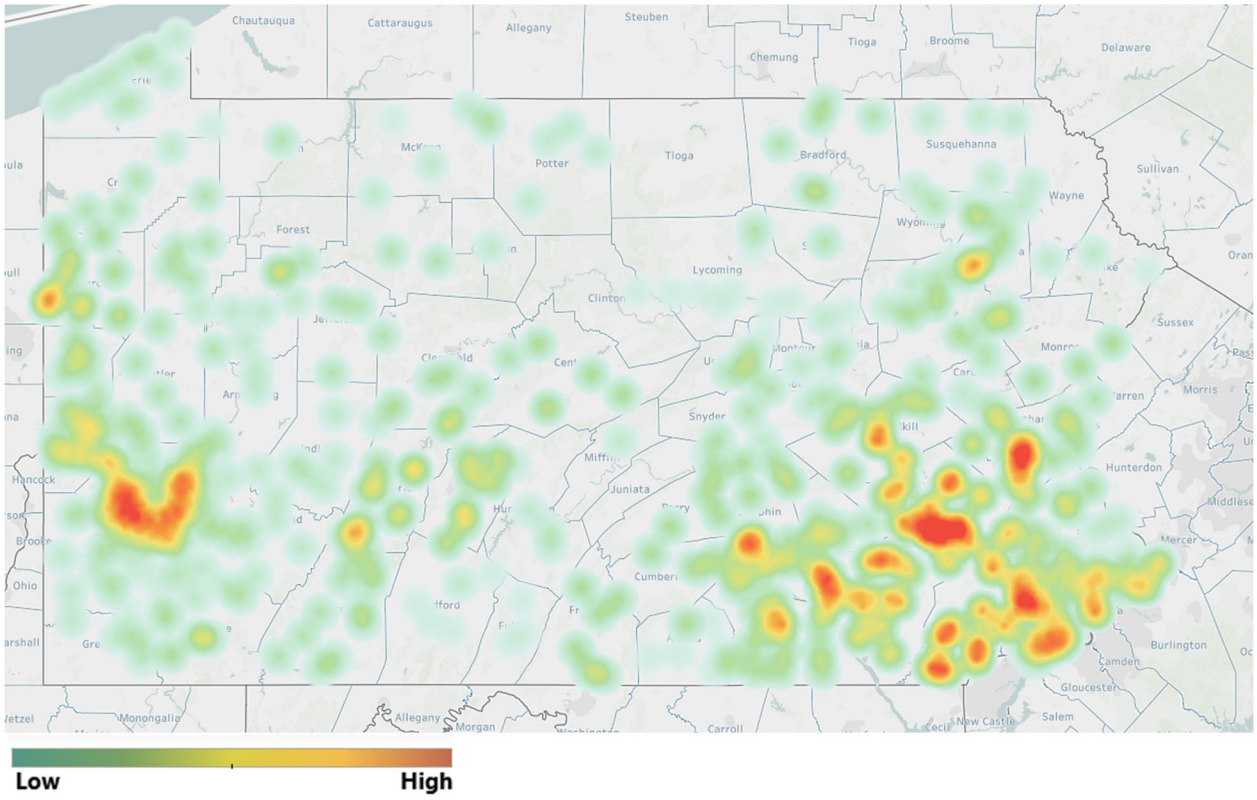
Transportation, Distribution, and Logistics

Programs in this cluster focus on the planning, management, and movement of people and goods and train students in automotive technology, logistics, warehousing, and transportation systems.

In FY 2024-25, 248 approved Transportation, Distribution, and Logistics programs were available to secondary students. Exhibit 26 shows the density of these programs across the state.

Exhibit 26

Density Map of Transportation, Distribution, and Logistics Programs by School District



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

In FY 2024-25, 492 school districts had access to at least one Transportation, Distribution, and Logistics program. The Philadelphia City School District had the most access to these programs, with 11 CTC and high school-based programs.

The eight school districts without programs in this career cluster have a combined enrollment of 4,413 students.

Exhibit 27 summarizes program availability for school districts and secondary students across career clusters.

Exhibit 27

School District's Program Availability and Student Access by Career Cluster
FY 2024-25

Career Cluster	Approved Programs	SDs Without Programs	HS Enrollment Without Access	% of Total HS Enrollment Without Access
Agriculture, Food, and Natural Resources	193	183	138,097	30.2%
Architecture and Construction	320	5	2,912	0.6
Arts, A/V Technology, and Communications	108	145	66,089	14.5
Business, Management, and Administration	45	421	339,264	74.3
Education and Training	30	400	324,296	71.0
Health Science	187	5	2,504	0.5
Hospitality and Tourism	122	10	4,783	1.0
Human Services	204	7	3,721	0.8
Information Technology	109	34	16,552	3.6
Law, Public Safety, and Security	61	161	112,595	24.7
Manufacturing	176	35	28,941	6.3
Marketing, Sales, and Service	30	414	313,248	68.6
STEM	48	347	263,561	57.7
Transportation, Distribution, and Logistics	248	8	4,413	1.0

Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

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SECTION V
SECONDARY CAREER AND TECHNICAL EDUCATION SUBSIDY

Fast Facts…

- *The total SCTES subsidy increased 51.7 percent from FYs 2019-20 to 2023-24, from $59 million to $89.7 million for CTCs, and $69.2 million to $105 million overall.*
- *Secondary enrollment in CTE increased 11.5 percent from 68,105 in SY 2019-20 to 75,941 in SY 2023-24*
- *69.7 percent and 41.8 percent of CTCs can maintain a capital reserve and/or a fund balance, respectively.*

Overview

Created under Section 2502.8 of the Public School Code of 1949, the Secondary Career and Technical Education Subsidy (SCTES) is designed to help offset the costs of administering CTE programs.[26] The subsidy is distributed annually through a statutory formula that considers factors such as average daily attendance, district wealth, and cost calculations.

School districts and CTCs receive their SCTES based on their average daily membership (ADM) figures in PDE-approved CTE programs.[27] SCTES is a state-funded subsidy provided through the state budget's career and technical education appropriation. It is distributed to school districts and CTCs in Pennsylvania based on the formula outlined in Section 2502.8 of the Pennsylvania Public School Code of 1949.

Between FYs 2019–20 and 2023–24, the SCTES line item grew by more than 50 percent, from approximately $69 million to over $105 million , reflecting legislative changes to the subsidy formula and increases in CTE student enrollment. The formula adjustments aimed to strengthen the subsidy's role in offsetting costs and encouraging districts to expand access.

House Resolution 2024-81 directed the LBFC to analyze the SCTES and its impact on districts. This section analyzes the SCTES formula, including historical changes, statutory structure, and distribution trends.

Key Findings

1. The SCTES subsidy increased by 51.7 percent from FY 2019-20 to FY 2023-24 years, from $69.2 million to $105 million.

2. CTE enrollment rose 11.5 percent from FY 2019-20 to FY 2023-24.

[26] Pennsylvania School Code of 1949, art. XXV, § 2502.8; 24 P.S. § 25-2502.8.
[27] Average Daily Membership for Career and Technical Centers refers to the average number of students enrolled and attending a CTC daily over a specific reporting period. ADM for those in school district CTE programs has the same definition.

3. Over two-thirds (69.7 percent) of CTCs informed the LBFC that they can maintain a capital reserve. A slight majority (58.2 percent) of survey respondents told the LBFC they could not keep a fund balance.

4. The state of Indiana uses a tiered funding system for CTE programs based on labor market data and demand for courses.

Recommendations

1. The General Assembly should consider passing legislation to create tiered SCTES allocations based on in-demand career clusters.

A. Secondary Career and Technical Education Subsidy (SCTES)

Historical Subsidy Changes

The SCTES subsidy was created by Section 2502.8 of the Public School Code of 1949 and has seen relatively few legislative changes over the years.[28] Historically, the formula has relied on variables such as Actual Instructional Expense (AIE), Weighted Average Daily Membership (WADM), and a Base Earned for Reimbursement (BER), which adjusts for district wealth through equalized mills.

Key components of the SCTES formula have remained consistent over time, although some values have been modified by legislation.

Weighted Average Daily Membership (WADM): A count of students enrolled in approved CTE programs, adjusted by a weight. Historically, each CTE student in a CTC or district has been counted as less than one full ADM, acknowledging that CTE programs receive additional funding per student. For years, the weights were 0.21 for CTC-enrolled students and 0.17 for district CTE students, as specified in law. These multipliers mean that, for funding purposes, each CTC student is counted as 0.21 ADM, and each district-run program student as 0.17 ADM. The weighted ADM figure is often called **vocational ADM (VADM).**

Actual Instructional Expense (AIE) per WADM: The formula considers each district's AIE/WADM, which measures the district's instructional spending per weighted student. This metric acts as a proxy for the cost of providing education. In the subsidy calculation, a

[28] Pennsylvania School Code of 1949, art. XXV, § 2502.8; 24 P.S. § 25-2502.8.

district's AIE/WADM is compared to a state benchmark (the base earned for reimbursement, described below) to determine the reimbursable per-student amount. If a district's spending per WADM is high, it may be capped by the state benchmark.

Base Earned for Reimbursement (BER): The BER is a statewide benchmark cost used to ensure districts with low spending or high tax effort remain supported.[29] By formula, the BER is derived from the state median AIE per WADM minus an adjustment of up to $200 based on local tax effort. In practice, the Department of Education calculates BER by taking the median AIE per WADM statewide and subtracting an amount proportional to the district's equalized mills (a measure of local tax effort) relative to the highest and lowest in the state.

Aid Ratio and Minimum State Share: The formula incorporates the district's Market Value/Personal Income Aid Ratio, a state-calculated index of local wealth, to determine the state share of the cost. Each district's reimbursable amount is multiplied by the greater of its aid ratio or 0.375 (37.5%). This means even the wealthiest districts receive at least 37.5% of the state share for eligible CTE costs. The product of (reimbursable cost times aid ratio or 0.375) and the weighted ADM yields the district's SCTES allocation.

In summary, for each subsidy recipient, the formula amount is:

$$SCTES\ Subsidy\ Allocation = Reimbursable\ Cost\ per\ WADM\left(the\ lesser\ of\ district\frac{AIE}{WADM}or\ BER\right)\times Aid\ Ratio\ (with\ 37.5\%\ minimum)\times Weighted\ CTE\ ADM$$

Ending Proportional Reductions (2018–2019). Before FY 2019-20, PDE would proportionally cut payments if SCTES funding was insufficient to cover the full calculated subsidy for all eligible districts. Starting in FY 2019-20, this practice was discontinued, allowing the full distribution of the calculated formula amounts. The General Assembly amended Section 2502.8 to guarantee the CTE subsidy would be fully funded.[30]

Incremental Formula Amendments and Funding Growth (2021–2024). To allocate more resources to CTE, policymakers implemented a series of legislative amendments from 2021 to 2023 to increase the WADM multipliers and enhance the subsidy.

Key amendments to Section 2502.8(b)(1): The General Assembly passed incremental changes in consecutive years, each tied to the state budget, that boosted the WADM weights for CTE students:

[29] High tax effort is the ratio of actual tax revenues collected in a jurisdiction relative to its tax capacity.
[30] Act of June 28, 2019 (P.L.117, No.16), § 16; 24 P.S. § 25-2502.8(f).

