

STRENGTHENING STATES' IMPLEMENTATION OF PROGRAM QUALITY INDICATORS FOR CAREER AND TECHNICAL EDUCATION

Collecting and Analyzing Data for the Secondary Program Quality Indicators in the *Carl D. Perkins Career and Technical Education Act of 2006* 

**DECEMBER 2022** 



# Strengthening States' Implementation of Program Quality Indicators for Career and Technical Education

Collecting and Analyzing Data for the Secondary Program Quality Indicators in the Carl D. Perkins Career and Technical Education Act of 2006

> U.S. Department of Education Office of Career, Technical, and Adult Education Division of Academic and Technical Education

> > DECEMBER 2022

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U.S. Department of Education Miguel Cardona Secretary

Office of Career, Technical, and Adult Education Amy Loyd Assistant Secretary

#### December 2022

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#### A Letter from the Office of the Director Division of Academic and Technical Education Office of Career, Technical, and Adult Education

On behalf of the Office of Career, Technical, and Adult Education, I am pleased to share this guidebook to support state secondary and postsecondary education agency administrators and data analysts in addressing the accountability provisions advanced within the *Strengthening Career and Technical Education for the 21st Century Act (Perkins V)*.

Federal investment in career and technical education (CTE) is designed to promote high-quality programming and motivate improvement efforts. To assess statewide progress, *Perkins V* includes accountability provisions that require that states and local grantees within states report annually on student participation in CTE and the outcomes they achieve.

Authorization of *Perkins V* has introduced a new set of accountability indicators to assess program quality. These include the percentage of CTE concentrators graduating from high school who have: (1) attained a recognized postsecondary credential; (2) earned postsecondary credits through a dual or concurrent enrollment program; and/or (3) participated in work-based learning. These new indicators require that states refine or develop new approaches for collecting data from local education agencies receiving federal funds.

To inform this reporting, the U.S. Department of Education launched the Quality Indicator Project, a nationwide initiative to build states' capacity to implement the *Perkins V* quality indicators. Three Quality Indicator Workgroups (QIWs) comprised of state and local-level CTE directors and staff at the secondary and postsecondary levels met between November 2020 and August 2021 to consider effective data collection and analysis protocols, as well as challenges and possible solutions to issues complicating indicator adoption.

Recommendations sourced from QIW members have supported development of the technical assistance materials included in this document.

The new quality indicators will have long-standing ramifications for CTE program design and the use of data for accountability and program improvement purposes at the state and local levels. We hope you will find these resources and tools of use.

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Sharon Lee Miller Director, Division of Academic and Technical Education

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# Abbreviations

551	Fifth indicator group outlined in Sec. 113(b)(2)(iv) of <i>Perkins V</i> at the secondary education level, indicator 1: Attained Recognized Postsecondary Credential
5S2	Fifth indicator group outlined in Sec. 113(b)(2)(iv) of <i>Perkins V</i> at the secondary education level, indicator 2: Attained Postsecondary Credits
553	Fifth indicator group outlined in Sec. 113(b)(2)(iv) of <i>Perkins V</i> at the secondary education level, indicator 3: Participated in Work-Based Learning
5S4	Fifth indicator group outlined in Sec. 113(b)(2)(iv) of <i>Perkins V</i> at the secondary education level, indicator 4: Achieved Another State-Developed Measure of Success
AP	Advanced Placement
CAR	Consolidated Annual Report
CEDS	Common Education Data Standards
CTE	Career and technical education
ESEA	Elementary and Secondary Education Act of 1965
OCTAE	Office of Career, Technical, and Adult Education
Perkins V	Carl D. Perkins Career and Technical Education Act of 2006, as amended by the Strengthening Career and Technical Education for the 21st Century Act
POS	Program of study
QIW	Quality Indicator Workgroup
SCED	School Courses for the Exchange of Data
WBL	Work-based learning
WIOA	Workforce Innovation and Opportunity Act

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# **Executive Summary**

The Carl D. Perkins Career and Technical Education Act of 2006, as amended by the Strengthening Career and Technical Education for the 21st Century Act (Perkins V), signed into law in July 2018, extended many key accountability provisions contained in earlier career and technical education (CTE) legislation while introducing several new requirements. Among the most consequential was the specification of criteria for identifying CTE measurement populations to be included in the section 113(b)(2) Core Indicators of Performance and the introduction of three new program quality indicators for secondary education. Specifically, states<sup>1</sup> are required to report on the outcomes achieved by CTE concentrators, defined within Perkins V as students completing at least two courses in a single CTE program or program of study (Perkins V, Sec. 3(12)), for the following indicators:

- attained recognized postsecondary credential
- attained postsecondary credits
- participated in work-based learning

During the development of its *Perkins V* state plan, each state had to include at least one of these new indicators with the option to include additional measures.

Thus far, the U.S. Department of Education has not issued regulations for *Perkins V* or provided guidance to states with respect to measuring the secondary program quality indicators. Consequently, states have had great flexibility in defining and measuring the program quality indicators.

Following their selection of one or more of the new indicators, each state had to further define its indicator(s) and establish performance-level targets for the first four years of *Perkins V's* implementation. While states must use the definition of a CTE concentrator, as defined in Section 3(12) of *Perkins V*, states retain discretion in determining which experiences count toward concentrator status, how data are to be collected, and the procedures used to calculate performance outcomes, in part because the U.S. Department of Education has not issued regulations thus far. As a result, the ways that states may

<sup>&</sup>lt;sup>1</sup> Here and throughout the guide, the term "state," unless otherwise specified, means the 50 states in the U.S., the District of Columbia, the Commonwealth of Puerto Rico, and each outlying area (*Perkins V*, Sec. 3(49)). Outlying areas include the United States Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and the Republic of Palau (*Perkins V*, Sec. 3(34)).

construct indicators and establish performance levels can differ substantially. The many differences in state definitions that resulted from giving states this discretion make it difficult to compare state performance on the program quality indicators.

In October 2020, the U.S. Department of Education, Office of Career, Technical, and Adult Education, launched the **Quality Indicator Project** to assist states in refining the validity, reliability, and accuracy of their new quality indicators. This nationwide initiative engaged states in identifying measurement challenges and crowdsourcing practices to improve their CTE data system operations and promote equity in the design of the new program quality indicators.

Quality indicator workgroups (QIWs), comprising state and local CTE directors and staff and led by nationally recognized subject matter experts, identified challenges associated with indicator adoption as well as noteworthy practices to support implementation. This resource guide summarizes the input from these workgroups to assist state agency administrators and data analysts in strengthening the implementation of the new program quality indicators, refining data collection and analysis procedures, and promoting the use of data in advancing equity in CTE programming.

### Using the guide

Guidebook content is organized into the following five topical areas integral to the design and implementation of effective state CTE performance accountability systems.

#### 1. Who counts? — Specifying CTE concentrator populations

Overview of considerations in identifying secondary CTE concentrators, measurement assumptions built into the definition, and the decisions states must make in operationalizing the indicator in the absence of U.S. Department of Education regulations.

#### 2. How are indicators constructed? — Creating numerators and denominators

A summary of how numerators and denominators can be constructed for each performance indicator, including the stipulation of measurement populations, timing of data collection, and success criteria.

#### 3. What is measured? — Defining indicator terminology

Exploration of each program quality indicator to examine states' design options in the absence of federal regulations and the criteria used to collect information to ensure data are consistent, understandable, and aligned with state goals for quality and equity.

#### 4. How are outcomes calculated? — Establishing business rules

Description of processes states can use to ensure that their data collection and analysis procedures are clearly documented and consistently applied over time. It includes information on reporting guidance for local school districts, data dictionaries, programming code, student privacy protections, and quality assurance procedures.

#### 5. What are acceptable outcomes? — Establishing performance levels

Review of processes states have used to set performance levels and insights on how baseline and annual performance level targets are being applied.

Because of the high stakes associated with performance reporting, it is imperative that states' CTE accountability systems produce data that can help identify equity gaps across student groups. Accordingly, state practices to strengthen data collection to promote equity are highlighted throughout the guidebook.

Resources are also included throughout the guidebook and compiled at the end of the document to offer states examples of noteworthy practices used in the field to strengthen the operation of *Perkins V* accountability systems. State administrators and policy analysts can also use the information presented to consider issues associated with their own indicator specifications and for context when interpreting results from other states. Each section concludes with questions for further consideration and stretch goals to challenge states to innovate.

State CTE leaders are encouraged to share this guidebook with their staff responsible for reporting on the *Perkins V* program quality indicators, as well as those in other departments and school district central offices, to ensure that CTE data reporting, especially on these new quality indicators, is consistent, well documented, and of uniformly high quality.



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# Federal Career and Technical Education Legislation

The *Carl D. Perkins Career and Technical Education Act of 2006*, as amended by the *Strengthening Career and Technical Education for the 21st Century Act (Perkins V),* is the principal legislative vehicle for federal investment in career and technical education (CTE). The act provides nearly \$1.4 billion annually to support states<sup>2</sup> in improving the quality of CTE programming offered within public school districts and postsecondary institutions. In return for this support, state and local grantees are required to report on a robust set of accountability indicators to ensure CTE programs are achieving their desired results.

While federal legislation in support of CTE dates to the early 1900s, the first authorization of what is now the *Perkins Act* came in 1963 with the enactment of the *Vocational Education Act*. Several amendments later, Congress renamed it after the late Representative Carl Perkins in 1984 with the passage of the *Carl D. Perkins Vocational Education Act*. Since then, the act has been amended multiple times, most recently in 2018. The 2018 reauthorization is often referenced as *"Perkins V,"* denoting that it is the fifth iteration of the legislation since Perkins was included in the name of the law.

Federal accountability requirements at the secondary level have historically focused on a broad set of outcome indicators that included student achievement of academic and technical skills, high school graduation, postsecondary enrollment or employment, and the enrollment experiences of students preparing for work in nontraditional fields.<sup>3</sup>

*Perkins V* extended many key provisions contained in early legislation while introducing several new accountability requirements. Among the most consequential was the specification of measurement populations and the introduction of three new program quality indicators for secondary education. Specifically, states are required to report on the outcomes achieved by CTE concentrators, defined within *Perkins V* as students completing at least two courses in a single CTE program or program of study (*Perkins V*, Sec. 3(12)).

<sup>&</sup>lt;sup>2</sup> In keeping with legislative language, the term "state," unless otherwise specified, means the 50 states in the U.S., the District of Columbia, the Commonwealth of Puerto Rico, and each outlying area (*Perkins V*, Sec. 3(49)). Outlying areas include the United States Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and the Republic of Palau (*Perkins V*, Sec. 3(34)).