- **For 2021–22:** The weight for students at area CTCs was increased from 0.21 to 0.2276, and for students in district-run or charter programs from 0.17 to the same level 0.1844.[31]
- **For 2022–23:** The weights were raised again to 0.2668 for CTC program students and 0.2178 for school district CTE students.[32]
- **For 2023–24 (and beyond):** The most recent weight increase was implemented through Act 33 of 2023. The current formula now uses 0.2990 for CTC students and 0.2441 for district/charter CTE students beginning in FY 2023–24 and each subsequent year.[33]

By increasing the multipliers, the formula produces a larger total state subsidy for the same number of CTE students, thereby increasing the state's share of CTE funding. We note that throughout these adjustments, the core elements of the formula (AIE/WADM, BER, aid ratio) remained unchanged.

Data Modernization and Recent Developments (2024–2025). One of the recent updates to Section 2502.8 addresses the timeliness and accuracy of data used in the formula. Due to delays in data availability, PDE has relied on prior-year or older data to calculate the subsidy. As part of the FY 2024-25 budget legislation, a new subsection (g) was added to Section 2502.8 to enhance this process. Starting with FY 2024–25 calculations, the data used for the SCTES formula must be based on the most recent year available as of June 1st before the school year.[34]

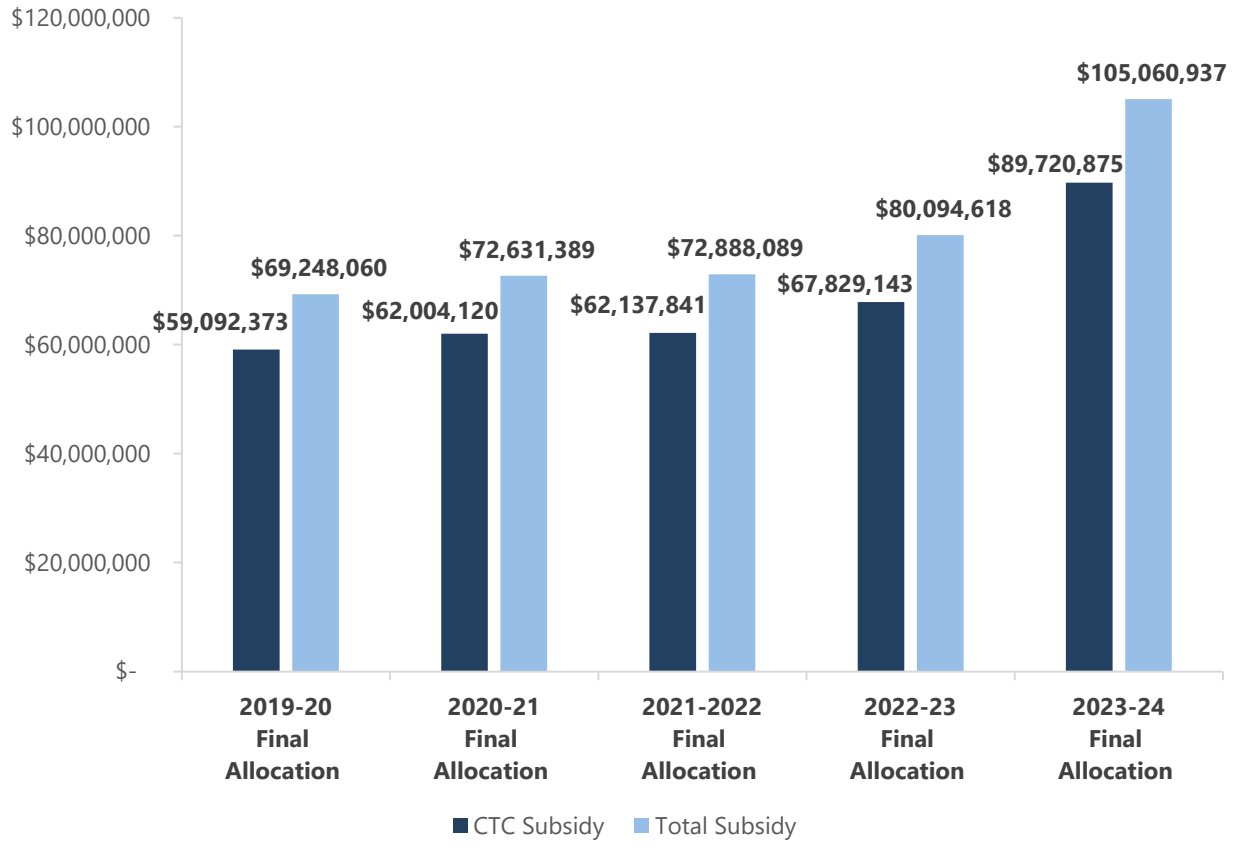
Funding Formula Distribution and Trends

The SCTES allocation grew each year since FY 2019-20. Exhibit 28 shows the annual SCTES funding allocated to CTCs and total allocations, which include school districts and charter schools that offer CTE.

[31] Act of July 8, 2022 (P.L.620, No.55), § 53(b)(1); 24 P.S. § 2502.8(b)(1).
[32] Act of December 13, 2023 (P.L.187, No.33), § 31; 24 P.S. 2502.8(b)(1)(ii).
[33] Act of July 11, 2024 (P.L.618, No.55), § 40(b)(1)(iii); 24 P.S. § 25-2502.8(b)(1)(iii).
[34] Act of July 11, 2024 (P.L.618, No.55), § 40(g); 24 P.S. § 25-2502.8(g).

Exhibit 28

SCTES Subsidy Allocations
FY 2019-20 to 2023-24



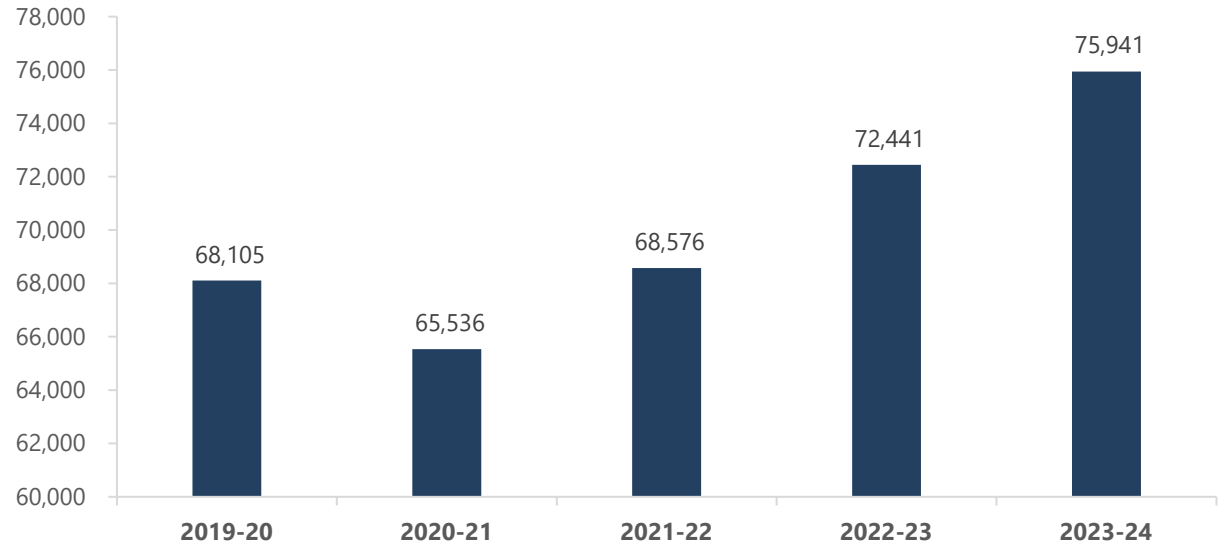
Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

The total SCTES subsidy amount increased by 51.7 percent over the past five years, from $69.2 million to $105.1 million overall. CTCs receive an average of 85.0 percent of the SCTES subsidy each year, with the remaining 15.0 percent allocated to district-run programs.

While changes to the subsidy formula resulted in increased allocations, higher CTE enrollment also contributed. Exhibit 29 shows enrollment for secondary CTE programs from FY 2019-20 to FY 2023-24.

Exhibit 29

Secondary CTE Enrollment
FY 2019-20 to 2023-24



Source: Developed by LBFC staff from information obtained from the Pennsylvania Department of Education.

From FY 2019-20 to FY 2023-24, CTE enrollment increased from 68,105 to 75,941, or 11.5 percent.

B. Impact on School Districts

The SCTES has different impacts on districts due to the variables within the allocation formula. The allocation a district receives is primarily dependent on its CTE enrollment and relative tax effort. This results in some districts receiving more SCTES funds than others.

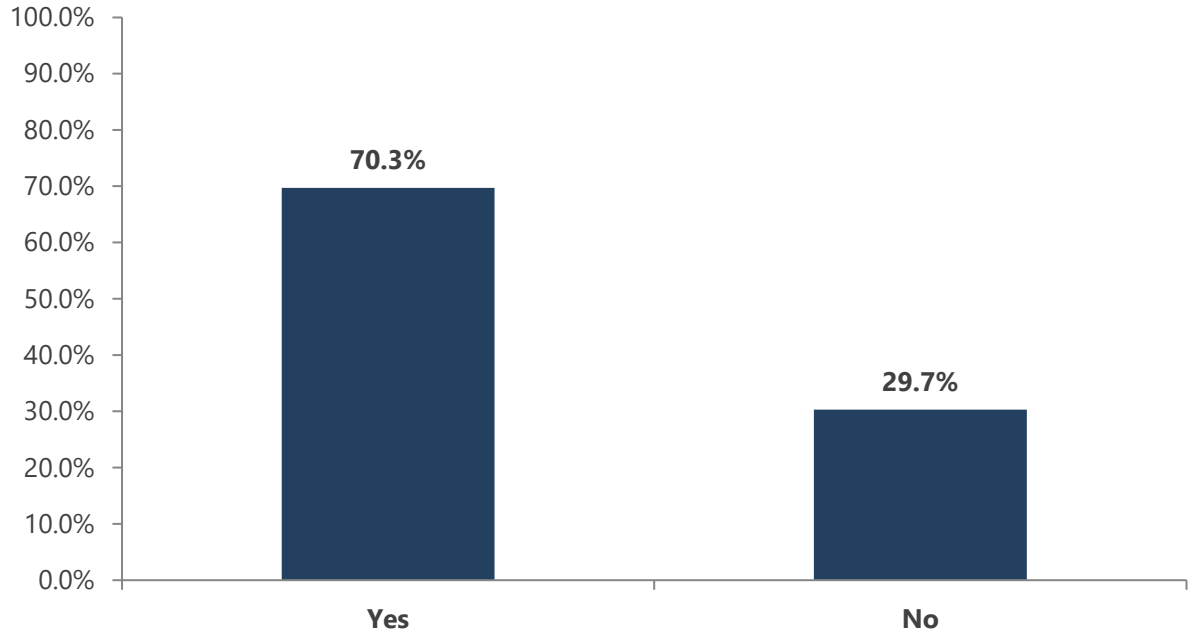
Joint operating committees (JOC)s determine how any unused SCTES funding at the end of the school year is allocated.[35] While some JOCs permit their CTCs to keep a fund balance or capital reserve, this policy is not universal. In our survey, we asked CTCs if they can maintain a fund balance or a capital reserve.[36]

[35] JOCs oversee the governance of CTCs and include representatives from the CTCs' participating school districts.
[36] A fund balance is a surplus at the end of a fiscal year and may be used, for example, for operating costs or emergency expenses. Funds in a capital reserve are restricted for future capital expenditures, such as renovations, land acquisition, and construction.