<sup>&</sup>lt;sup>3</sup> The term "nontraditional fields" means occupations or fields of work, such as careers in computer science, technology, and other current and emerging high-skill occupations, for which individuals from one gender comprise less than 25 percent of the individuals employed in each such occupation or field of work. (See *Perkins V*, (Sec 3(33).)

states and local programs are required to set performance levels for each indicator contained in *Perkins V* and to report data annually on the number of students achieving the desired outcome. Data must be provided for all students, as well as disaggregated for special populations described in section 3(48) of *Perkins V* and subgroups of students described in section 1111(h)(1)(c)(ii) of the *Elementary and Secondary Education Act of 1965 (ESEA)*. These special populations and subgroups include the following:

- individuals with disabilities
- individuals from economically disadvantaged families
- individuals preparing for nontraditional fields
- single parents
- out-of-workforce individuals

- English learners
- homeless individuals
- youth in foster care
- youth with parent in active military
- migrant students

*Perkins V* reflected larger conversations in the CTE community about ensuring that all students have equitable access to high-quality CTE programs and the necessary supports to achieve success in those programs. The new requirements around data reporting and use, coupled with new indicators and measurement approaches, have underscored the need for valid and reliable data in CTE.

In accordance with *Perkins V*, states must report on the CTE measurement populations and accountability indicators specified in the federal legislation to the U.S. Department of Education, Office of Career, Technical and Adult Education (OCTAE), but they have flexibility to choose a secondary program quality indicator.

Thus far, the U.S. Department of Education has chosen not to issue regulations for *Perkins V* or to provide guidance to states with respect to measuring the secondary program quality indicators. Consequently, states have had great flexibility in defining and measuring the program quality indicators. The many differences in state definitions that resulted from giving states this discretion make it difficult to compare state performance.

Because the Department has not issued regulations for *Perkins V* with respect to the secondary program quality indicators, states also retain some discretion in defining terminology not specified in the legislation, establishing data collecting and analysis procedures, and setting performance-level expectations for local grantees. Consequently, while mandated to report on comparable populations for their selected quality indicators, the business rules governing how data are compiled and processed may differ substantially across states.

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# Introducing the New Quality Indicators

Well-designed CTE programs connect secondary and postsecondary CTE programming across education levels and with the workforce. To strengthen these connections and opportunities, Congress introduced three program quality indicators into the accountability system for secondary education in its 2018 reauthorization of *Perkins V*, with the option for states to report on an additional indicator.

These new indicators measure the proportion of high school graduates who concentrated their studies in CTE by completing at least two courses in a single CTE program or program of study. They include:

5S1	<b>5</b> \$2	5\$3	5\$4
Program Quality Indicator	Program Quality Indicator	Program Quality Indicator	Program Quality Indicator
Attained Recognized Postsecondary Credential	Attained Postsecondary Credits	Participated in Work- Based Learning (WBL)	Achieved Another State- Developed Measure of Success

The quality indicators introduced in *Perkins V* are often abbreviated by federal and state education agencies using a numbering and lettering convention similar to that applied to the other core indicators of performance. Here, the number "5" represents that the program quality indicators are the fifth indicator group outlined in Section 113(b)(2)(iv) of *Perkins V*, the "S" that they apply only at the secondary education level, and the number following refers to the specific quality indicator.

States must select at least one of the first three program quality indicators for their annual *Perkins V* accountability reporting and may propose additional indicators either from the first three defined in *Perkins V* or under the more flexible 5S4, if desired. States were required to articulate their indicator choice(s) in their *Perkins V* 2020 state plan, which was originally submitted in the spring of 2020.<sup>4</sup>

States responded to this requirement in different ways: Thirty-two states, the District of Columbia, Palau, and Puerto Rico have selected a single quality indicator (Table A). The remainder have opted to report on two or more indicators, with eight states choosing to report on three quality indicators. States made

<sup>&</sup>lt;sup>4</sup> Perkins V state plans can be found on the Department of Education's Perkins Collaborative Resource Network website, within the state profiles section for each state at https://cte.ed.gov/profiles/national-summary.

their choices for a variety of reasons often stated in their *Perkins V* state plans, including system goals, the availability of CTE financing, data system capabilities, and considerations of equity.

Number of Indicators Reported	States	Total
1	Alabama, Alaska, Arkansas, California, Colorado, Connecticut, District of Columbia, Florida, Hawaii, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Oklahoma, Oregon, Palau, Puerto Rico, South Carolina, South Dakota, Vermont, Wisconsin, Wyoming	32 states + the District of Columbia, Palau, and Puerto Rico
2	Arizona, Idaho, Illinois, Maryland, Montana, North Carolina, Ohio, Pennsylvania, Tennessee, Texas	10 states
3	Delaware, Georgia, Indiana, Rhode Island, Utah, Virginia, Washington, West Virginia	8 states

Table A. States Reporting on the Perkins V Quality Indicators, by Number of Indicators Reported

State selection of quality indicators varies, with a majority (26 states plus the District of Columbia, Palau, and Puerto Rico) selecting 5S3—Work-based Learning (Table B). Ten states have opted to report on one additional quality indicator under 5S4 and three states on two additional quality indicators—Georgia, Rhode Island, and Utah.

Type of Indicator Reported	States	Total
5S1 — Recognized Postsecondary Credential	Alabama, Alaska, Arizona, Arkansas, Delaware, Florida, Indiana, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Missouri, North Carolina, Pennsylvania, South Carolina, Texas, Vermont, Virginia, Washington, West Virginia, Wyoming	22 states
5S2 — Postsecondary Credit	California, Delaware, Hawaii, Idaho, Illinois, Indiana, Kansas, Maine, Montana, Nevada, New Mexico, Washington	12 states
5S3 — Work-based Learning	Colorado, Connecticut, Delaware, District of Columbia, Georgia, Illinois, Indiana, Iowa, Massachusetts, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oklahoma, Oregon, Palau, Puerto Rico, Rhode Island, South Dakota, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin	26 states + the District of Columbia, Palau, and Puerto Rico
5S4 — One additional indicator*	Arizona, Idaho, Maryland, North Carolina, Ohio, Pennsylvania, Tennessee, Texas, Virginia, West Virginia	10 states
5S5 — Two additional indicators*	Georgia, Rhode Island, Utah	3 states

Table B. States Reporting on the Perkins V Quality Indicators, by Type of Indicator

\*States electing to report additional quality indicators; selected indicators may differ among states.

# Strengthening quality indicator adoption

In October 2020, OCTAE launched the **Quality Indicator Project** to assist states in refining the validity, reliability, and accuracy of their new quality indicators. This nationwide initiative engaged states in identifying measurement challenges and crowdsourcing practices to improve their CTE data system operations and promote equity in their CTE programming.

Three quality indicator workgroups (QIWs), comprising state and local CTE directors and staff with knowledge of statewide accountability systems, met bimonthly between November 2020 and August 2021. Nationally recognized subject matter experts led workgroup discussions and synthesized member input.

During meetings, states shared information on their measurement approaches and issues complicating indicator adoption and implementation. During off months, QIW members participated in activities to provide information about their indicator use. These included such topics as the business rules used to analyze data and strategies to promote equitable student access to programming.

This report summarizes the considerations that state education agency administrators and data analysts face in implementing the new program quality indicators, along with strategies they have adopted to strengthen the specification, collection, analysis, and reporting of data.

This guidebook content is organized into five topical areas integral to the design and implementation of effective state CTE performance-accountability systems. Sections are:

- 1. Who counts? Specifying CTE concentrator populations
- 2. How are indicators constructed? Creating numerators and denominators
- 3. What is measured? Defining indicator terminology
- 4. How are outcomes calculated? Establishing business rules
- 5. What are acceptable outcomes Establishing performance levels

If a state fails to meet at least 90 percent of the state-determined level of performance for any of the core indicators of performance for three consecutive years, the Secretary of Education may, after notice and opportunity for a hearing, withhold all or a portion of the state's funding allotment. Because of these high stakes associated with performance reporting, it is imperative that states' CTE accountability systems are of uniformly high-quality and produce data that can help identify equity gaps across student groups. Accordingly, state practices to strengthen data collection and promote equity are highlighted throughout the guidebook.

#### These practices fall into three categories:



**Improvement** strengthen compliance reporting on the quality indicators



Equity — promote equitable student access to CTE and the outcomes they achieve



Hot tip — push beyond compliance reporting to advance system operations

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# Who Counts? — Specifying CTE Concentrator Populations

Federal accountability reporting under *Perkins V* has always been focused on "CTE concentrators," those who achieve a threshold level of course-taking in a single CTE program area.

For the first time, *Perkins V* includes a base definition of a concentrator rather than leaving the definition completely up to states. At the secondary level, *Perkins V* calls for states to assess the performance outcomes of students completing at least two courses in a single CTE program or program of study (POS), the legislatively established threshold for a CTE concentrator (*Perkins V*, Sec. 3(12)). In the absence of federal regulation, states have assigned concentrator status using a basic set of assumptions that include:

- Academic coursework is excluded While related academic courses may be an integral part of CTE programming, generally only technical coursework counts in threshold calculations.
- CTE programs or POS are documented Technical coursework is part of a state-established or provider-developed, state-approved CTE program or POS that usually progresses in a sequence that increases in specificity.
- Funding sources are irrelevant All coursework that is part of a state- or locally developed CTE program is counted irrespective of whether it is funded with federal, state, or local resources.
- Concentrator assignment is permanent Students achieving concentrator status retain this status throughout high school regardless of whether they are participating in CTE coursework at the time of reporting.

States are in many cases operationalizing how they define and track CTE concentrators in different ways, and a range of underlying issues may affect how these student cohorts are identified. The following section details questions state administrators are asking when specifying measurement populations.

# What CTE coursework counts toward concentrator status?

States have specified qualifying coursework in two core ways:

- All technical coursework, generalized or specific Any course linked to a CTE program may be counted, including generalized classes that apply across multiple fields (e.g., computer applications). This results in the largest number of students being classified as concentrators; however, it may include students who did not intentionally focus their studies in a single program area.
- Only program-specific coursework Coursework is limited to technical courses classified within a single CTE program area or with a specific level of rigor. This may reduce the number of students who are counted as concentrators, though it increases the likelihood that the skills taught are applicable in a single field.

### How is coursework counted?

To date, states have interpreted "completed two courses" differently, as the term "course" is not defined in *Perkins V*. This decision may be a result of state policy, state CTE program approval processes, existing state CTE data system capabilities, or efforts to standardize the definition of CTE concentrator status across programs or providers. Accordingly, states are counting:

- Courses completed Students complete two courses of any length in a CTE program sequence. This approach may be most effective if CTE courses in the state are of a standardized length (e.g., semester or yearlong). States that choose this option also need to define what constitutes course completion (i.e., a minimum grade or transcripted credit).
- Credits earned Students complete a state-established minimum number of credits in an approved CTE program sequence. This approach introduces a more standardized measure of participation (e.g., a Carnegie unit) and may be effective if states have a wide variety of CTE course lengths across programs or schools.
- Standards met Students achieve a state-established proportion of the standards identified within an approved CTE program that is roughly equivalent to two courses. This approach may be most effective in places that are moving toward competency-based education and away from seat-time or credit-hour requirements.
- Contact hours Students complete a state-established number of contact hours within an approved CTE program. This approach may be effective in places where credit hours are not a standard unit of measurement within secondary CTE programming, but states want a more consistent measure than course enrollment alone would provide.