Exhibit 30 displays the number of responding CTCs who reported they could maintain a capital reserve.[37]

Exhibit 30

Number of Responding CTCs That May Maintain a Capital Reserve
FY 2024-25



Source: Developed by LBFC staff from information obtained from the LBFC Survey of Barriers to Career and Technical Education.

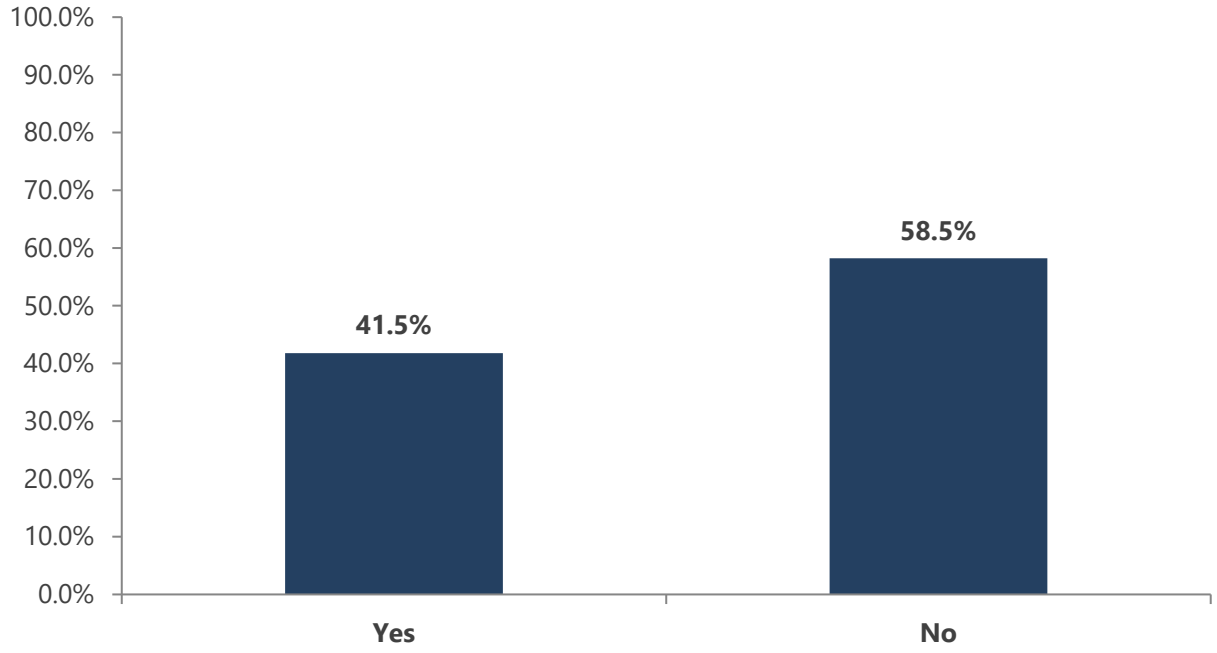
Of all responding CTCs, 45 (70.3 percent) indicated that they were able to maintain a capital reserve.

Exhibit 31 displays the number of responding CTCs who indicated that they could maintain a fund balance.

[37] Act 2025-47 extended the period in which funds in a CTC's capital reserve are to be spent from five to ten years after deposit.

Exhibit 31

Number of Responding CTCs Allowed to Maintain a Fund Balance



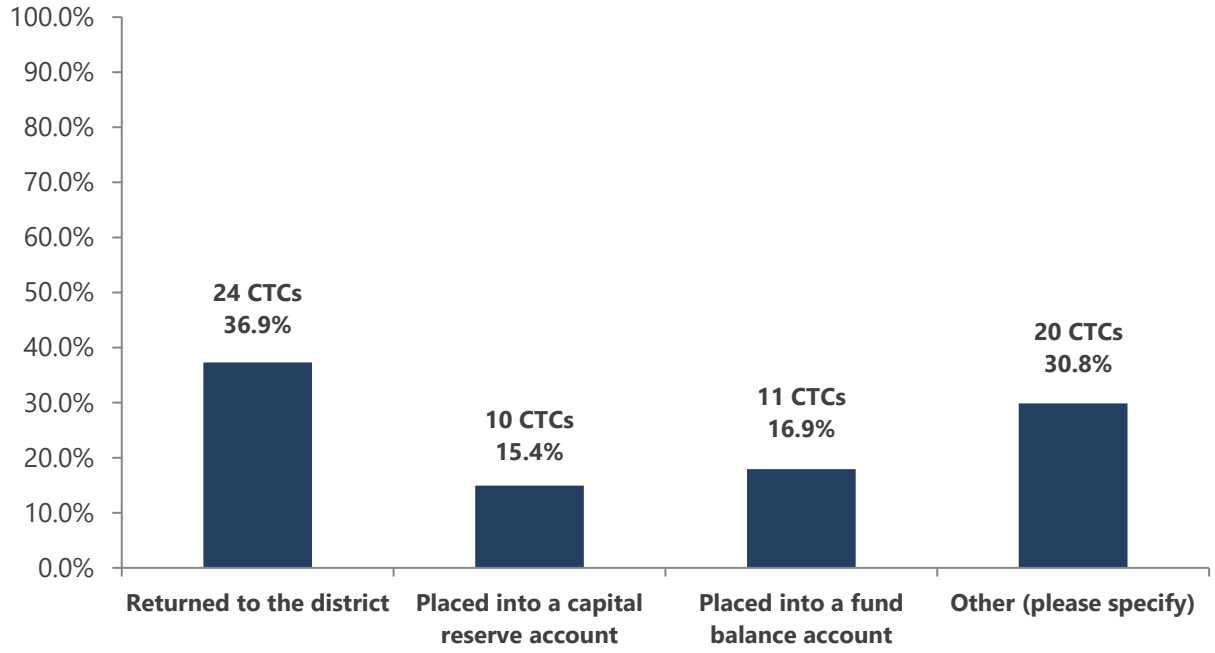
Source: Developed by LBFC staff from information obtained from the LBFC Survey of Barriers to Career and Technical Education.

Of all responding CTCs, 38 (58.5 percent) indicated that they could not maintain a fund balance.

Exhibit 32 shows responses to the survey question "What occurs with remaining funds at the end of the year?"

Exhibit 32

What Occurs with Remaining Funds at the End of the Year



Source: Developed by LBFC staff from information obtained from the LBFC Survey of Barriers to Career and Technical Education.

Twenty-four (36.9 percent) CTCs return the funding to the sending districts, making it the most common response. Most CTCs selecting the "other" option have a mix of the other three options.

In-Demand Programming

As states aim to modernize CTE funding, several have revised their funding formulas to better align with workforce needs and program expenses. For example, the state of Indiana revised CTE funding in 2019 to focus on high-wage, in-demand fields.[38] Indiana assigns each approved CTE course a "value level" score based on labor market data such as projected job openings and wages, categorizing programs into High-Value, Moderate-Value, or Less-than-Moderate-Value groups. Schools receive tiered grants per student credit hour. For example, high-value courses receive about $680 per credit, while moderate-value courses receive $400, and lower-value courses receive $200. State tuition

[38] IC 20-43-8-7.5.

support for CTE reached a record $195 million in 2023-24, indicating schools expanded programs in response to these incentives.[39]

By funding programs that align with workforce demand, PDE can incentivize CTE providers to offer programs in the most critical careers and produce students who meet the current needs of the workforce.

Recommendation: The General Assembly should consider passing legislation to create tiered SCTES allocations based on in-demand career clusters.

[39] Indiana Commission for Higher Education, *Perkins State Plan,* 2024.

SECTION VI
INITIATIVES IN PENNSYLVANIA AND OTHER STATES TO ADDRESS TEACHER SHORTAGES

Fast Facts…

- *All states have established at least one Grow Your Own (or equivalent) program to help recruit and incentivize instructors.*
- *Pennsylvania had a 19.5 percent decrease in secondary CTE instructors from 2020 to 2024.*
- *Seventy-seven percent of respondents to our survey of CTE providers indicated they did not have teacher shortages.*
- *Ten percent of survey respondents indicated they have eliminated programs due to insufficient instructors.*

Overview

According to the United States Department of Education, career and technical education (CTE) instructor shortages occur nationwide.[40] In FY 2023-24, 28 states reported experiencing CTE instructor shortages in secondary education, reflecting a 7.7 percent increase from FY 2022-23, when 26 states indicated CTE instructor shortages.[41,42]

According to the Bureau of Labor Statistics (BLS) and the United States Department of Education (USDE), there were 59,973 secondary CTE participants and 4,110 secondary CTE instructors in Pennsylvania in 2019-20.[43] In FY 2022-23, the state had 64,258 secondary CTE participants and 3,310 secondary CTE instructors. This reflects an increase of 7.1 percent for secondary CTE participants, but a decrease of 19.5 percent for secondary CTE instructors.

Pennsylvania has implemented several strategies to address CTE instructor shortages, including the Supporting Certified Teacher Registered Apprenticeship Program Grants. The state provides emergency permits or certificates to school entities upon request if they are unable to hire qualified, properly certified individuals to fill instructor positions.

HR 481 directed the LBFC to review other states' approaches to CTE instructor credentialing in addressing educator workforce shortages.

[40] This report uses the term "fiscal year" to refer to Pennsylvania's fiscal year, which runs from July 1 through June 30. The USDE also refers to the fiscal year as "school year," but this can be misleading, as the term "school year" may informally refer to the months when students are in school.
[41] United States Department of Education, *Teacher Shortage Area Reports,* https://tsa.ed.gov/#/reports, 2025.
[42] Data from the Department of Education also includes information from the territories of the United States and the District of Columbia, which are not included in our state counts.
[43] Based on secondary CTE instructor data from BLS from May 2020 and 2019-20 CTE participant data from the USDE. The USDE defines a CTE participant as a student who completes at least one CTE course. For our report, hereafter, we utilize the definition set by the USDE for "CTE participant". The USDE also reports the number of CTE concentrators at the secondary school level. A CTE concentrator is a CTE participant who has completed at least two courses in a single career and technical education program or program of study. The definition of participant and concentrator is based on https://cte.ed.gov/pcrn/explorer, accessed April 30, 2025. From 2019-20 to 2022-23, there was a jump from 35,682 to 36,436 CTE concentrators in Pennsylvania, a 2.1 percent increase.

Key Findings

1. Pennsylvania's CTE teacher certification process is lengthy and costly, which can create barriers to attracting qualified instructors.

2. Pennsylvania has several initiatives to recruit teachers, including a pathway to certification for out-of-state teachers, the Supporting Certified Teacher Registered Apprenticeship (CTRA) Program Grants, and a new website as a resource for those interested in teaching careers.

3. Nationwide, from 2020 to 2024, there was a 42.0 percent increase in CTE instructors; selected states varied in whether they had increases or decreases.[44] Although Pennsylvania experienced a 19.5 percent decrease in total CTE instructor counts between 2020 and 2024, only 23.0 percent of CTE providers reported teacher shortages in our survey.

4. Pennsylvania had one of the lowest instructor-to-student ratios among selected states, 1:15 in 2024.

5. Initiatives in other states addressing CTE instructor shortages include grant distributions, reductions of certification fees, and elimination of basic skills tests.

Recommendations

1. Joint operating committees should consider covering CTE instructor certification costs to reduce the financial burden on prospective CTE instructors.

2. Given that the Pennsylvania Department of Education allows a candidate to have multiple years of teaching experience with Emergency and Experience Based Certifications, the Department should establish an option for CTE instructors for in-demand careers that allows them to replace some educational credits for years of teaching experience for an Instructional II Certificate, as determined by PDE, to ensure the candidate has sufficient education in pedagogy while reducing some of the 42 credit hour requirement.

[44] We obtained CTE instructor data from the Bureau of Labor Statistics within the United States Department of Labor. All data is as of May each year.

A. Career and Technical Education Teacher Certification in Pennsylvania

Individuals must complete a certification process to teach CTE programs. The process follows guidelines and procedures established by the Pennsylvania Department of Education (PDE) and is managed by Career and Technical Educator Preparation Programs (EPPs). Four institutions offer CTE EPPs: Temple University, Pennsylvania State University, Indiana University of Pennsylvania (IUP), and Point Park University.

The types of CTE instructor certificates offered in Pennsylvania are:

- Career and Technical Experience Based Certificate.
- Career and Technical Instructional I Certificate.[45]
- Career and Technical Instructional II Certificate.

Exhibit 33 provides an overview of each certificate's certification process.

[45] PDE may issue a Career and Technical Instructional I certificate to an out-of-state applicant who has met applicable requirements.

Exhibit 33

Overview of CTE Instructor Certification Requirements

Experience Based

- Acceptable, verifiable evidence of experience
- Acceptance for enrollment in a state-approved CTE teacher preparation program
- Pass the occupational competency examination or credential review
- Recommendation for the certificate by the university at which the applicant is enrolled/accepted
- Satisfy other requirements provided by law (Pennsylvania School Code of 1949, Section 1209 and Title 22, Pa. Code, Section 49.12)

Instructional I

- Acceptable, verifiable evidence of experience
- Pass the occupational competency examination or credential review
- Completion of 18 credit hours in an approved program of CTE teacher education
- Receive recommendation from the preparing Pennsylvania university
- Satisfy other requirements provided by law (Pennsylvania School Code of 1949, and Title 22, Pa. Code, Section 49.12)

Instructional II

- Complete three years of satisfactory teaching on a Instructional I certificate
- Complete 42 credit hours in an approved program of career and technical education at a career and technical teacher preparing institutions
- Present evidence of satisfactory ratings conducted by the public or nonpublic school entity
- Present evidence of having passed the Career and Technical II assessment
- Complete PDE-approved indcution program
- Receive recommendation from the preparing Pennsylvania university

Source: Developed by LBFC staff from information published by the Pennsylvania Department of Education.

Depending on how many classes a person can take each semester, it can take over 10 years to progress from an Experience Based Certificate to an Instructional II Certificate.

The Experience Based and Career Technical Instructional I Certificates require individuals to pass an occupational competency assessment (OCA). The OCA is designed to ensure that applicants' skills and knowledge meet industry standards and highlight their strengths and areas for potential growth.

There are three methods of OCA in Pennsylvania:

- NOCTI: The NOCTI assessment involves a written and performance exam to assess the applicant's occupational competency.[46]
- Credential Review: A credential review involves reviewing and evaluating the applicant's credentials.
- Committee Evaluation: For applicant evaluation, the Institutional Test Center Coordinator uses an approved evaluation template created by subject matter experts in the specific field to be tested.

Experience Based Certificate

The Experience Based certification is an initial step for applicants aiming to become certified CTE instructors. It also provides an alternative path for those with bachelor's degrees. According to PDE, the Experience Based Certificate program is designed to assist with educator recruitment and allows prospective CTE instructors to work while earning their certificates.

To qualify for the Experience Based Certificate, applicants must submit acceptable evidence of experience verified by Temple, Penn State, or IUP. The experience requirement can be met by one of the following:

- Four years (8,000 hours) of wage-earning experience in the occupation to be taught.
- Two years (4,000 hours) of wage-earning experience in the occupation and hold a bachelor's degree.
- Four years of full-time experience teaching post-secondary courses at a regionally accredited institution of higher education in the occupation to be taught.
- If applicable to the occupation to be taught, four years (8,000 hours) of volunteer experience as a firefighter or emergency medical technician.
- If applicable to the occupation being taught, four years (8,000 hours) of military employment or service.

Other requirements for the Experience Based Certificate include:

- Acceptance into a state-approved career and technical teacher preparation program.
- Passing the appropriate occupational competency assessment or evaluation of credentials.

[46] NOCTI is a nonprofit organization that develops and administers standardized tests to measure technical competence in career and technical education (CTE) fields.

- Being recommended for the certificate by the university where the applicant is enrolled or accepted.

The applicant must also fulfill other legal requirements, specifically Section 1209 of the Public School Code of 1949 (relating to disqualification of an individual for teacher certification) and Title 22, Section 49.12 of the Pennsylvania Code (relating to eligibility of an individual serving in Pennsylvania schools).[47]

Once these requirements are satisfied, an applicant becomes eligible to receive an Experience Based Certificate, valid for five calendar years from the date it is issued.

Instructional I Certificate

To become a permanent CTE instructor, a teacher must earn the Instructional I Certificate, which authorizes individuals to teach in their occupational areas. Applicants for an Instructional I Certificate must present evidence of experience (a minimum of 8,000 hours, equivalent to four years full-time wage-earning experience in the occupational area to be taught, or 4,000 hours, equivalent to 2 years wage-earning experience). Applicants must also possess a baccalaureate degree, pass the appropriate occupational competency assessment (OCA) or credential review, be recommended for the certificate by the preparing Pennsylvania university, and meet all other requirements specified by law, following similar provisions listed under the Experience Based certification requirements.

In addition to these requirements, the Instructional I Certificate requires applicants to complete 18 credit hours in an approved CTE teacher preparation program. The credit hours must include at least three credits or 90 hours of instruction related to accommodations and adaptations for diverse learners in an inclusive setting. After meeting the Instructional Certificate I requirements, candidates have eight years to obtain their Instructional II Certificate.[48]

[47] Act of March 10, 1949 (P.L.30, No.14), art. XII, § 1209; 24 P.S. § 12-1209; 22 Pa. Code § 49.12.
[48] *Ibid*., art. XII, § 1204.2; 24 P.S. § 1204.2.

Instructional II Certificate

The final step in becoming a permanent CTE instructor requires an Instructional II Certificate. To qualify, applicants must:

- Complete three years of satisfactory teaching on an Instructional I Certificate and 42 credit hours in an approved CTE teacher preparation program.[49] Six credits or 180 hours must be instruction related to providing accommodations and adaptations for students with disabilities in an inclusive setting, and at least three credits or 90 hours must be instruction related to supporting English language learners.[50]
- Present evidence of satisfactory ratings from the school entity and pass the Career and Technical II assessment, which is an evaluation completed by a school's superintendent or principal, which serves as a recommendation to upgrade from an Instructional I to an Instructional II Certificate.
- Complete a PDE-approved induction program and receive a recommendation for the certificate from the EPP.

Emergency Certification

In addition to the CTE instructor certification processes, PDE offers emergency permits when requested by a school entity with an open position that cannot find a qualified and properly certified applicant. At a minimum, anyone receiving an emergency permit must hold a high school diploma or equivalent.

Emergency permits are valid for one school year and may be renewed with PDE's approval through an appropriate application submitted by a public school entity. On average, from FY 2019-20 to 2023-24, 13.7 percent of CTE instructors held emergency permits.

Certification as a Barrier to CTE

In our survey, we asked CTE providers about factors contributing to CTE teacher shortages, and 79.1 percent of respondents said the teacher certification process is one of these factors. The process, as described above, can take more than a decade. Work experience requirements can

[49] The three years of satisfactory teaching must be verified by the chief school administrator of the approved school entity in which the most recent service of the applicant took place. The 42 credit hours must be completed through Temple University, Penn State, or Indiana University of Pennsylvania. Point Park University began offering Certificate II in March 2025.

[50] 22 Pa. Code § 49.142(a)(3); 22 Pa. Code § 49.143.

be burdensome, and the required pedagogical education requirements may only be completed at one of four Pennsylvania schools.

Some selected comments on the process from survey respondents:

- "The certification process is laborious and time consuming. Most of these individuals are coming from the private sector, and some aren't keen on going back to school for a job where they can make more money by just staying in industry."

- "Even if someone with 10-20 years of industry experience (the type of person we WANT for teaching CTE courses) is interested in becoming a CTE teacher, when we tell them they are looking at 10 years of college coursework to become certified, the answer is frequently 'no.'"

- "The time it takes to get certified once teaching is too long. It is discouraging for potential hires to understand that they will not only be taking on a new job, but they will also need to go back to school for a long period of time."

CTE Certificate I candidates must complete 18 credit hours in an approved CTE teacher education program, and candidates for a CTE Certificate II must complete an additional 42 credits. The required credits can be costly.

Across the four institutions offering CTE teacher preparation programs, we estimated an average cost of $11,691 to complete the 18 credit hours for Certificate I and an average of $27,279 to complete the additional 42 credit hours for Certificate II, yielding a total average cost of $38,970 to achieve permanent certification.[51]

Although 72.0 percent of survey respondents said they pay some certification costs, candidates may pay the costs and be reimbursed by the providing school after the course.

Recommendation: Joint operating committees should consider covering CTE instructor certification costs to reduce the financial burden on prospective CTE instructors.

Recommendation: Given that the Pennsylvania Department of Education allows a candidate to have multiple years of teaching experience with Emergency and Experience Based Certifications, the Department should establish an option for CTE instructors for in-

[51] Our estimations are based on the current tuition rates for each CTE teacher preparation program at each participating university (Penn State, IUP, Temple, and Point Park). Calculations assume the current per-credit rate for FY 2025-2026, part-time status, and in-state residency and do not include fees charged by the universities or potential tuition changes.

demand careers that allows them to replace some educational credits for years of teaching experience for an Instructional II Certificate, as determined by PDE, to ensure the candidate has sufficient education in pedagogy while reducing some of the 42 credit hour requirement.