### Who assigns concentrator status?

Concentrator status has also been assigned in different ways:

- State agency staff Student-level course data are analyzed to flag students achieving concentrator status based on transcript data. This requires that states identify course sequences within a given program area, either through the use of common course codes or CTE program course lists submitted by districts.
- Local program staff Providers assign concentrator status based on internal review of data. This is most common in states with a high level of local control over CTE programs.



The *Perkins V* quality indicators require states to report on the outcomes that CTE concentrators achieve. Consider rerunning your indicator data to assess the outcomes of students who participate at levels less than and greater than the concentrator threshold. This can help you to assess whether students have differential outcomes based on their intensity of engagement.



## Defining graduation for the program quality indicators

*Perkins V* requires states to report on the percentage of CTE concentrators who graduate high school, as measured by the four-year adjusted cohort graduation rate defined in Section 8101 of *ESEA* and, at the state's discretion, the extended-year adjusted cohort graduation rate defined in Section 8101. The new program quality indicators introduced in *Perkins V* clearly stipulate that states report on "the percentage of CTE concentrators graduating from high school," but the law does not specify which definition (four-year adjusted cohort or extended-year cohort) a state must use. In the absence of federal regulations, states have utilized different definitions for "concentrator graduation" for the purposes of reporting on the program quality indicators.

#### What types of diplomas count?

- All diploma types Students earning a regular high school diploma or certificate of completion.
- Regular high school diploma Only students earning a regular high school diploma.



# Consider how students earning a certificate of completion perform in CTE programming

Students earning a certificate of completion that does not meet the basic requirements for graduation may still benefit from participating in CTE coursework. Since states must follow *ESEA* requirements for defining high school graduates for some indicators, these students may be excluded from federal reporting. If certificate earners are not included in state analyses, then equity gaps may be missed. Consequently, states may wish to consider how these students perform in CTE programming to assess whether there are any equity gaps among these students that need to be addressed.



#### Does your state offer equitable access to CTE programming?

One might expect the statewide distribution of CTE concentrators to parallel that of your statewide student population. To check, compare the proportion of CTE concentrators in your graduating class to the statewide cohort, disaggregating by student demographics and district characteristics. If rates differ, it could be that students do not have equitable access to CTE programming, either because program options are not available to all students or because certain populations may be steered toward specific types of programs. If this is the case, your data may not be telling the full story of what is happening in your state.

#### Which graduation cohort is used?

- All graduates in the reporting year (exit cohort) All graduating CTE concentrators are counted regardless of their entering cohort year. This would include the most students in the calculation.
- Four-year ESEA cohort graduates Only CTE concentrators who are included in the four-year adjusted cohort (defined in Sec. 8101(25)(A) of ESEA) and graduate are counted. This would align the measure with the primary graduation-rate measure in *Perkins V* but excludes students who are part of the extended-time cohort.
- Extended-time ESEA cohort graduates In states that measure and report on an extendedtime graduation rate, graduating concentrators could also be defined as students who complete the requirements to graduate in five or six years and are included in the respective state's extended-time-adjusted cohort.

#### When is graduation status assessed?

- On-time graduation Counting graduates at the end of the official academic year will limit reporting to concentrators who attained an on-time completion status (typically June of their senior year). This will undercount students who fulfilled their graduation requirements prior to the start of the following academic year.
- Delayed graduation Determining graduation status later in the year, closer to when data are reported to the federal government, could mean that a state includes students who complete the requirements to graduate at a later time (typically during the summer of the reporting year following participation in summer school).

Arizona allows districts to report outcomes for students who are members of the graduating cohort through September of their graduating year (i.e., three months following a June on-time completion).

Source: Information provided during 5S1 QIW Meeting by Arizona, January 27, 2021.

# Are your definitions clear? Provide details to assist users in understanding your CTE concentrator definitions

Given that all measurements are based on CTE concentrators, users must understand who is included in the metric so that they do not make inaccurate comparisons. Whenever possible, provide clarifying information. For example, if concentrator status is based on course completion, clarify what constitutes a qualifying course (e.g., trimester, semester, full year) and note any special cases that may affect status assignments.



# Know the facts: Understand how states are defining concentrator populations before making comparisons

States are making differing assumptions when specifying CTE concentrator populations. For example, some states are limiting measurement to cohorts achieving an on-time graduation, while others extend eligibility to include those completing during the summer months. Know who is included in an indicator before comparing your results with those of other states or with other data elements within the state. Visit the Perkins Collaborative Resource Network State Profiles section to access state participation and performance-level data and download copies of state plans.

Source: https://cte.ed.gov/profiles/national-summary

### **Suggested data elements**

Assigning concentrator status using student-level data requires a listing of courses within a state-approved CTE program. Programming instructions must be written at the individual district level if standardized state course codes do not exist. Analyzing data could require the following data elements, depending on decisions made above:

- $\hfill\square$  state program or POS course identifiers
- □ student enrollment in CTE coursework
- □ course credit or length
- □ sequence of courses in program

- □ course grade
- $\hfill\square$  date of high school completion
- □ type of high school completion award
- □ ESEA graduation cohort

#### **Questions for consideration**

- How do you identify CTE concentrators who transfer into or among high schools within a district, potentially with credits earned at two or more schools?
- Does your operationalized definition of CTE concentrator capture the broadest possible group of students?
- How will your data system assign students who concentrate in more than one CTE program?
- How do you count students in nontraditional programs who do not identify as either male or female?
- How can you measure student progression in a CTE program beyond the given accountability model? For example, what constitutes participation and completion within a CTE program? Although not required for *Perkins V* compliance purposes, student participation and completion can provide insights into concentrators' access and persistence in CTE programming.



- Given that all students benefit from earning a recognized postsecondary credential, attaining
  postsecondary credits, or participating in WBL, consider the relationship of Perkins and the *Every
  Student Succeeds Act (ESSA)* to create parallel indicators of state performance that include all high
  school graduates as the measurement population rather than just CTE concentrators. This can
  help determine whether opportunities are limited to CTE concentrators, promote equitable
  outcomes, and provide a systemwide benchmark. States could also consider the alignment of
  Perkins and *ESSA* with the Workforce Innovation and Opportunity Act (WIOA) in-school youth
  indicators to align the definitions used to calculate youth who have one or more barriers to
  employment and student outcomes.
- To inform public policy and description of CTE programs within the state, consider exploring Explore the relationship between student performance on the program quality indicators and other indicators of performance. For example, determine if students who are achieving technically have a greater propensity to achieve academically or to enroll in postsecondary education.
- One might expect districts of similar size to report similar proportions of students achieving concentrator status. Consider grouping districts by size to assess the relative number of concentrators that each produce and, if differences are found, the factors contributing to differentials (e.g., the number or type of programs offered).

#### Assess student persistence in CTE programming

Not all CTE participants continue on in their studies. Consider assessing the proportion of CTE participants who went on to achieve concentrator status, disaggregated by student demographics, CTE program, and/or district characteristics. Differential rates of retention within graduating cohorts may indicate equity gaps in need of immediate attention.



Oregon created an interactive dashboard displaying the percentage of participants in graduating cohorts who persisted to achieve concentrator status. Program-level data can be explored at the state, regional, or district levels cross-tabbed by student gender and selected special population characteristics.

Source: https://public.tableau.com/app/profile/ednw/viz/OregonCTEParticipationExplorer/ Overview

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# How Are Indicators Constructed? — Creating Numerators and Denominators

Operationalizing your quality indicators requires specifying the numerator and denominator that will be used to determine the percentage of CTE concentrators who have achieved each indicator. States are required to submit these numerator and denominator definitions in their consolidated annual report (CAR) each year.

While many states have posted their numerator and denominator constructions online, these descriptions often lack detail and specificity. This can cause confusion in comparing outcomes across states and localities. To clearly communicate your state's measurement approach, indicator numerator and denominator definitions should describe the following information:

- Measurement population how CTE concentrators are identified
- Timing of measurement when measurement occurs
- Success criteria what constitutes "attainment" or "participation"

At a minimum, indicators should include the same measurement population of CTE concentrators in the numerator and denominator (i.e., the numerator should be a subset of the denominator) as well as refinements from noted legislated definitions. The numerator and denominator should be developed in a way that captures the broadest possible group of students.

Because the denominator is largely based on the CTE concentrator definition, specifying the decisions made in identifying this population can be helpful. An example of a well-specified denominator, which might apply for nearly all program quality indicators, could be stated as:

#### Denominator: The number of CTE concentrators graduating from high school with a regular high school diploma or certificate of completion as of June in the reporting year.

Similarly, numerators for each indicator should clearly specify who is included and the success criteria. These criteria should build on the considerations outlined in *Perkins V* (and are explored more fully in the following section). Here are some examples:

#### 5S1. Attained Recognized Postsecondary Credential

Numerator: The number of CTE concentrators graduating from high school with a regular high school diploma or certificate of completion who attained a recognized postsecondary credential as of June in the reporting year.

#### 5S2. Attained Postsecondary Credits

Numerator: The number of CTE concentrators graduating from high school with a regular high school diploma or certificate of completion who earned a dual or concurrent credit associated with their CTE program or POS as of June in the reporting year.

#### 5S3. Participated in Work-Based Learning

Numerator: The number of CTE concentrators graduating from high school with a regular high school diploma or certificate of completion who participated in and successfully completed a qualifying WBL experience associated with their CTE program or POS as of June in the reporting year.

Including as many details as possible can help to inform policy makers and data analysts in other states as to why performance rates may differ for similar indicators. The next section explores how to determine the appropriate details and more fully define the measurement approach.

#### Communicate clearly: Structuring an indicator for clarity



The District of Columbia has developed an indicator construction for Participated in Work-Based Learning (5S3) that communicates who is counted in the numerator:

"The number of CTE concentrators graduating in the reporting year who, while enrolled, participated in and successfully completed a paid or unpaid internship, pre-apprenticeship or apprenticeship experience, or cooperative education experience aligned with their program of study."



Similarly, in Nevada, the numerator for its indicator on Attained Postsecondary Credits (5S2) is defined as:

"The percentage of CTE concentrators graduating high school having attained postsecondary credits in relevant career and technical education programs and programs of study earned through a dual or concurrent program or another credit transfer agreement." Nevada further connects the indicator's denominator to the graduation rate the state uses for the Every Student Succeeds Act: "Number of CTE concentrators who, in the reporting year, were included in the state's computation of its graduation rate as defined in the state's Consolidated Accountability Plan pursuant to Section 1111(b)(2) of the [Every Student Succeeds Act]."

Source: District of Columbia | https://osse.dc.gov/sites/default/files/dc/sites/osse/publication/ attachments/State%20Plan%20v4.0%20%28Public%20Comment%29.pdf; Nevada | https:// s3.amazonaws.com/PCRN/docs/stateplan/NV\_2020\_State\_Plan.pdf

#### **Questions for consideration**

- Are your performance indicator numerators and denominators clearly articulated and readily accessible so that stakeholders within your state and in others understand what is reported?
- Are your performance indicator numerators and denominators developed in a way that captures the broadest possible group of students?
- Are your performance indicator numerators and denominators constructed in a manner that creates points of comparison between CTE students and non-CTE students?
- Are your numerator and denominator constructions for your program quality indicator(s) accurately reflected on the Perkins State Plans and Data Explorer housed on the Perkins Collaborative Resource Network (https://cte.ed.gov)? Keep in mind that your indicator information is publicly available, so the more people know about your indicators the more likely they will accurately interpret your data. If not, contact your state's Perkins regional coordinator to have information corrected.

• Can you use your knowledge of CTE concentrators and indicator constructions to identify other states that are taking similar approaches?



- Public understanding of accountability data is essential to communicate the value of CTE. Consider convening stakeholder focus groups to determine if your measurement approaches and data are easily understood and interpreted.
- Student attainment of a recognized postsecondary credential, postsecondary credits, or
  participation in work-based learning are cornerstones of CTE programs; however, states are only
  required to report on one of these indicators. Consider adopting additional program quality
  indicators to go beyond the minimum to better assess program quality.
- Consider the development of state led data models with comparable numerators and denominators for states to conduct research and analysis of public policy and to support highquality CTE programs.
- Comparing outcomes between states is difficult given the varying approaches employed by states in constructing their accountability systems. Review performance indicator numerators and denominators of similarly situated states to determine appropriate points of comparison when analyzing student performance.

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# What Is Measured? — Defining Indicator Terminology

The following sections examine the options states have in developing each program quality indicator and the criteria that they are using to collect information. State administrators and policy analysts can use this information to consider issues associated with their own indicator specifications, as well as provide context for interpreting results from other states.



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# 5S1 — Attained Recognized Postsecondary Credential

High school students attaining concentrator status within a single CTE program might be expected to have mastered an advanced, measurable set of technical skills prior to graduating. Accordingly, states choosing this measure are directed to assess the percentage of CTE concentrators graduating from high school who have earned a recognized postsecondary credential.

#### **Indicator definition**

The percentage of CTE concentrators graduating from high school having attained a recognized postsecondary credential.

Recognized Postsecondary Credential (*Perkins V,* Sec. 3(43); *Workforce Innovation and Opportunity Act*, Sec. 3(52))

The definition of a Recognized Postsecondary Credential in *Perkins V* references the *Workforce Innovation and Opportunity Act* (29 U.S.C. 3102):

The term "recognized postsecondary credential" means a credential consisting of an industryrecognized certificate or certification, a certificate of completion of an apprenticeship, a license recognized by the state involved or federal government, or an associate or baccalaureate degree.

### Who chooses what counts?

Current law allows for states to identify qualifying credentials for reporting. This determination may be made by:

- **State agencies** The state authorizes a list of credentials, along with a process to update the list regularly. Alternatively, a state may accept applications or recommendations from local districts as to what is approved for inclusion. This list or process may be managed by the state CTE agency or another related agency, such as a state workforce board or governor's office.
- Local providers Local school districts identify their own list of acceptable credentials to include in *Perkins V* reporting.

### What types of credentials count?

Although *Perkins V* stipulates the basic categories of credentials that qualify for measurement, in some instances states have established their own eligibility criteria to operationalize this definition. Often, what is measured is a function of the data that are available. Based on current guidance for implementing credential attainment measures under the *Workforce Innovation and Opportunity Act* (*WIOA*), qualifying credentials may include:

- Industry-recognized certifications Certifications are awarded by employers or employer
  associations to document workers' skill mastery. Data may be sourced directly from credentialing
  bodies or collected through self-reporting. Credential quality is important, as there are thousands
  of certifications available, not all of which are universally recognized by employers.
- Certificate of completion of an apprenticeship Apprenticeship certificates are formal credentials recognized by the federal government and many employers. They may include registered apprenticeships or extend to newer industry-recognized apprenticeship programs, largely depending on what is offered and recognized by employers in the state. States must decide whether pre-apprenticeship or youth apprenticeship credentials are included in this category. Data for apprenticeships may be difficult to obtain, though states that serve as an approving agency for registered apprenticeships may have ready access.
- State or federally recognized license Licenses are granted by the state or a federal agency and allow an individual to work in a specific job, such as nursing. Much like certifications, quality considerations are important, as licenses may vary significantly in labor market value. State licensing data may be obtained through data-matching agreements with other state agencies.
- **Postsecondary certificates or associate or baccalaureate degrees** These credentials are awarded by a postsecondary institution, including area CTE centers, two-year community or technical colleges, and four-year colleges or universities. Given the length of time typically required to earn an associate or baccalaureate degree, postsecondary certificates will likely make up the majority of credentials counted.

### When are credentials counted?

High school students may earn credentials as part of their course programming or pursue credentialing outside of school or after graduation, particularly if the credentials have age restrictions. Examples include:

- **Prior to graduation** Credentials are counted when awarded prior to a student completing high school.
- Following graduation Credentials earned within a window of time following high school graduation are counted (e.g., within three months or one year of graduation). This method can allow states to capture awards that would not otherwise be accessible to students (e.g., because of age requirements), but it may cause states to lag reporting by a year to allow time for the awarding of the credential and the related data collection.

#### Offer guidance on qualifying credentials to ensure quality



Arizona provides funding to districts for students who have obtained an industry-recognized credential with additional resources earmarked for credentials linked to CTE programs in high-demand sectors. This list is updated annually. Organizations wishing to add credentials to the list submit an application documenting their request, including the requirement that a minimum of three employers offer letters of support that indicate a preference for hiring graduates with this credential.



The identification of credentials in Kentucky is legislatively mandated (9KRS 158.6455). Local workforce development boards, working in conjunction with local economic development organizations, annually compile lists of industryrecognized certifications, licensures, and credentials. Lists are specific to a regional workforce area and ranked by labor market demand. The Kentucky Workforce Innovation Board collaborates with the Kentucky Department of Education to revise lists, which are then disseminated to school districts for use in reporting credential attainment.



Arkansas is committed to providing students with high-quality, cutting-edge CTE programming and services to equip students with competitive skills for future success. To support this core value, the state has established a strategy of increasing the number of CTE students who receive industry-recognized certifications. To publicize credentialling opportunities, the state maintains a list of industry-recognized certifications, updated annually, that cross-references qualifying certifications with CTE career clusters.

Source: Arizona | List of credentials https://www.azed.gov/cte/cte-industry-credentials; application process: https://www.azed.gov/sites/default/files/2020/09/IndustryCertApprovalProcess.pdf; Kentucky | https://apps.legislature.ky.gov/law/statutes/statute.aspx?id=52910; Arkansas | https:// dcte.ade.arkansas.gov/docs/Resources//2021%20-%202022%20Certification%20Cluster%20 Crosswalk%20March%2031%202022.pdf

### Must credentials be aligned to CTE programming?

Current law does not address whether a credential must be related to a student's CTE program or how this determination can be made. Absent federal guidance, states have required that either:

- **Credentials must be aligned** Only credentials within the CTE field of study count. This can eliminate general non-occupational credentials or those obtained by students in an unrelated field. It also will automatically exclude students who concentrate in programs where no appropriate credentials exist. However, the experiences of students who obtain an aligned credential are more likely to offer insights into the rigor of programming and the benefits it affords credential holders.
- Credentials need not be aligned Any credential counts. States choosing this approach may
  assume that any credential affords value to students, even if it is not directly related to the CTE
  program. Applying this approach will likely increase state performance levels but reduce the
  utility of the indicator in evaluating performance of a specific CTE program or the use of data for
  program improvement.

### How are data collected?

Collecting robust credential attainment data can be the most challenging part of measuring and reporting on this indicator. Generally, two methods are being used:

- State matching with administrative records States match CTE concentrators with administrative records sources maintained by credential-awarding associations or state higher education, licensing, or apprenticeship agencies. Administrative record matching produces results that are more valid than self-reported data and are the gold standard.
- Local reporting Credential attainment data are entered by district representatives, including teachers or CTE administrators. These data may be self-reported by students or obtained via data-sharing agreements with credential providers. In some instances, districts may agree to serve as certification testing centers in exchange for obtaining access to student outcome data.

### What quality standards are applied?

**Credential Engine** estimates that there are almost 1 million unique credentials across the country.<sup>5</sup> Not all meet the definition of a recognized postsecondary credential, and some are poor quality or are too technically advanced for high school students to earn. Identifying credentials of value—to both students and employers—is a key step in constructing this performance measure.

<sup>&</sup>lt;sup>5</sup> See https://credentialengine.org/counting-credentials-2021/

Credentials of value can be defined in many different ways. Here are a few criteria that states have used to identify quality standards related to credentials:

- alignment with educational program
- recognition in the labor market and by employers
- value related to increased earnings
- length of time/number of hours to obtain
- difficulty/rigor
- transferability across states or regions
- stackability (i.e., one in a sequence that can be earned over time)

These criteria need not imply relative value of a credential. For example, a credential requiring a relatively greater investment of time to obtain may confer less labor market value than one included in a stackable sequence of credentials or widely recognized in the field. Similarly, the perceived difficulty or rigor of a given credential may be a subjective determination that is not directly associated with its labor market return. Consequently, it is important to understand how states are defining credentials to determine the relative weight to ascribe to them.

Credentials also may not be universally recognized. For example, some states do not include credentials like food handlers, cardiopulmonary resuscitation and automated external defibrillator training, or Occupational Safety and Health Administration 10-hour training, or they require these credentials to be bundled with others to count toward attainment. Other states require a specified level of employer support.

One other factor relates to how often credentials are reviewed for quality. Ideally, credential lists are reviewed on an annual basis to ensure they are applicable and of utility.

#### What is it worth? Assess the relative value of credentials in the workforce

Industry-recognized credentials may be associated with different rates of return. Consider disaggregating certifications by industry field or estimates of recipients' average wages to determine the range of awards and their relative worth in the workplace. A high level of performance may mask the value of the results if CTE concentrators are earning credentials that are not well compensated or widely recognized by employers.

### Who pays for credentials?

Some credentials can be costly to obtain, which may lead to equity issues. There may be costs associated with certification exams, licensure, and/or postsecondary tuition before a credential may be pursued or awarded. Strategies for paying for these assessments may be provided by:

- States Through legislation, states may provide for financial support for students pursuing a recognized postsecondary credential. States also may use school foundation funding to reimburse or award school districts based on the number of students attaining a credential. Care must be taken to ensure incentives or reimbursement plans minimize unintended consequences and maximize value for students.
- **Districts** Districts may make funding available for credential attainment using their *Perkins V* grant or other state or local sources.
- **Individuals** The cost of credentialing is borne by the student. This strategy has equity implications, as some students do not have the ability to pay for their credentialing costs.

#### Consider credentialing costs when making state comparisons

States have adopted differing policies to compensate districts for certifications. Those that have developed compensation strategies might be expected to produce higher outcomes than those that do not. For example:

Wyoming has identified a set of industry-recognized credentials and certifications that reflect the state's labor market data and feedback from employers and educators statewide. The state uses Perkins V funding to reimburse districts for exam costs for each concentrator who passes a listed credential or certificate.



Arizona offers up to a \$1,000 incentive reimbursement for each student who earns a qualifying credential identified by the state. If the number of qualifying students exceeds available funding, awards are prorated.