B. Pennsylvania Initiatives

Pennsylvania has implemented various initiatives to support the CTE instructor workforce:

- Act 55 of 2022 expanded the teacher certification process to include an option for out-of-state teachers to obtain a CTE Instructional I Certificate in Pennsylvania.[52] Before Act 55, out-of-state applicants had no clear pathway to obtain a PA certificate without completing the full certification process. To qualify for a Pennsylvania CTE Instructional I Certificate, out-of-state CTE teachers must fulfill the following requirements:

    - Hold a valid and current CTE certificate in another state.
    - Have four years of experience in the occupation they are certified to teach, which must be verified by Temple University, Penn State University, or IUP.
    - Verify and maintain evidence of satisfactory experience from their two most recent years of teaching.
    - Comply with basic teacher eligibility requirements.
    - Hold a professional license/certificate for specific career and technical occupational areas.[53]

    Since Act 55, 1.9 percent (six of 314) of CTE Instructional I certifications were from out-of-state, compared to nearly 15.0 percent (2,964 of 19,793) of non-CTE Instructional I certifications that were out-of-state.

- Act 35 of 2023 authorized Pennsylvania to join the Interstate Teacher Mobility Compact (ITMC), which aims to enable teachers with an eligible license in one state to obtain an equivalent license in another.[54] The main goal is to enable teachers to move their licensure from one state to another.[55] States may define a

[52] Act of July 8, 2022 (P.L.620, No.55), § 6; 24 P.S. 12-1204.3.
[53] *Ibid*.
[54] Act of December 13, 2023 (P.L.311, No.35), § 5; 24 P.S. § 1201-C.
[55] Pennsylvania has also previously signed the National Association of State Directors of Teacher Education and Certification (NASDTEC) Interstate Agreement, a non-enforceable, informal pact among states. It consists of over 50 individual agreements by states and Canadian provinces. Each "agreement" is a statement by that state or jurisdiction outlining which other states' educator certificates it recognizes and accepts.

list of licenses they will recognize through reciprocity, and they may update this list as needed; however, Pennsylvania is not a member of this compact.

- Supporting Certified Teacher Registered Apprenticeship (CTRA) Program Grants, administered by the Department of Labor and Industry (L&I) and funded through the Workforce Innovation Opportunity Act, are designed to help Pennsylvania schools facing barriers to staffing qualified teachers in rural, suburban, and urban areas by promoting on-the-job learning to develop skills and experience. L&I awarded the first grants in 2025.

- In May 2025, PDE launched the Teach in PA website, which allows CTCs to publish instructor vacancies and provides resources for individuals interested in a career in education.

C. Other States' Approaches to Addressing CTE Teacher Shortages

HR 481 directed us to review approaches used in other states for CTE instructor credentialing to address educator workforce shortages.[56] These include:

- Colorado.
- Delaware.
- Maryland.
- New York.
- New Jersey.
- Ohio.
- West Virginia.[57]

We examined various legislation, information published by state education agencies, and other publicly available data to review how different states address CTE instructor needs.

According to the Association for Career and Technical Education (ACTE), "almost one-third of public schools that reported CTE teacher vacancies in 2020-21 found those vacancies very difficult to fill or were not able to fill them."[58] ACTE also noted in its analysis that "28 states and territories reported CTE teacher shortages to the United States Department of Education in 2023-24." However, in Pennsylvania, our survey of CTE

[56] We included Colorado in this report because a stakeholder identified it as a successful model.
[57] We refer to these states as "selected states" hereafter.
[58] Alvarado, Vilmer, Association for Career and Technical Education, *Analysis of National Data Illustrates CTE Teacher Shortages*, July 6, 2023.

providers found that 77.0 percent of respondents were not experiencing a shortage of teachers (see Section III for more detailed information from our survey).

No nationwide or statewide databases specifically provide data on the CTE instructor shortage. However, we created a general overview of CTE instructor availability using publicly accessible data. Exhibit 34 displays the total number of secondary CTE instructors in each selected state.

Exhibit 34

Total Number of Secondary CTE Instructors in Pennsylvania and Selected States and Nationally[a/]

State	2020	2021	2022	2023	2024	% Change 2020 to 2024
Colorado	670	730	810	770	-	14.9%
Delaware	-	580	510	430	560	3.4
Maryland	680	740	660	650	450	33.8
New Jersey	960	950	1,710	1,540	2,370	146.9
New York	4,740	5,380	5,680	6,070	6,260	32.1
Ohio	5,250	4,390	4,490	2,960	4,960	5.5
Pennsylvania	*4,110*	*4,110*	*3,530*	*4,390*	*3,310*	*19.5*
West Virginia	340	790	960	960	780	129.4
National Total	**73,530**	**84,360**	**88,280**	**90,070**	**104,450**	**42.1**

Notes:
[a/]BLS data is as of May of each year and does not include 2020 Delaware figures. The data provides the estimated total employment of secondary CTE instructors in each respective state, rounded to the nearest ten.
[b/]The Delaware percent change was calculated from 2021 to 2024.
[c/]The Colorado percent change was calculated from 2020 to 2023.

Source: Developed by LBFC staff from information published by BLS.

Four of the eight states, including Pennsylvania, saw decreases in CTE instructors. New Jersey and West Virginia experienced increases of over 100 percent. On average, there was a 32.6 percent rise.

To better visualize how the overall supply of CTE instructors relates to the total number of students considered CTE participants in Pennsylvania and selected states, we combined BLS data with the United States

Department of Education's (USDE) CTE enrollment data to display the student-to-teacher ratio in each state, as shown in Exhibit 35.[59]

Exhibit 35

Secondary CTE Student-to-Teacher (S/T) Ratios in Pennsylvania and Selected States, and Nationally, by Perkins V Program Year[a/,b/]

	2019-20		2020-21		2021-22		2022-23	
State	**S/T Ratio**	**Students**	**S/T Ratio**	**Students**	**S/T Ratio**	**Students**	**S/T Ratio**	**Students**
Colorado	111.6	74,776	129.7	94,681	109.3	88,518	137.4	105,803
Delaware	-	28,105	48.8	28,297	87.1	44,413	71.2	30,616
Maryland	163.1	110,933	165.6	122,519	191.7	126,504	204.7	133,071
New Jersey	79.9	76,709	81.5	77,428	44.4	75,842	49.2	75,712
New York	11.0	52,048	21.1	113,469	15.5	87,810	15.9	96,575
Ohio	25.5	133,627	29.1	127,711	30.1	135,272	46.2	136,688
Pennsylvania	*14.6*	*59,973*	*14.0*	*57,709*	*17.2*	*60,570*	*14.6*	*64,258*
West Virginia	121.8	41,421	48.2	38,082	43.4	41,626	57.3	55,038
National	**101.7**	**7,476,815**	**98.0**	**8,268,511**	**92.3**	**8,151,708**	**87.0**	**7,832,489**

Notes:
[a/]BLS data is as of May of each year and does not include 2019-20 Delaware figures. USDE data follows the Perkins V program year, July 1 to June 30, and 2023-24 CTE participant/concentrator data were unavailable as of April 2025. For computation purposes, we matched the Perkins V program years 2019-20 through 2022-23 to BLS data from May 2020 to 2023. USDE informed us that Perkins V data for 2023-2024 was unavailable, and we could not include it in this report. We write "Student-to-Teacher Ratio" as "S/T Ratio" in the table headings above. Ratios are rounded to the nearest decimal point.
[b/]Student-to-teacher ratios are aggregated estimates from USDE data taken in October of each year, and do not fully account for actual ratios on a state-to-state or course-to-course basis. For example, a welding course would have a smaller ratio of students to teachers than other CTE courses because workspaces are constrained by equipment and safety guidelines. Additionally, we note from discussions with PDE that states differ on their definitions of CTE courses, which would also influence ratios. For example, a PDE official informed us that a biology course -necessary for agriculture programs- would count as a CTE course in other states. Pennsylvania mandates that CTE courses must be skill-based; a biology course would not qualify.

Source: Developed by LBFC staff from information published by the USDE and the BLS.

In 2019-20, on average, there were approximately 101.7 students per teacher nationwide. Pennsylvania experienced a slight increase in its student-to-teacher ratio and has one of the lowest ratios among the

[59] "Student" in this context, which is used hereafter, refers explicitly to CTE participants. See footnote 37 for more information on how CTE participants are defined.

comparable states. Exhibit 36 displays the percentage changes from 2019-20 to 2022-23.

Exhibit 36

Percent Change in Student-to-Teacher Ratios

State	% Change: 2019-20 to 2022-23
Colorado	23.1%
Delaware	45.9[a/]
Maryland	25.5
New Jersey	-38.4
New York	44.5
Ohio	81.2
Pennsylvania	*~0.0*[b/]
West Virginia	-53.0
National Total	**-14.5**

Notes:
[a/]The Delaware percent change was calculated from 2021 to 2023.
[b/]Percent changes are rounded to the nearest tenth of a percent. Pennsylvania maintained a negligible (~0.05 increase) in its secondary CTE student-to-teacher ratio, which is listed as a 0% change due to our rounding.

Source: Developed by LBFC staff from information published by the USDE and the BLS.

New York's student-to-teacher ratio increased by 44.6 percent overall, from 11 in 2019-20 to 15.9 in 2022-23. However, from its 2020-21 figure of 21.1 students per teacher to its 2022-23 figure of 15.9 students per teacher, there was a total decrease of 24.6 percent.

Delaware's student-to-teacher ratio increased by 45.9 percent from 48.8 students per teacher in 2020-21 to 71.2 in 2022-23. In contrast, from its 2021-22 figure (87.1 students per teacher) to its 2022-23 figure (71.2 students per teacher), there was an overall decrease of 18.3 percent.

Pennsylvania's student-to-teacher ratio in secondary CTE education consistently ranged from 14 to 18 students per teacher from 2019-20 through 2022-23. In contrast, the ratios we calculated for selected states fluctuated over these years. CTE programs in Pennsylvania are not required by law to maintain a specific student-to-instructor ratio. The analysis may suggest that, although some CTCs reported teacher shortages in our survey, shortages are not as severe in Pennsylvania as in other states.

Multiple State Initiatives

Various states have taken steps to address their CTE instructor shortages.

Grow-Your-Own (GYO). One common initiative among selected states was the implementation of GYO programs, which aim to expand the teacher workforce by supporting individuals from local communities in becoming teachers through advice, financial assistance, mentoring, and paid work experience. Typically, these programs are run by institutions offering teacher preparation programs.

The recruitment pool may include high school students and paraeducators, among others. According to New America, every state and the District of Columbia has at least one GYO (or GYO-equivalent) program. However, not all states have a GYO-focused statute or executive order. All selected states except Pennsylvania, New Jersey, and West Virginia have a GYO-focused policy. Additionally, Pennsylvania and New Jersey do not have dedicated state funding for these GYO programs.