Kansas, through its Excel in CTE initiative, offers high school students statefinanced college tuition in approved CTE courses offered by Kansas technical and community colleges. Roughly 30 percent of participants complete a college-level certificate or degree prior to graduating.

Source: Wyoming | https://edu.wyoming.gov/wp-content/uploads/2021/03/2021-Wyoming-Guideto-Industry-Recognized-Credentials-and-Certifications.pdf; Arizona | https://www.azed.gov/sites/ default/files/2020/09/AZIndustryCredentialIncentiveProg-BusinessRules.pdf; Kansas | https://www. kansasregents.org/workforce\_development/excel\_in\_career\_technical\_education\_initiative\_ senate\_bill\_155

### **Suggested data elements**

States may recognize a range of credentials that have differing educational requirements. Consider designing your data system to collect detailed information on the type of postsecondary credential awarded. Potential fields could include:

- □ type of credential awarded
- name of credential
- date certification/licensing exam administered for credentials requiring exams (allow for multiple fields)
- □ student score (if appropriate)
- □ date credential awarded
- □ credential provider (i.e., organization administering or awarding the credential)
- □ type of accommodation requested and offered (if applicable)
- $\Box$  date certification/licensing exam passed

#### **Questions for consideration**

- Does your state have quality measures or a policy in place to identify credentials of value within a CTE program?
- Does your state have procedures to ensure that credential data reporting for both local and administrative student records is complete and accurate?
- Does your state publish information on credential data and reporting procedures at the secondary and postsecondary levels to help share best practices across districts and institutions of higher education and other noteworthy practices to strengthen data validity and reliability?
- Are the industry-recognized credentials earned by students that are included within the state's accountability model roughly equivalent in terms of time or skill required for award (i.e., are credentials awarded for a six-week course of study given equal weight to those requiring a year or more of focused study)? Is there a designation between credentials required for a CTE program and those that are counted for purposes of accountability?
- Do you use the National Student Clearinghouse to obtain certificate and degree award data for private in-state and public and private out-of-state institutions?



 Consider reviewing and analyzing industry-recognized credential awards across secondary and postsecondary CTE programs to determine the alignment of skills, ability to award credit for prior learning, and how CTE programs connect with state high-skill, high-wage occupational projections.

- Analyze credential award data to determine if all students in your state have access to credentials of value. Determine if there are patterns in the types of credentials, or in the industries in which credentials are earned more prolifically.
- Capture information about industry credentials beyond attainment, which could include cost to confer, attainment requirements, exam/practicum procedures, etc. to determine if credential awards are equally distributed across districts, or if barriers exist for students. If gaps are detected, what factors might explain these results (e.g., low-socioeconomic status sites where more individuals may lack resources to pay for the credentials; inequitable access to programming)?

#### Are your outcomes equitable: Who earns what credential?



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# 5S2 — Attained Postsecondary Credits

High school students completing a threshold level of CTE coursework within a single CTE program might be expected to acquire advanced skills that would qualify them to earn postsecondary credit prior to graduating. States choosing this measure are directed to assess the percentage of CTE concentrators graduating from high school having attained postsecondary credit, which may include dual or concurrent enrollment credits or another credit-transfer arrangement.

### **Indicator definition**

The percentage of CTE concentrators graduating from high school having attained postsecondary credits in the relevant CTE program or POS earned through dual or concurrent enrollment or another credittransfer agreement.

#### **Dual or Concurrent Enrollment**

The definition of a dual or concurrent enrollment program in *Perkins V* conforms to that specified in Section 8101 of the *ESEA*:

A program offered by a partnership between at least one institution of higher education and at least one local educational agency through which a secondary school student who has not graduated from high school with a regular high school diploma is able to enroll in one or more postsecondary courses and earn postsecondary credit that—

- 1. is transferable to the institutions of higher education in the partnership; and
- 2. applies toward completion of a degree or recognized educational credential as described in the Higher Education Act of 1965 (20 U.S.C. 1001 et seq.).

#### **Credit-Transfer Agreement**

#### Perkins V, Section 3(11) reads:

A formal agreement, such as an articulation agreement, among and between secondary and postsecondary education institutions or systems that grant students transcripted postsecondary credit, which may include credit granted to students in dual or concurrent enrollment programs or early college high school, dual credit, articulated credit, and credit granted on the basis of performance on technical or academic assessments.
*Perkins V* mandates that states assess the proportion of students achieving CTE concentrator status who earned any form of postsecondary credit related to their CTE programming. Measuring these outcomes requires that states clarify eligible credit options based on the respective definitions and strategies in place to gather this information. This includes answering the questions below.

## Who decides what counts?

The award of dual or concurrent enrollment must be approved by an authorized agency. This determination may be made by:

- State agencies The state specifies the requirements or courses that qualify for the award of dual or concurrent enrollment. Alternatively, a state may accept applications from local districts as to what is approved for inclusion.
- Local providers Local school districts negotiate with postsecondary providers to identify their own list of coursework that qualifies for early postsecondary credit.

## Which types of credit count?

A multitude of postsecondary credit opportunities may be offered within a state. States must determine which of these opportunities to include, a decision that is often based on state policy; programmatic offerings; and the availability, validity, and reliability of data. Options may include:

- Dual and/or concurrent enrollment States have differing systems and definitions in place for dual and concurrent enrollment and may use varying terminology. Courses may be offered on a high school or postsecondary campus and may be taught by teachers either employed by or approved by the postsecondary institution. These opportunities generally award transcripted college credit that may be applied toward a postsecondary certificate or degree. Data sources may include local data-sharing agreements or administrative records matching with the state higher education data system.
- Early-college high schools An early-college high school is a partnership between a school district and an institution of higher education allowing students to simultaneously complete a regular high school diploma and receive postsecondary credit. Not all states offer the early-college high school model, but for those that do, including credits earned at those institutions would be appropriate. Since credits may not appear in state or local secondary and postsecondary data systems, additional collection strategies may be needed to record these credits.
- Articulation agreements Articulation agreements are defined in *Perkins V* as state or local agreements between institutions that allow students to pursue a non-duplicative sequence of courses through some type of credit transfer agreement. Often, they provide postsecondary credit for students who complete a sequence of secondary courses or experiences. Statewide

articulation agreements ensure that postsecondary credits awarded to high school students are honored by all public institutions of higher education in the state. However, some articulation agreements require students to enroll in the postsecondary institution for credit to be granted, which can complicate data collection, or be limited to one local institution, which lowers the value to students.

 Credit for exam performance — Many postsecondary institutions award credit to high school students passing standardized assessments, which may include academic (e.g., Advanced Placement (AP) and International Baccalaureate) and technical examinations (e.g., industryrecognized certification tests). States counting these credits must determine how to validate credits earned and the timing of when credits are awarded. For example, CTE students taking an AP computer science course may not receive their exam results until after graduation.

## Offer memorandum of agreement templates to support districts and colleges in negotiating terms among institutions

Help remove legal and administrative barriers by providing model templates that providers may modify to establish binding credit-transfer agreements. For example, New Mexico offers sample templates that include language covering such issues as student eligibility, course requirements, and the roles and responsibilities of each party.

Source: New Mexico memorandum of agreement example https://webnew.ped.state.nm.us/wpcontent/uploads/2017/12/CCRB\_dualcredit\_Dual.Credit.Master.Agreement.Sample.pdf

## What subject-matter credits count?

*Perkins V* requires that credits attained for this indicator be "in the relevant career and technical education program or program of study." However, it is open to state interpretation how this is operationalized because the U.S. Department of Education has not regulated on this issue thus far.

- Inclusive of all courses Any early postsecondary credit gained by CTE concentrators counts, irrespective of its technical content (e.g., dual-enrollment credits in academic subjects). States applying this approach consider academic subjects to be a core component of CTE programs or POS. State performance on the measure will likely exceed that of states limiting credits to technical coursework.
- Includes some academic courses Academic credits that are most closely aligned to the POS such as anatomy for health science students, are included in the measure. This approach requires states to establish clear policies and criteria governing which postsecondary credits are aligned and should count.
- Limited to CTE courses Only postsecondary credits that are awarded through CTE coursework
  or technical exams are included. This may be the simplest approach, and the most closely aligned
  with CTE program implementation, although it will likely result in a lower performance level for
  states applying this standard.

## Document the site where instruction occurs

Postsecondary credit may be awarded for coursework taught at different sites. Consider creating a data element recording the physical location where instruction occurs and cross-tabbing it with student demographic information and district urbanicity. Differential rates of earned credits by site may indicate an equity gap that needs attention, such as moving instruction to a facility more centrally located.



The Florida Department of Education includes CTE dual-enrollment course location (accredited career center or charter technical career center campus, other postsecondary/adult school location, high school campus, other K–12 public school location) as a data element in the student information system.

Source: Florida | http://www.fldoe.org/core/fileparse.php/18758/urlt/1920-197283.pdf

## How are data collected?

Collecting data on different aspects of this measure can be challenging, and state data systems may not be designed to capture all options. Generally, there are two methods that can be used:

- State matching with administrative records States match CTE concentrators with administrative records sources, such as their state higher education databases. Administrative records data offer a valid and reliable approach to measurement, as well as processing efficiencies. However, administrative records matching may not include all sources of early postsecondary credit, including credit earned through articulation agreements or exams.
- Local reporting Data on early postsecondary credit attainment are entered into data systems by local school district representatives. These data might be pulled from transcripts, evaluated according to articulation agreements, obtained via data-sharing agreements with postsecondary institutions, or pulled from other local data sources (such as AP test scores).

## How is postsecondary credit assessed?

*Perkins V* indicates that students should have attained postsecondary credits to be counted. This needs to be operationally defined in measure construction. There are several options that might be used, alone or in combination, depending on the types of credit offered:

- Transcripted credit Only graduating CTE concentrators earning transcripted postsecondary
  credits are included. Credits officially recorded on a college transcript are the most valid and
  often the most valuable, but using only this definition may be limiting to students.
- Credit in escrow Includes credits earned by graduating CTE concentrators through a state or local agreement that are awarded upon their enrollment in a postsecondary institution. These credits may be harder to verify but may be evaluated based on copies of state or local credit-transfer agreements.
- Credit by exam Credits earned by students for achieving a threshold score or passing an exam. The timing of exam scores must be considered, as well as the scores that will be recognized, since postsecondary institutions may apply different criteria to award credit. Other exam options may include portfolio documentation or performance assessment.



# Establish cross-sector linkages between K–12 and postsecondary system offices to track credit award

Postsecondary-credit awards may not be transcripted within secondary databases. To track credit awards across education levels, state agency staff should negotiate data-sharing agreements that enable secondary department administrators to collaborate with their postsecondary colleagues, located at the state agency or individual colleges, to track credit awards.

The Nevada Department of Education is working to implement School Courses for the Exchange of Data (SCED) into its Infinite Campus data-management system to identify students who earned articulated college and/or dual credit while in high school. Currently, Nevada has a system of banked credit that flags whether a student has qualified for an award. Following graduation, students have up to three years to enroll in a postsecondary institution and request that the credit be recognized. Institutions may choose whether to recognize the credit and award differing amounts of credit depending upon how it aligns to their programming.

Source: Information provided during 5S2 QIW Meeting by Nevada, May 25, 2021.

## Who pays for early postsecondary credit?

Early postsecondary credit opportunities often come with costs, either for tuition and fees for enrollment in a postsecondary course, or for exam fees associated with programs like AP, International Baccalaureate, or industry certifications that might award postsecondary credit. States should consider the equity implications of potential costs as they construct their performance measure and goals.

- **States** States may legislatively provide for financial support for students pursuing a recognized postsecondary credential. Others may use school foundation funding to reimburse or award school districts based on the number of students attaining credit.
- **Districts** Local districts may cover the costs of early postsecondary opportunities for students, such as through cost-sharing agreements with local postsecondary institutions.
- Individuals The costs associated with postsecondary credit award are borne by the student. This strategy has equity implications, as some students do not have the ability to pay for the credit.

# Is access equitable? Disaggregate enrollment data to assess student access to postsecondary credit-awarding CTE programming

States are required to report on the characteristics of students attaining postsecondary credit. Consider conducting a similar analysis to assess the extent to which students have equitable access to credit-granting coursework. Possible analyses could include:

- *Availability of offerings* Calculate the race/ethnicities or special population characteristics of students enrolled in districts offering postsecondary credit and compare with those that do not.
- *Site characteristics* Assess the physical and virtual accessibility, urbanicity, or socioeconomic status of districts offering postsecondary credit and compare with those that do not.
- *Program types* Analyze the gender or special population characteristics of students enrolling in differing CTE program types to assess whether opportunities are equitably accessible across subject areas.

## **Suggested data elements**

Tracking postsecondary credit awards requires tracking the following:

□ credit awarded

- □ course grade
- $\hfill\square$  cluster and pathway where credit is awarded
- □ funding used to support award

□ institution granting credit

### Share research documenting the benefits a postsecondary credit confers

To support stakeholders in understanding why early postsecondary credit opportunities matter, highlight research studies that document the outcomes students who earn postsecondary credit while in high school achieve. This will offer context for indicator results.



The Texas Education Agency's College, Career, and Military Prep Division created a webpage for information about dual credit. It includes a research study the Texas Higher Education Coordinating Board and the University of Texas System conducted about the benefits of dual-credit programs and courses. The site also addresses frequently asked questions and offers data on student awards.

Source: Texas Education Agency | https://tea.texas.gov/academics/college-career-and-military-prep/ dual-credit

## **Questions for consideration**

- Does your state have quality measures or a policy in place to align secondary and postsecondary credit (articulated credit, dual-enrollment, registered apprenticeship) within a CTE program?
- Does your state have procedures to ensure that postsecondary credit data reporting for both local and administrative student records is complete and accurate?
- Does your state publish information on postsecondary credit data and reporting procedures at the secondary level and the awarding of credit at the postsecondary level to help share best practices across districts and institutions of higher education?
- Is the amount of postsecondary credit earned by students within the accountability model roughly equivalent in terms of time or skill required for award (i.e., does each CTE program award students nine college credits through articulation and/or dual enrollment)? Is there a threshold of credit that is required for the student to count within the accountability model?

# Stretch goals

- Review and analyze postsecondary credit awards across secondary and postsecondary CTE programs to determine the return on investment (lessened time to credential/degree) and transition into an aligned major.
- Analyze postsecondary credit award data to determine if all students in your state have access to postsecondary credits that promote student transfer and access to higher education. Determine if there are patterns in credit awards based on the types of postsecondary credits, the industries in which postsecondary credits are earned more prolifically, and the type of CTE programs of study or district.
- Capture information about postsecondary credit beyond attainment, which could include awards that are associated with a cost to confer, attainment requirements, and dual enrollment procedures to determine if credit awards are equally distributed across districts. If gaps are detected, what factors might explain these results (e.g., low-socioeconomic status sites where more individuals may lack resources to pay for the credentials; inequitable access to programming)?

#### Publicize dual- or concurrent-enrollment options to motivate participation



Posting information on program availability, targeted toward students and parents, can spread awareness of program options, which may lead to higher engagement. The Kansas Board of Regents has developed a listing of systemwide transfer courses, organized by discipline, that award credit that may be applied at any Kansas public institution.



lowa opted not to report on the 551 indicator because concurrent-enrollment numbers in the state are already strong, with numbers at the point of saturation. To publicize these positive results, the state releases an annual report summarizing statistics on the joint enrollment of high school students in community colleges.

Source: Kansas Board of Regents | https://www.kansasregents.org/students/transfer-articulation; lowa Department of Education | https://educateiowa.gov/article/2021/03/26/number-high-schoolstudents-earning-community-college-credit-hits-record-high

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Measurements	<b>5</b> \$1	552	553	Business Rules	Performa	nce Levels	Concluding Thoughts	Resources

# 5S3 — Participated in Work-Based Learning

High school students completing a threshold level of CTE coursework within a single CTE program or POS might be expected to have participated in an immersive WBL experience prior to graduating. This experiential learning is intended to help them apply classroom learning in the work setting and gain an understanding of careers in the field. The federal legislation defines this participation as:

## **Indicator definition**

The percentage of CTE concentrators graduating from high school having participated in WBL.

#### **Work-Based Learning**

Sustained interactions with industry or community professionals in real workplace settings, to the extent practicable, or simulated environments at an educational institution that foster in-depth, firsthand engagement with the tasks required in a given career field, that are aligned to curriculum and instruction (Perkins V, Sec. 3(55)).

*Perkins V* mandates that states adopting this indicator assess the proportion of graduates achieving CTE concentrator status who participated in a WBL experience. Given that WBL may take a range of forms, some states have categorized WBL along a continuum of experiences. (See Figure 1 for the approach taken in Nebraska.) Introductory experiences, intended to promote career awareness, help students learn about jobs within and across industries as well as the academic knowledge and technical skills needed to secure them. More advanced experiences engage students in more directed WBL that culminates in worksite placements or structured simulations.

Figure	1. Nebraska	Continuum	of Work-Based	Learning Ex	<i>cperiences</i>

PHASE 1 Awareness Strategies	PHASE 2 Exploration Strategies	PHASE 3 Work-Based Learning Strategies May require WBL endorsement			
Career Readiness Skills Identification	Career Readiness Skills Development	Career Readiness Skills Demonstration			
	,				
Career-Based Service Learning	Business Tours	Apprenticeships			
Career Fairs	Field Trips	Cooperative Education			
Lunch and Learns	Job Shadowing	Education/Training Experiences			
Research Projects	Mentorships	Entrepreneurship			
Speakers	Simulations	Health Science Clinicals			
Videos	Summer Experiences	Internships			
		Intern Nebraska			
		Youth Apprenticeships			
		Rule 47 Academy Internships			
		School-Based Enterprises			
		Supervised Agricultural Experiences			
CADEED		GANIZATIONS			
CAREER	AND TECHNICAL STUDENT OR	GANIZATIONS			

Nebraska has identified a three-phase continuum of WBL experiences that become progressively more focused as students advance in their education. For accountability purposes, only Phase 3 qualifies for inclusion in the indicator.

Source: https://www.education.ne.gov/wp-content/uploads/2019/01/WBL-web.pdf

## What qualifies as a work-based learning experience?

Collecting data that are valid and reliable begins with ensuring that providers have a clear understanding of what WBL is and how it should be structured. To do so, states have developed handbooks that lay out the expectations of a high-quality WBL experience and the components it should include. However, even with well-defined guidelines and handbooks, it can be challenging to translate what often occurs as a continuum of experiences into a single measure of participation as required under *Perkins V.* States must carefully consider what will count as WBL for the purposes of their *Perkins V* accountability indicator. While there is value in students participating in low-intensity WBL exposure (e.g., job shadows), states must report on experiences that provide "sustained interactions with industry or community professionals" as required in the *Perkins V* definition (*Perkins V*, Sec. 3(55)). Some examples of experiences that states currently support include:

- school-based enterprises
- employer-supervised intensive projects
- entrepreneurial experiences
- service-learning projects

- internships
- clinicals
- apprenticeships

## WBL During COVID-19

School and workplace closures associated with the COVID-19 pandemic made placing students at a jobsite much more difficult. Many states and districts responded by providing supportive guidance, virtual experiences, and assessment flexibility. While little research exists to document the benefits of these remote placements, states may wish to consider retaining elements of these approaches following the return to in-person schooling. With many companies transitioning to remote workplaces, students may benefit from learning how to work from afar.

Several states responded to the pandemic by supporting flexibility in WBL delivery, offering leeway to local CTE programs to provide virtual or blended workplace learning experiences. States such as Iowa, Nebraska, New York, Oregon, and South Carolina provided supportive guidance, and Minnesota allowed districts to decide whether to recognize a variety of remote career-exploration activities for WBL credit.

In addition to guidance, a few states offered specific types of virtual industry engagement. For example, Kansas created a micro-internship program for students to complete paid assignments that take up to 40 hours of work. In Kansas, the state DECA—a career and technical student organization for careers in marketing, finance, hospitality, and management—now offers its members virtual challenges to complete.

Source: https://www.acteonline.org/wp-content/uploads/2021/04/HighQualityCTE\_COVID\_ ChallengesAndInnovations\_March2021\_Final.pdf



# Clarify state policies or expectations of WBL to ensure that all students have equitable access to high-quality, consistent experiences

Work-based learning may be offered in many different forms that may be complicated to understand. States should consider developing guidebooks to ensure local providers are offering high-quality programming aligned with state policies.

*lowa's WBL guide offers educators information on the components of quality WBL programs, describes different types of experiences, and reviews teacher licensure requirements as well as the roles and responsibilities of teachers, school administrators and counselors, employers, and student and parents. Resources, a glossary of terms, and sample forms are included.* 

Delaware has made a statewide effort to expand WBL opportunities for all students. The state's policies and procedures document provides guidelines to ensure consistent student experiences across the state and defines the logistical requirements for credit-bearing WBL experiences.

Oklahoma created a WBL manual profiling a continuum of state-approved WBL activities. Each activity includes an overview of the approach and how it can be implemented, a suggested timeline, and resources to support educators in its adoption.

Illinois developed a tool kit focused on the "Career Development Experience" as articulated in legislation. The tool kit includes the state's WBL continuum, terminology, and a list of "whys" for student and employer participation.

Source: lowa | lowa Work-Based Learning Guide August 2020 | Delaware | Work-based Learning Policies and Procedures https://education.delaware.gov/wp-content/uploads/2020/05/cte\_2020\_04\_WBL\_ policies\_and\_procedures.pdf.pdf; | Oklahoma | WBL Implementation Guide https://oklahoma.gov/ careertech/educators/work-based-learning/implementing-wbl/implementation-guide.html; Illinois | WBL Implementation Guide https://edsystemsniu.org/career-development-experiencetoolkit/



## What constitutes a sustained interaction?

The definition of WBL in *Perkins V* indicates a requirement for a sustained interaction with business and community professionals. Some states are establishing a threshold level of interaction to ensure that students benefit from their experience. States are using differing criteria to establish these expectations.

- No No threshold has been established.
- Yes The state has established a threshold level of student participation. This could be the number of hours, weeks, or months or a number of credits earned in a WBL-related course. Experiences failing to achieve this threshold do not count toward the indicator.