In Pennsylvania, examples of GYO programs include BridgeUP and Para2Teacher. The BridgeUP program is a partnership between the Allegheny Intermediate Unit, Point Park University, and Bloomboard, a talent development firm. It provides paraeducators and other support staff with the necessary instruction, coaching, and classroom experience to help them become certified special education teachers. The BridgeUP program was launched in early 2024; due to its recent implementation and the time required for participants to complete the program, information on outcomes is not yet available.[60]

Pittsburgh Public Schools launched the Para2Teacher program, enabling paraprofessionals to pursue a two-year master's degree while still working for the district. Point Park University, one of the two universities that oversee the program, reported a 100% completion rate as of 2022, highlighting one graduate who became a teacher with Pittsburgh Public Schools.[61]

The Philadelphia School District also leads a GYO program with the Philadelphia Federation of Teachers to help district paraprofessionals earn teaching credentials. As of 2022, Philadelphia's GYO program had

[60] Allegheny Intermediate Unit, *Strategic Goals Public Report 2023-2024,* 2024, p. 21.
[61] Point Park University Newsroom, *Point Park University's Latest Para2Teacher Cohort Celebrates 100% Completion,* https://www.pointpark.edu/news-education/point-park-universitys-latest-para2teacher-cohort-celebrates-100-percent-completion, Accessed July 2022.

84 participants, and in November 2022, it received additional funding to train another 75 participants.[62]

Certification and Licensure in Other States

Throughout our fieldwork for this study, stakeholders repeatedly told us that Pennsylvania's teacher certification and licensure process is rigorous. We found that certification and licensure requirements for CTE instructors differ from state to state.

Standard components of certification and licensure requirements across the nation include:

- Work Experience (required by 48 states): refers to having a certain number of hours or years of work or apprenticeship experience in the occupational area.
- Education (required by 45 states): includes possessing a high school diploma or equivalent, a postsecondary degree, or completion of postsecondary CTE coursework.
- Teacher or CTE Training (required by 41 states)
- Certification (required by 26 states): refers to possessing an industry-recognized license/certification.
- Completing assessments (required by 17 states): includes teacher certification exams, tests for a CTE subject matter, and content area expertise.

Exhibit 37 provides an overview of common certification and licensure requirements in selected states.

Exhibit 37

Overview of Common Components in Each Selected States' Certification/Licensure Requirements

State	Minimum Level of Education Necessary to Begin Certification Process	Subject Assessments	Work Experience	Credit Hours Required in Addition to Minimum Level of Education	Pedagogical Training
Colorado	There is no baseline educational requirement; the	Depends on the specific career.	Depending on the career, the prerequisites	The requirement varies depending on the particular	The required amount varies depending on the

[62] Chalkbeat Philadelphia, *Philadelphia ramps up program for paraprofessionals in effort to ease teacher shortage,* https://www.chalkbeat.org/philadelphia/2022/11/1/23435550/philadelphia-qualified-teachers-paraprofessionals-educators-shortage-pennsylvania, Accessed November 2022.

	level is dependent on the particular career.		typically encompass either 2000 or 4000 hours of professional experience, contingent upon the level of education.	career; often, it entails completing 24 credit hours in designated courses.	career. Typically, three years of teaching experience are necessary to obtain a Professional Authorization.
Delaware[a/]	A minimum of a bachelor's degree or its equivalent is required for eligibility to obtain a teaching license.	Required.	Variable. For candidates, six years of occupational or related teaching experience is required.	Variable. Candidates must earn between 15, 36, or 51 credit hours, depending on their starting education levels.	A variable amount is required depending on the career and educational level attained.
Maryland	At a minimum, a high school diploma.	Required.	Variable depending on certification pathway. At a maximum, three years of prior work experience in the content field and current full-time employment.	For most pathways, 12 additional credits are required in professional education coursework.	Variable depending on certification pathway and educational level attained.
New Jersey	At a minimum, a high school diploma.	Required.	The number of hours is variable depending on the certification path. Depending on the education level, it can be as many as 8,000 hours or a minimum of 4000.	Many alternate route candidates need at least 30 credit hours of courses related to the content field.	Required for "alternate route" candidates: 50 hours of pre-professional experience. All candidates complete 30 weeks of mentored, provisional teaching.
New York	At a minimum, a high school diploma.	It depends on the career and the pathway to certification.	It depends on career and pathway to certification, but at least one year of industry experience is often required.	Eighteen credit hours total to obtain a Professional CTE Certificate.	Variable depending on the pathway.

Ohio	At a minimum, a high school diploma.	Variable depending on career.	Depending on the candidate's educational level, at least 2 years of work experience is required.	At a minimum, 12 additional credit hours of university-approved coursework are required, depending on the career program.	Variable depending on career.
Pennsylvania	At a minimum, a high school diploma.	Required for all occupations where they exist for Certificate I. To obtain Certificate II, the specific CTE II exam must be passed.	Anywhere from two to four years of full-time, wage-earning experience, depending on education.	18 credit hours in an approved CTE education program for Certificate I, 42 more credit hours for Certificate II.	Three years of experience are required to obtain Certificate II.
West Virginia	At a minimum, a high school diploma.	Required.	Anywhere from two to four years of relevant occupational experience, depending on educational attainment.	Generally, 18-21 credit hours are required to obtain an Initial/Professional Certificate.	Variable depending on career.

Note:
[a/]Delaware refers to a CTE instructor as a Skilled and Technical Sciences Teacher (STS).

Source: Developed by LBFC staff from information published by the Education Commission of the States and various states' educational departments.

All selected states require work experience for their certification or licensure. Delaware and New York have some of the most comprehensive requirements, including education, training, certification, assessment, and work experience. Pennsylvania requires applicants to meet PDE's minimum standards for work experience, pass relevant evaluations, and complete teacher or CTE training. However, there are no specific requirements regarding education and industry-recognized certification.[63]

Colorado. In 2021, Colorado Senate Bill 185 (SB21-185) established the Educator Recruitment and Retention Financial Assistance Program (ERR). The ERR was created to reduce a financial barrier to entering the

[63] In Pennsylvania, either work experience or education (e.g., postsecondary CTE coursework) can be used toward the CTE teacher certification, not both.

education profession by offering grants of up to $10,000 to applicants who are enrolled in an educator preparation program (or an institute of higher education for CTE educators) and meet one of the following requirements:[64]

- Earned a bachelor's degree or higher from a regionally accredited institution and has obtained employment as an alternative teacher or temporary educator in a shortage area.
- Currently employed as a paraprofessional in a school district, charter school, or board of cooperative educational services (BOCES).
- Secured a position as a CTE instructor in a small or rural district and fulfilled all state CTE requirements.

According to a November 2024 report, out of the 699 educators who received grants from the ERR program, only one has a CTE authorization.[65]

Colorado has a distinct method for CTE instructor certification, unlike Pennsylvania, where educational requirements are mandatory and standardized.[66,67] Notably, the requirements are not standardized and vary between different careers. They include both educational and occupational experience criteria.[68,69] Depending on the career and content area, knowledge requirements can often be met by, but are not limited to:

- Specific course and credit hour requirements.
- A valid license or certification in the content field at the state or national level.
- A passing score on professional aptitude exams in the content field.
- A bachelor's degree or higher in the content or related field.
- A valid teaching license.

[64] Colorado Department of Education, *Educator Recruitment and Retention Program,* https://www.cde.state.co.us/educatortalent/errprogram, Accessed 10/24/2025.
[65] Colorado Department of Education, *Educator Recruitment and Retention Financial Assistance Program 2023-24,* 2024, pg. 11.
[66] Colorado offers an Initial CTE Authorization and Professional CTE Authorization for educators, most similar to Pennsylvania's Instructional I and II Certificates. Colorado does not provide an Experience Based Certificate or equivalent.
[67] Like other states, Colorado offers emergency teaching authorization, including for CTE, but it lacks the potential flexibility of dedicated CTE requirements. To be granted emergency authorization, a candidate must be enrolled in an approved program for the full credential, hold a bachelor's degree, and possess an emergency authorization packet validated by the educational entity requiring services.
[68] Colorado Department of Education, *Career and Technical Education (CTE) Authorization General Information,* https://www.cde.state.co.us/cdeprof/cte_generalinfo. Accessed 10/24/2025.
[69] United States Service Members have their own requirements for each career that supersede occupational and knowledge requirements.

Occupational experience requirements can often be fulfilled by, but are not limited to:

- A bachelor's degree and verification of 2,000 full-time occupational hours in a content field.
- Verification of four thousand full-time occupational hours in a content field.
- Three years of verified teaching experience in a content field, 800 hours of which can be counted through student teaching.

Once candidates meet the knowledge and occupational requirements, they receive an Initial CTE Authorization. The Initial Authorization is valid for three years and cannot be renewed; holders must use this time to work toward a Professional CTE Authorization. Depending on the career, obtaining professional authorization may involve additional coursework, an internship, or an externship.[70] Unlike Pennsylvania's Instructional II Certificate, which is permanent, Colorado educators must renew their professional license every 5 years, verifying their teaching experience and professional development activities.

Colorado saw a 14.9 percent increase in secondary CTE teachers, from 670 to 770, between 2020 and 2023. The secondary CTE student-to-teacher ratio rose from 111.6 in 2020 to 137.4 in 2023, a 23.1 percent increase.

New York. In 2016, New York updated Regulation 80-3.5 (8 CRR-NY 80-3.5), establishing three new pathways for a Transitional A CTE teaching certificate. Transitional A certificates are provided to applicants with the requisite occupational experience but do not meet the requirements for an initial certificate. These certificates are valid for three years while maintaining employment in a school district or Board of Cooperative Educational Services (BOCES) and completing the requirements for the Initial Certificate.[71]

Before the Regulation 80-3.5 update, available pathways for Transitional A certificates included meeting the required education requirements (e.g., associate's degree) and work experience. The regulation added three new pathways to earn certification to teach CTE subject areas by satisfying one of the following requirements:

- Have at least two years of work experience in the CTE subject area of the certificate sought and hold an industry-related credential, where available, or pass an industry-accepted examination and have an employment and support commitment.

[70] Colorado Department of Education, *Career and Technical Education (CTE) Authorization General Information,* https://www.cde.state.co.us/cdeprof/cte_generalinfo, 2025.
[71] There are 37 boards of cooperative educational services in New York.

- Enrolled in an approved CTE teacher preparation program and have either a minimum of one year of related work experience or passed an industry-accepted examination and an employment and support commitment.

- Currently certified as a 7th- to 12th-grade teacher in any CTE subject area with two years of documented work experience or holds industry-recognized credentials, where available, in the related CTE area, and has an employment and support commitment.

Though Regulation 80-3.5 has been updated since 2016, data that provides totals for the number of Transitional A applicants under these three new pathways or certificates granted to those who completed them is unavailable.

In 2022, New York announced the launch of the Empire State Teacher Residency Program, piloted through the state's Department of Labor. The first funds were awarded in January 2024. The program is designed to partially or fully cover the costs of master's degrees or teacher certification programs for graduate-level K-12 teacher candidates who complete a two-year residency within a public school district or BOCES program. At its launch, $30 million was available, with a second round providing an additional $21 million.

In addition to partially or fully funding master's degrees or teacher certification programs for eligible teacher candidates, funding can also cover candidates' books and fees, resident wages, fringe benefits, and stipends for living expenses. Teaching candidates receiving financial support through this program must commit to teaching within their school districts for at least two years after completing their residency.

The program states that applicants seeking funding must be (1) a public school district, (2) a consortium of public school districts, (3) a BOCES, (4) a consortium of BOCES, or (5) any combination of these entities. Additionally, eligible applicants must have at least two full-time employees and be in good standing with relevant laws, rules, and regulations.