#### Document requirements: Defining a "sustained interaction"



A WBL experience may be open to interpretation unless it is clearly defined. To ensure that placements meet a minimum threshold, some states are establishing criteria for what constitutes a qualifying experience. Communicating the expectations of a WBL can ensure local programs are consistent and support states in comparing outcomes.



North Dakota recognizes two forms of WBL: (1) supervised placements offered at the worksite or (2) simulated environments in an educational setting.

To qualify as a sustained interaction, the experience must meet a threshold of 40 hours of student participation during enrollment in the program.

Source: North Dakota | Sustained interaction definition https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiutrDR0ePwAhWMt54KHR2BAIQQFjACegQICxA-D&url=https%3A%2F%2Fwww.cte.nd.gov%2Fsites%2Fwww%2Ffiles%2Fdocuments%2FPerkins%2FWBL\_Guidance.docx&usg=AOvVaw1JnkxHYdD4ZdgmXYQGosSm

# Must the work-based learning experience be aligned to the CTE program or program of study?

Current law does not specify whether the WBL experience must be related to a student's specific CTE program, or how to make that determination. Currently states are opting for one of these measurements:

- Aligned experience Only WBL experiences within the field of study count. This might eliminate opportunities for students to apply transferrable skills but does ensure that the experience is "aligned to curriculum and instruction" as required by the definition.
- No alignment required Any WBL experience counts. States choosing this approach might assume that any WBL experience is valuable to students, even if it is not directly related to the CTE program. Using this approach would likely increase performance on the indicator, but including these experiences will require intentional actions by educators to ensure experiences are still aligned to broader pieces of curriculum and instruction.

## How will data be obtained?

Since many states are just beginning to track WBL participation, there are few data sources available for collecting this information, particularly if states are interested in including a broad set of experiences. Some options are noted below:

- **Course codes** This can be useful if there is a standard set of course codes in the state to capture intensive WBL experiences. However, using separate course codes could miss experiences that are embedded in other CTE courses, such as health care clinical hours, and often lack quality controls.
- Local data entry As a broader alternative or addition to course codes, local CTE providers can enter information about WBL participation in data systems.

#### Provide educators with guidance on recording WBL placements



Because of the complexity of tracking WBL placements, states may have difficulty collecting accurate self-reported data from local providers. Local providers also may have difficulty entering workplace experiences into state databases.

California has dedicated a webpage of the California Longitudinal Pupil Achievement Data System to support educators in coding WBL data for entry into the database. The site includes examples of training videos and supports.

The second second

To differentiate among student experiences, South Carolina has developed a nuanced set of codes that district administrators can use to record the type of WBL offering in which students participate. These data can support research efforts seeking to assess the relative value of different types of WBL experiences.

Source: California | https://documentation.calpads.org/OnlineMaintenance/ StudentDataMaintenance/StudentDetailsWBLR/#work-based-learning-wblr; South Carolina | https://ed.sc.gov/instruction/career-and-technical-education/career-guidance/work-basedlearning/wbl-implementation-guide-2022/

# Are there additional quality criteria for work-based learning experiences that must be in place?

Some states are considering additional quality criteria that must be in place for WBL experiences to count toward this indicator. These criteria vary greatly across the country, depending on state and local context, systems, and priorities. Consider:

- teacher credential or training requirements
- student learning plan requirements
- requirement for linkages to a specific CTE course
- portfolio review requirements
- student pay requirements

 requirements related to the location of experiences (worksite vs. educational facility vs. virtual or simulated)

• student self-reflection requirements

Vermont is developing new analysis strategies to compare program performances statewide (e.g., all secondary automotive technology programs) to identify gaps, trends, and opportunities for sharing exemplary performance.

*Source: Information provided to QIWs by Vermont, June 21, 2021.* 



# Is access equitable? Disaggregate statewide data to assess whether students have equitable access to WBL experiences

Consider analyzing CTE concentrator data to assess the extent of student access to WBL experiences. Possible analyses could include the following:

- *Site characteristics* Assess the urbanicity or socioeconomic status of districts offering WBL opportunities and compare it with those that do not.
- *Program types* Analyze the extent of WBL participation across CTE programs and assess whether rates vary by gender or special population characteristics of students.
- *Compensation* Cross-tab whether concentrators' access to paid vs. unpaid WBL experiences is associated with their gender, race/ethnicity, or special population characteristics.
- Continuum of experiences Analyze whether rates of participation along the continuum of WBL experiences vary by gender or special population characteristics of students, such as advanced nontraditional experiences by gender.

## **Suggested data elements**

Federal accountability reporting requirements mandate that states employing this indicator assess whether students participated in a WBL experience. While this can offer information on the extent to which graduating CTE concentrators are engaged in WBL, it offers limited insights into how students may benefit from differing experiences. Below are some data elements that might be helpful in constructing this measure as well as more broadly improving the quality of WBL experiences.

- □ type of WBL placement
- □ WBL start/end date
- □ name of district/school
- name of employer (optional: address; contact information; company size)
- □ time of participation (e.g., hours)
- □ grade awarded and/or supervisor rating

- □ paid or unpaid
- □ placement related to CTE POS
- □ career cluster in which placement occurs
- Credential, badges awarded
- □ course credit award
- □ teacher certification for WBL

## **Questions for consideration**

- Does your state have quality measures, standards for work-based learning, or a policy in place to ensure high-quality work-based learning exists within a CTE program?
- Does your state have established procedures to ensure that work-based learning data reporting for both local and administrative student records is complete and accurate?
- Does your state publish information on work-based learning data and reporting procedures at the secondary level and credit for prior learning policy at the postsecondary level to help share best practices across districts and institutions of higher education?
- Is the quality of work-based learning experienced by students within the accountability model roughly equivalent in terms of time or skill required for award (i.e., does the work-based learning experience represent an education value to the young person through the award of college credits, wages, or experience needed to attain a credential/future employment in the industry)? Is there a threshold of time that is required for the work-based learning experience to count within the accountability model?



- Consider the review and analysis of how work-based learning policy connects to postsecondary credit for prior learning policy and registered apprenticeship to determine the return on investment (lessened time to job placement or increase in wages).
- Review the types of WBL experiences students are participating in and consider how you may increase entry points for access to paid work experiences.
- Analyze work-based learning award data to determine if all students in your state have access to an array of work-based learning experiences that promote student transition into the workforce and access to higher education. Determine if there are patterns in work-based learning participation based on the types of work-based learning experiences, the industries in which students participate in work-based, and the type of CTE programs of study or district.

#### How do students benefit? Assess the quality of students' WBL experiences

Students participating in a WBL placement may put different levels of effort into their work. Accordingly, some states have put in place strategies for assessing the quality of a student's WBL experience through the collection of teacher or supervisor ratings.



Tennessee has developed a tool kit to support educators in crafting highquality WBL placements, including expectations for students to create portfolios documenting their experience.



Virginia has created the High-Quality Work-Based Learning Guide to assist educators in structuring high-quality programs. Included are forms to assist in structuring and evaluating student placements in each of the 12 experiences recognized by the state.

Source: Tennessee tool kit | https://www.tn.gov/education/career-and-technical-education/workbased-learning/wbl-toolbox.html; Virginia WBL guide | https://www.doe.virginia.gov/instruction/ career\_technical/work-based\_learning/documents/wbl-guide.docx



## Expand opportunity: Provide employers with information and resources to motivate their engagement

Employers may have limited understanding of what WBL is and why they might want to host a student. Others may appreciate the benefits but are unsure how to engage with students or navigate the legal complexities of having a youth on-site. To encourage employer participation, states are developing online resources to convey the importance of WBL and how it can benefit both students and employers.



Georgia has created a WBL website directed at an audience of employers. The site provides information about the state's WBL program and how it can assist employers in creating a technologically sophisticated, career-oriented workforce. The site includes videos and statistics communicating what WBL is and why employers should participate.

Source: https://gawbl.org/

Executive Summary		Federal Legislation			Quality Indicators		CTE Populations		Indicator Construction	
Measurements	<b>5</b> 51	552	553	Business Rules		Performa	nce Levels	Conc	luding Thoughts	Resources

# How Are Outcomes Calculated? — Establishing Business Rules

Given the high stakes associated with achieving performance targets, it is imperative that state data collection and analysis procedures are clearly documented and consistently applied over time. Business rules describe the process that data analysts follow to calculate quality indicator outcomes. These guidelines are maintained in written and/or digital format and updated annually to ensure that agency staff members follow standardized procedures to produce reliable information.

Documenting how data are analyzed to calculate performance indicators is critical. Consequently, it is imperative that states develop reporting guidance to ensure providers understand what data are to be collected, how data are to be entered into local

Think of written business rules as succession planning for data analysts.

information systems or state collection templates, and when data are to be reported.

## **Reporting guidance**

School districts must collect detailed information on students participating in CTE programming and the educational outcomes they attain; report on district CTE programming, including course descriptions and staffing; and document fiscal and administrative data. In some instances, these data are directly harvested from institutional databases through software extracts or file uploads.

Since data reporting can be a complicated process, states frequently produce reporting procedures detailing how CTE data are entered. While no one approach will work for all states, well-designed guidelines include:

- background on federal and state CTE reporting requirements
- field descriptions and data entry coding
- data submission instructions
- glossary of terms

• reporting deadlines



### Establish "perpetual" reporting timelines

Avoid having to update annual reporting deadlines by establishing recurring submission dates based on a point in time, such as "Monday of the second week in September." This can save staff time updating websites and allow staff members to enter important dates in their electronic calendars, which will automatically remind them of upcoming submission requirements.

#### Produce video shorts to provide users with form-specific instructions

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In lieu of an hourlong recorded webinar, create close-captioned 30-second videos demonstrating how data should be entered. Using free software available online, you can record your desktop interactions with data templates and fields. This just-in-time support for a specific need can free up data entry staff from watching an entire video.



South Dakota has a Perkins web portal for district staff to learn about using CTE data. The site contains instructions for entering and using data, provided in PDF files and on-demand training videos.



The Michigan Department of Education provides an online CTE Information System training hub for local data analysts and administrators. The training videos include self-study instructions.

Source: South Dakota | Perkins web portal https://doe.sd.gov/cte/data.aspx; Michigan | http://support. cteis.com/Training/Training-Videos

## **Data dictionaries**

Data dictionaries are foundational to CTE performance reporting. Dictionaries are used to catalog the data elements contained in state data systems and promote the use of consistent terminology. While states may use different approaches to structure these documents, components may include descriptions of federal and state CTE and workforce legislation, statewide initiatives, and policies; detailed descriptions of data elements; and a glossary of commonly used terms.

Data dictionaries for CTE may be organized as stand-alone documents, specifically designed for CTE programming, or integrated into statewide data dictionaries containing information on all educational data collected in the state.

## **Data Elements**

Data elements are the building blocks of state CTE reporting. Used to describe, and in many instances quantify, student characteristics and program outcomes, elements may be represented in numeric or text formats. To ensure that elements are clearly understood, data analysts maintain fields that describe how the element is defined, collected, and used in reporting.