Without data from either of the New York initiatives, we cannot definitively determine whether either is responsible for increasing New York's CTE instructor count, as other factors may also influence the number of additional teachers. Nevertheless, New York's CTE instructor count has risen yearly since 2020, from 4,740 to 6,260 in 2024 (32.1 percent), indicating positive effects from the state's initiatives. New York's student-to-teacher ratio for secondary CTE instructors has increased slightly from 11 in 2020 to 15.9 in 2023, a 44.5 percent rise.

However, despite this modest increase, New York has consistently maintained a low student-to-teacher ratio compared to other states.

West Virginia. The State Board of Education Policy 5202 outlines CTE educator licensure and certification requirements in West Virginia. The policy has been revised six times since 2019, with the latest revision taking effect in January 2025.[72] One of those amendments pertains to CTE educator licensure. In 2019, the policy was updated to accept a broader range of coursework for CTE certificate renewal.

The policy before this change required an applicant for a CTE certificate renewal to complete six semester hours of appropriate college coursework related to the public school program, as defined in the policy. The policy change in 2019 allowed renewal applicants to follow either the coursework requirement in the policy or coursework approved by the West Virginia Department of Education's Office of CTE.[73]

Data from the West Virginia Department of Education regarding the number of CTE certificate renewals was unavailable. However, as shown in Exhibit 34, the state increased CTE instructors by 129.4 percent since 2020, from 340 instructors to 780 in 2024, indicating that the state's efforts, including teacher apprenticeship programs and Policy 5202 revisions, have been effective. West Virginia's increase in CTE instructors correlates with its reduction in the secondary CTE student-to-teacher ratio, which dropped from 121.8 in 2020 to 57.3 in 2023, a 53.0 percent decline.

New Jersey. To help solve a teacher shortage, New Jersey enacted Senate Bill 2826 in its 2020-21 legislative session. It directed the New Jersey Department of Education to create a five-year pilot program for issuing a limited certificate of eligibility (CE), with or without advanced standing.[74] Under the bill, these certificates were to be issued to individuals seeking employment in a school district, charter school, or renaissance school who may not meet one of the general requirements (such as minimum GPA) for a certificate of eligibility, with or without advanced standing.[75]

[72] As of March 20, 2025. Revision dates are based on information listed on the West Virginia Secretary of State's Online *Code of State Rules Search* for Administrative Law.
[73] Based on the April 15, 2019, version of the West Virginia State Board of Education's Policy 5202.
[74] N.J.S.A. 18A:26-2c. According to the NJ Department of Education, a "Certificate of Eligibility with Advanced Standing (CEAS) is issued to an individual who has completed a teacher preparation program and met requirements for certification, including academic study and applicable test requirements." It allows an individual to obtain employment in public schools requiring certification.
[75] Renaissance schools are hybrid charters, which became available in 2012 after the Urban Hope Act was enacted.

In March 2025, the New Jersey Department of Education issued a progress report on the pilot program.[76] Data shows that 1,120 educators participated between July 1, 2022, and October 14, 2023. Of these, 1,073 educators received 1,277 CEs, and 47 received 63 CEs with advanced standing. Notably, the department states that 35.0 percent of the CE holders hold certificates in subjects considered teacher shortage areas and are working there, including CTE.[77]

The pilot program has proven effective in increasing the number of educators in teaching shortage areas, with 204 educators added during the data collection period. However, only four of these teachers were in CTE, indicating it has been less successful in producing CTE educators than in other subjects.

Furthermore, Senate Bill 4074, enacted in January 2022, exempts individuals holding a certificate of eligibility (with or without advanced standing) in a CTE endorsement from completing a basic skills test in reading, writing, and mathematics to obtain a standard certificate. The bill also allows these individuals to demonstrate basic skills proficiency through an alternative measure approved by the New Jersey Department of Education, such as work product portfolios, occupational licenses or certifications, or industry certificates or registrations.

In 2023, the New Jersey governor announced the Education Certification Holiday, waiving all New Jersey educator certificates and associated fees (such as educator certification renewals, applications, and related services) from July 1, 2023, through June 30, 2024. As shown in Exhibit 34, between 2023 and 2024, the number of secondary CTE instructors in New Jersey increased from 1,540 to 2,370, a rise of 830 instructors, or nearly 54.0 percent. In contrast, between 2022 and 2023, there was a loss of 170 instructors, dropping from 1,710 to 1,540, a 9.9 percent decrease. The Education Certification Holiday likely contributed to the 2023-2024 increase in secondary CTE instructors by removing financial barriers.

New Jersey has experienced a rise in secondary CTE instructors, increasing from 960 in 2020 to 2,370 in 2024, nearly a 147.0 percent increase. This increase contrasts with other data showing declines in the number of instructors across the state. According to data from the New Jersey Department of Education, the total number of certified teachers in New Jersey (covering all subjects and grade levels) decreased by 750, from 117,885 in 2020 to 117,135 in 2024, a 0.64 percent decline.[78,79] Similarly, the student-to-teacher ratio for secondary CTE instructors in

[76] New Jersey Department of Education, *Limited Certificate of Eligibility (CE) and Certificate of Eligibility with Advanced Standing (CEAS) Pilot Program Report,* March 5, 2025.
[77] Through the pilot program, some educators were able to obtain a certificate of eligibility in more than one subject area.
[78] New Jersey Department of Education, *Certificated Staff Reports 2019-2020*, 2025.
[79] New Jersey Department of Education, *Certificated Staff Reports 2023-2024*, 2025.

New Jersey has fallen from 79.9 in 2020 to 49.2 in 2023, a 38.4 percent decrease.

Furthermore, data from the National Center for Education Statistics shows that the number of secondary school teachers in New Jersey dropped by 192 (~0.5 percent) from 36,996 in 2021 to 36,804 in 2022, the only years for which information is available.[80]

Delaware. Delaware passed a law regarding testing components of the educator certification process. Under 14 Del.C § 1210(e), "an initial license may be issued for a period of up to six years for applicants in a vocational trade and industry (skilled and technical sciences or STS) area to complete specified college-level coursework required for certification."[81] Previously, skilled and technical sciences licensure applicants had to pass an approved performance assessment before their initial license expired. However, in 2021, the law was amended to eliminate this requirement.

We cannot definitively determine if the 2021 amendment of 14 Del.C § 1210(e) has impacted the number of CTE instructors in Delaware. However, as shown in Exhibit 34, the number of CTE instructors in Delaware has decreased by 3.4 percent since 2021, despite the aim of 14 Del.C § 1210(e) to lower barriers for CTE licensure applicants. Additionally, for CTE instructors, Delaware's student-to-teacher ratio has risen from 48.8 in 2021 to 71.2 in 2023, a 45.9 percent increase.

Ohio. In Ohio, House Bill 98 was signed into law in 2018, updating the state's rules for CTE instructor licensure. The bill replaced the professional career-technical teacher license with a two-year initial license and a five-year advanced career-technical workforce development educator license.

The bill directed the Ohio State Board of Education (OSBE) to issue a two-year initial career-technical workforce development educator license to an applicant upon request by the superintendent of the employing school district. In the request, the superintendent must verify that the applicant has completed at least five years of work experience in the subject area to be taught and is enrolled in an educator preparation program that meets the criteria in the bill.

The OSBE was also instructed to issue a five-year advanced career-technical workforce development license to an applicant who has completed the educator preparation program and demonstrated mastery

[80] National Center for Education Statistics, *Digest of Education Statistics, Table 208.30. Public elementary and secondary teachers, by level and state or jurisdiction: Selected years, fall 2000 through fall 2022,* 2023.
[81] Delaware refers to a CTE instructor as a "Skilled and Technical Sciences Teacher." For more information, *see* 14 DE Admin. Code 1559.

of CTE and workforce development competencies. The bill also specified that a bachelor's degree is not required for either of these licenses, although a high school diploma is mandatory.

In the same year, Senate Bill 216 was enacted into law, which required the OSBE to establish rules for a supplemental teaching license that allows instructors to teach subject areas outside their licensed fields. The OSBE may issue this license upon request by the superintendent of a school entity. Individuals may qualify for a supplemental teaching license if they meet the criteria outlined in the bill, which include the following:

- Hold a current professional or permanent Ohio teaching certificate/license.
- Are of good moral character.
- Are employed in a supplemental licensure area or teaching field defined by the state board.
- Complete an examination prescribed by the state board in the licensure area.
- Complete additional coursework, if applicable, and testing requirements for full licensure in the supplemental area as a condition of holding and teaching under a supplemental teaching license.

Individuals may advance from a supplemental teaching license to a standard teaching license if they verify to their employing superintendent or governing authority that they have (1) successfully taught in the licensure area for at least two years and (2) completed the requirements applicable to the licensure area or teaching field as defined by the OSBE.

For the FY 2024-2025 Budget, Ohio appropriated $300 million for equipment and construction projects to support CTE programs in schools statewide.[82] Although the funds were not allocated explicitly to CTE instructors, expanding programs enables more students to participate, indicating a demand for more instructors.

Later, in 2024, Ohio updated its licensing procedures by passing House Bill 432. It created two new alternative pathways to earn a career-technical educator license. The first pathway involves completing a modified educator preparation program developed by one or more lead districts within a career-technical planning district. The program must align with CTE and workforce development competencies set by the Ohio Department of Education and Workforce.

The program must include at least nine credit hours (or three semester hours) of coursework in the subject to be taught and a minimum of 45

[82] Ohio Department of Education and Workforce, *LBO Analysis of Enacted Budget,* August 2023, p. 16.

hours of local professional development designed by the employing district.

The second alternative pathway involves completing a mentoring program, aligned with CTE and workforce development competencies, developed by the Ohio Department of Education and Workforce. The mentoring program must include the following:

- An assigned mentor who is a licensed educator or has served in the capacity of an administrator.
- A competency-based self-assessment developed and approved by the OSDB, in consultation with individuals in the CTE field.
- A personal learning plan approved by the lead district of the career-technical planning district.
- Participation in 90 hours of professional development.

The bill also created a two-year CTE educator license for specific individuals. This license can be issued to those who already hold a valid educator license under the Ohio Revised Code, have at least five years of experience in the subject they will teach, and have been informally recommended for a CTE instructor position by the superintendent of the employing school district. Before this bill, current teachers could obtain one-year supplemental licenses with limited renewals to teach CTE courses, provided they met specific requirements.

Although Ohio experienced a 5.5 percent decline in CTE instructors from 2020 to 2024 (from 5,250 to 4,960) and an 81.2 percent increase in its CTE instructor student-to-teacher ratio from 2020 to 2023 (from 25.5 to 46.2), limited testimonials suggest that HB432 and the $300 million appropriation have had a positive impact. In May 2025, during testimony to multiple committees of the Ohio Senate, Scott Wludyga, the superintendent of the Ashtabula County Technical Career Center, stated that HB432 and the $300 million appropriation "...have significantly advanced CTE growth in Ohio."[83] More information is needed to evaluate the effects of these measures on CTE instructors. Therefore, we cannot determine if HB432 and the $300 million appropriation positively impacted the number of CTE instructors.

Maryland. In 2023, Maryland passed the Educator Shortage Reduction Act (House Bill 1219, 2023 session), creating the Teacher Development and Retention Program as a pilot initiative (lasting until June 30, 2029) to motivate college students to choose teaching careers.[84] The bill also includes provisions related to the recruitment and retention of teachers. Specifically, the pilot program is designed to financially

[83] Ohio Senate Education Committee, *Testimony of Scott Wludyga, Superintendent, Ashtabula County Technical and Career Center,* May 2025.
[84] MD Code, Education, § 6-120.

support eligible individuals who commit to serving as full-time teachers in a high-needs school, grade level, or content area identified by the Maryland State Department of Education (MSDE) as experiencing a teacher shortage.

Under the bill, recipients chosen for support through the program receive an initial stipend to assist their participation in an experiential learning opportunity at a public school or publicly funded prekindergarten classroom. Subsequently, recipients are eligible for a stipend of up to $20,000 for a 10-month educator internship if they meet the following requirements:

- Are enrolled in a teacher preparation program that leads to a Maryland professional teacher's certificate.
- Are engaged in an internship or a practicum in which they are working directly with students in a public school or a publicly funded kindergarten program.
- Continue to make satisfactory progress toward a degree and maintain the institution's standards.
- Pledge to fulfill a service obligation for two years as a full-time teacher in a high-needs school, grade level, or content area with a teacher shortage (as determined by MSDE).

Stipends for the pilot program were paid during the 2023-2024 academic year, the only year with available data. Currently, 11 undergraduate and one graduate student have received a stipend, totaling $221,940 for the pilot program.[85] No disclosure was made about the stipend recipients' field of study, and the initial number of recipients is small. This indicates that the pilot program will need time to potentially influence teacher shortage areas, including CTE.

Overall, from 2020 to 2024, the number of CTE teachers in Maryland declined, dropping from 680 in 2020 to 450 in 2024, a nearly 34.0 percent decrease. Maryland's student-to-teacher ratio for secondary CTE instructors increased from 163.1 in 2020 to 204.7 in 2023, a 25.5 percent rise. The increase in this ratio corresponds with the decrease in CTE instructors statewide.

[85] Maryland Longitudinal Data System, *Progress in Increasing the Preparation and Diversity of Teacher Candidates and New Teachers in Maryland,* July 2025, p. 18-19.

APPENDICES

Appendix A – House Resolution 2024-481

PRINTER'S NO. 3356

THE GENERAL ASSEMBLY OF PENNSYLVANIA

HOUSE RESOLUTION

No. 481 Session of 2024

INTRODUCED BY ABNEY, HILL-EVANS, SCHWEYER, PROBST, SCHLOSSBERG, HANBIDGE, SANCHEZ, CURRY, KHAN AND GIRAL, JUNE 21, 2024

REFERRED TO COMMITTEE ON EDUCATION, JUNE 21, 2024

A RESOLUTION

Directing the Legislative Budget and Finance Committee to conduct a study and make recommendations on non-academic barriers students face getting accepted into career and technical education programs and identifying the barriers.

WHEREAS, Career and technical education is any form of secondary education, given in school or elsewhere, the purpose of which is to fit an individual to pursue effectively a recognized profitable employment, whether pursued for wages or otherwise; and

WHEREAS, Career and technical education is placed into categories which may include industrial, agricultural, family and consumer science, technical marketing and distributive occupational, business and computer and information technology; and

WHEREAS, It is the duty of the Secretary of Education to

report the number of approved programs, students enrolled, secondary students enrolled in participating school districts, scheduling patterns, including grades in which programs are offered, and number of hours of instruction per year for each program; and

WHEREAS, Any school district may establish a career and technical school or department and two or more districts may establish a joint career and technical school or department; and

WHEREAS, There are more than 80 career and technical centers, plus high school-based programs teaching career and technical education to students; and

WHEREAS, While there is not a one-size-fits-all pathway for high school graduates, this Commonwealth has seen a 39% increase in career and technical education students since 2015; and

WHEREAS, There are more than 68,000 students enrolled in career and technical education programs, 28% of whom are special education students; and

WHEREAS, Career and technical education in this Commonwealth develops critical skills necessary to meet the needs of the economy, and workforce development depends on career and technical education, pre-apprenticeships, apprenticeships and schools-to-work programs; and

WHEREAS, This Commonwealth is contributing just 9% of career and technical education funding and local school districts are providing 88%; and

WHEREAS, The Pennsylvania Association of Career and Technical Administrators recently advised the Basic Education Funding

Commission that the current State funding model does not provide schools with the resources needed to expand or update their programs, which has resulted in thousands of students each school year being turned away due to capacity, poor facilities or staffing shortages; therefore be it

RESOLVED, That the House of Representatives direct the Legislative Budget and Finance Committee to conduct a study, issue a report and make recommendations on the current barriers to students being accepted into career and technical education programs and schools; and be it further

RESOLVED, That the report include:

(1) the number of students placed on wait lists or turned away due to capacity or condition of facilities or staffing, per area of study;

(2) the number of students without access to career and technical education programming due to a lack of program availability in their home district;

(3) the number of students placed on wait lists or turned away due to capacity or condition of facilities or staffing, per career and technical center and high school-based program;

(4) the career and technical areas of study offered at each career and technical center and high school-based programs with wait lists or that have turned away students due to capacity or condition of facilities or staffing;

(5) an analysis of the career and technical subsidy formula and the impact of that formula on districts; and

(6) an evaluation of how other states handle career and technical instructor credentialing to address the current educator workforce shortages;

and be it further

RESOLVED, That the Legislative Budget and Finance Committee provide a report of its findings and recommendations in the study to the House of Representatives no later than 120 days after the adoption of this resolution.

Appendix B – LBFC Survey to Career and Technical Centers and High Schools

Legislative Budget and Finance Committee: Survey of Barriers to Career and Technical Education

This survey will help us understand potential barriers to Career and Technical Education (CTE) within Pennsylvania.

* 1. Please name your school district or career and technical center.

* 2. Which county is your facility located in?

* 3. Provide the name and title of the individual(s) responding to this survey.

* 4. Identify your school's delivery model

- ○ Regional CTC Occupational/Part-Time Technical Program
- ○ Regional CTC Comprehensive Technical Program
- ○ District Based Secondary High School Technical Program
- ○ Other (please specify)

* 5. Do your facility offer any of the following:

- ☐ Senior Only Programs
- ☐ Semester About Programs
- ☐ None of the above

* 6. Please list the total number of students who are on waiting list for ALL CTE programs you offer by year.

2019-2020	
2020-2021	
2021-2022	
2022-2023	
2023-2024	

7. Please list how many students are on waitlists, for the **current 2024-2025 school year**, for each of the following career clusters. **If you do NOT deliver programs within a specific career cluster, please leave that option blank. If you do deliver programs, but have no waiting list, please list 0.**

Agriculture Food & Natural Resources	
Architecture & Construction	
Arts A/V Technology and Communications	
Business Management & Administration	
Education & Training	
Finance	
Health Science	
Hospitality & Tourism	
Human Services	
Information Technology	
Law Public Safety & Security	
Manufacturing	
Marketing Sales & Service	
Science Technology Engineering & Mathematics	
Transportation Distribution & Logistics	

* 8. Which of the following factors contribute to your waitlists, if any?

- ☐ Facility/Facility Conditions
- ☐ Physical Capacity
- ☐ CTE Educator Shortage
- ☐ None of the above

* 9. Do you have any comments regarding waitlists?

* 10. On average, what is your current waitlist time frame?

- ◯ 1-3 months
- ◯ 4-6 months
- ◯ 7-12 months
- ◯ Over 1 year
- ◯ None of the above

* 11. Is your facility experiencing a shortage or vacancies for CTE instructor positions for the current 2024-2025 school year?

- ◯ Yes
- ◯ No

12. If yes, how many instructors would your facility need to be at full staff?

* 13. Are some career clusters more difficult to retain instructors for compared to others?

- ◯ Yes
- ◯ No

14. If yes, which career clusters?

- [ ] Agriculture Food & Natural Resources
- [ ] Architecture & Construction
- [ ] Arts A/V Technology and Communications
- [ ] Business Management & Administration
- [ ] Education & Training
- [ ] Finance
- [ ] Health Science
- [ ] Hospitality & Tourism
- [ ] Human Services
- [ ] Information Technology
- [ ] Law and Public Safety & Security
- [ ] Manufacturing
- [ ] Marketing Sales & Service
- [ ] Science Technology Engineering & Mathematics
- [ ] Transportation Distribution & Logistics

* 15. What factors do you believe contribute to CTE instructor shortages?

- [ ] Certification Process
- [ ] Certification Costs
- [ ] Teacher Salary

Other (please specify)

* 16. Does your facility pay for certification processes (e.g., the Occupational Competency Assessment, required coursework) for instructors?

- ◯ Yes
- ◯ No

17. If yes, what parts of certification and portion of certification does your facility cover?

18. Do you have any other comments on career and technical teacher shortages?

* 19. How long, on average, are CTE instructor positions vacant?

- ◯ Less than 1 month
- ◯ 1-3 months
- ◯ 3-6 months
- ◯ 6 or more months

* 20. Within the 2019-20 to 2024-25 school years, have any CTE programs been eliminated due to lack of instructor?

- ◯ Yes
- ◯ No

21. If yes, please list the eliminated program(s).

22. **(CTCs Only)** List which school districts you serve.

23. **(CTCs Only)** Do your articles of agreement allow you to maintain a capital reserve?

- ◯ Yes
- ◯ No

24. **(CTCs Only)** Do your articles of agreement allow you to maintain a fund balance?

- ◯ Yes
- ◯ No

25. **(CTCs Only)** What occurs with remaining funds at the end of the fiscal year?

- ◯ Returned to the district
- ◯ Placed into a capital reserve account
- ◯ Placed into a fund balance account
- ◯ Other (please specify)

26. Do you have any other concerns regarding barriers and access to CTE programs, or any other information you would like us to be aware of?

Appendix C – Pennsylvania Department of Education Response

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF EDUCATION

March 6, 2026

Christopher Latta, Executive Director
Legislative Budget and Finance Committee
Commonwealth of Pennsylvania
613 North Street, 400A Finance Building
Harrisburg PA, 17105-8737

Dear Mr. Latta,

Thank you for your efforts to create a better understanding of the status of the Commonwealth's Career and Technical Education (CTE) sector. I truly appreciate your collaborative approach to the development of this report. The report reflects the thoughtful, diligent research of your team and properly represents many of the needs of our CTE programs and students.

Judd Pittman, who serves as the director of the Pennsylvania Department of Education's Bureau of Career and Technical Education, will represent the department during your scheduled March 18th public meeting. Director Pittman will be available to answer the committee's questions and to provide additional insights as needed.

Following the meeting, if a member of the General Assembly has additional questions for the department, they are welcome to reach out to my Government Relations Director, Stephen Latanishen.

I appreciate your coordination and look forward to working with the committee in the future.

Sincerely,

C. Rowe

Carrie Rowe, Ed.D.
Secretary of Education