While states maintain their own data dictionaries to reflect state CTE programming, Figures 2 and 3 provide some examples:

Name of data element	How the data element is referred to in the state system
Variable name or number	Unique and permanent alphanumeric identifier often used by data analysts or database managers
Туре	Description of data format (e.g., string, float, integer)
Variable coding	Definition of values that the element may take
Definition	A brief description of the data element
Functional, policy or legal description	Explanation of why the data element is collected, how it will be used, and policy, and/or legal implications for its collection
Source	How data are collected

#### Figure 2. Examples of Data Element Fields

Timing	When data are collected
Date implemented	The first date on which the data element was collected
Date sunset	The last date on which the data element was collected
CEDS mapping	Description of how the data element maps to Common Education Data Standards (CEDS)
Validation checks	Specific validation that occurs for each data element
Notes	Information about the data element
Common errors	Guidance on how to resolve common errors
Warnings	Indication that the data entered does not meet the standards outlined

#### Figure 3. Examples of a State Data Dictionary Element



The Utah System of Technical Colleges (UTech) Data Dictionary outlines data elements and core reports necessary for accurate reporting to the legislature and other stakeholders. The Data Dictionary is approved annually by the UTech Board of Trustees and is considered statewide policy. Each data element contains the following information:

- element number
- element name
- field name
- field format
- definition

- field value
- field attributes and examples
- effective data
- comments
- reference

Source: Utah System of Technical Colleges Data Dictionary https://ushe.edu/wp-content/uploads/pdf/ utech\_docs/policies/Final-FY2021-data-dictionary.pdf



In New Jersey, the CTE Submission Data Handbook includes data elements that are currently collected and maintained by schools, districts, and the New Jersey Department of Education (NJDOE). Each data element contains the following information:

- name of the data element
- NJDOE number
- definition of data element
- functional, policy, or legal description
- CEDS mapping

- if this data element is required
- acceptable values
- validation checks
- additional notes
- common errors
- snapshot dates

Source: New Jersey CTE Submission Data Handbook https://www.njsmart.org/njr/ks/CTE Submission/CTE Submission Student Data Handbook.pdf

## **Programming Code**

Data analysts create computer programming code to produce indicator statistics.<sup>6</sup> These instructions describe the data elements that will be used and how they will be combined to generate outcomes. Programmers often will use multiple data elements and specify acceptable variable codes for each element to generate performance results.

For example, to calculate the denominator for the following *Perkins V* quality indicator, an analyst might need to access the following data elements:

#### Denominator

The number of CTE concentrators graduating from high school with a regular high school diploma or certificate of completion as of June in the reporting year

- CTE concentrator
- high school graduate
- high school diploma type
- graduation date

<sup>&</sup>lt;sup>6</sup> Programming instructions may be code based, meaning that analysts write specific programming instructions, or menu based, in which analysts either use prepopulated code to run data (often found in Excel or SPSS) or conduct SQL database queries to produce outcome data. Since code-based instructions can be customized to specific state conditions, the reliability and replicability of this approach may produce more consistent results over time.

Depending upon how the state maintains data, analysts may need to perform additional calculations. For example, states that collect student-level course data might derive the CTE concentrator variable based on the number of CTE courses or course credits that are completed. In this instance, analysts would need to know which courses qualify toward meeting the CTE course threshold and in which CTE POS they fall.

#### Document analysis approaches used to generate indicators

North Carolina produces requirements specifications for each indicator to standardize reporting across years. Documentation includes functional requirements relating to data sources and selection criteria; data specifications and security issues; and presentation requirements describing the levels of disaggregation. A document revision history and distribution/sign-off lists also are included.

Source: Lassiter, Jessie. 2019. CTE Analysis and Reporting System, 551 Program Quality – Attained Recognized Postsecondary Credentials, LPS Performance Indicator 551 – Statewide/Region/LEA/School: Requirements Specification. Raleigh, NC: Public Schools of North Carolina.

#### Annotate programming code to document analysis

The District of Columbia uses code-based programming to analyze student-level data. To ensure instructions are clear to future analysts, programs are annotated to explain calculation purposes and historical changes are documented to inform trend analyses.

Source: Office of the State Superintendent of Education, District of Columbia.

Because of the complexity of indicator calculations, state data analysts should annotate their CTE programming code or processes so that others can understand the steps that they followed to produce analysis results. Where CTE data elements must be pulled from multiple data sources, analysts may wish to consider integrating these elements into state data systems so that all information is housed in a single location.

## **Protecting Student Privacy**

States collect a great deal of information on CTE program performance, some of which may be maintained at the individual student level. Given the sensitive nature of these data, state agency staff must take precautions to protect student confidentiality and review the U.S. Department of Education's resources on the *Family Educational Rights and Privacy Act* and student privacy. Of particular interest to state agency staff, the resources include the data stewardship publication and joint guidance on matching.

## **Quality Assurance**

Because of the high stakes associated with data reporting, states have adopted quality assurance guidelines to ensure that federally reported and publicly posted data are accurate. The examples in Figure 4 are good practices.

	In some at slate many lasting short to the sectors of interview of the
reporting tools	templates. To minimize errors, build automatic checks into data-reporting tools that alert users to problems with their entries. These may include macros that indicate if
	concentrator counts exceed student groups and when numerators are larger than denominators. Eliminating front- end errors can save programmers time and avoid the need
	for repeated data requests.
Standardize agency file naming and versioning conventions	Staff turnover can cause confusion if the person leaving had their own idiosyncratic approach to labeling files. Establish standardized practices for naming files so their contents can be understood without having to open them. Include a version number (e.g., V1, V2, or V2.1) to record chronological changes and status notations (e.g., draft, final) and establish an archive folder to maintain outdated files.
Share preliminary output with district providers prior to finalizing reports	Local educational agency staff are in the best position to assess the accuracy of their data. To ensure initial data runs are accurate, distribute indicator calculations along with student counts to verify outcomes. Sharing data can promote provider buy-in and help ensure that results are accurate.
Document whether students	Students with disabilities may require some form of
appropriate accommodations	federal legislation, including the <i>Americans with Disabilities</i> <i>Act of 1990</i> and Section 504 of the <i>Rehabilitation Act of</i> <i>1973</i> , which require access and prohibit discrimination in all federally funded programs. Review state policies
	regarding exam administration and, where necessary, update guidance to ensure providers are aware of available accommodations. Consider building in a data field to
	capture this information, which can direct attention to its importance.

## Figure 4. Examples of Quality Assurance

# Publicize updates to data collection procedures

Education accountability systems are constantly evolving to keep pace with policy changes and technology advancements. Centralized resources that can be accessed on an asynchronous, as-needed basis can ensure that district administrators keep pace with updates.



To communicate changes relating to data, the Ohio Department of Education places accountability updates on its CTE data and accountability webpage. Similarly, Washington updates its data manual and reporting guidance for its longitudinal data warehouse of education data, the Comprehensive Education Data and Research System, where CTE data is collected. The data manual includes publications updates that flag new data elements and business rule changes.

Source: Ohio | http://education.ohio.gov/Topics/Career-Tech/CTE-Performance-Data-and-Accountability; Washington | https://www. k12.wa.us/sites/default/files/public/cedars/pubdocs/Data%20 Manual%202021-22.pdf



## **Questions for consideration**

- Do you have backups in case of a ransomware attack or catastrophic data loss? What contingency plans are in place in the event your data systems are compromised, and how will you access the data?
- What quality assurance practices are in place to ensure that year-to-year reporting is performed consistently? For example, do you routinely use trend data to assess how current-year data compare with previous years?
- Are state data dictionaries readily available to district staff and the public? If not, how are stakeholders expected to make sense of data that are published?



- Ultimately, state performance results depend upon the quality of the information that is put into state systems. How confident are you that district CTE administrators and teachers understand what is asked of them? Consider holding focus groups with representative stakeholders to get feedback on the CTE data entry process and how it might be improved.
- Are you prepared for unanticipated staff turnover? See if your team can replicate your prioryear CAR submission without the help of your regular data analyst (i.e., using only the written instructions you have on file). Use the results to identify gaps in your reporting guidelines.

#### Create administrative guidance to support educators in entering CTE data

A myriad of reporting requirements and jargon associated with the *Perkins V* legislation can confuse district administrators. This has the potential to undermine the quality of the data.

South Carolina has created the detailed Student Reporting Procedures Guide to assist school district, high school, and career center staff in administering CTE data. The document summarizes data-collection expectations and offers instructions to ensure data are entered correctly into PowerSchool, which is used statewide to administer data. South Carolina has a state-defined page in PowerSchool for CTE. The state created the page and included business rules for data entry.

Source: CTE Student Reporting Procedures Guide https://ed.sc.gov/instruction/career-and-technicaleducation/performance-accountability/cte-data-collection-and-reporting/2020-21-srpg/

#### Making connections: Crosswalk to national data standards

Recognizing that states have unique data-element naming conventions, the federal government and other organizations have created nationwide standards to which states can crosswalk their data. Consider incorporating these standardized variable associations into your data dictionary so that other states and researchers understand how your data relates. To do so, consider the following:

- *Common Education Data Standards (CEDS)* effort to streamline reporting across preschool, K–12, postsecondary, and workforce systems. [https://ceds.ed.gov/]
- North American Industry Classification System used to classify U.S. business establishments for the collection, analysis, and publication of statistical data. [https://www.naics.com/]
- School Courses for the Exchange of Data (SCED) common classification system for school courses. [https://nces.ed.gov/scedfinder/Home/Resources]
- Standard Occupational Classification system federal standard used to classify workers into occupations when collecting, analyzing, or disseminating data. [https://www.bls.gov/soc/]
- Credential Engine nonprofit that maintains a Credential Registry that includes credential descriptions, standards, lists of credentialing organizations, and competencies.
   [https://credentialengine.org/]



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# What are Acceptable Outcomes? — Establishing Performance Levels

States are required to establish levels of performance for each *Perkins V* quality indicator that they have adopted for federal reporting purposes. These state-determined performance levels are objective, quantifiable, and measurable targets that are set by the state for the percentage of CTE concentrators who will achieve success on each of the performance indicators.

The overall performance level set for concentrators statewide on each indicator must be the same for all groups of CTE concentrators (i.e., for all genders, race/ethnicities, and special population groups) and across each career cluster. States described the procedures used to set these annual performance targets in their *Perkins V* four-year state plan, including how they align with the levels, goals, and objectives in other federal and state legislation (*Perkins V*, Sec. 122(d)(10)). Consultation with key state stakeholders was also required.

Once established, these state-determined levels of performance may be revised prior to the third program year covered by the state plan or if unanticipated circumstances arise or changes are made to a state's data-collection or measurement approach. Recognizing the challenges introduced by the COVID-19 pandemic and to accommodate states that acquired additional data, in spring 2021 OCTAE offered states the option of updating their proposed performance goals.

States and local grantees that fail to achieve 90 percent of a state-determined performance level for all CTE concentrators on any indicator are required within *Perkins V* to implement a program improvement plan. This plan must address the:

- disaggregated categories of certain groups of students, including students who are members
  of special populations identified in Section 3(48) of *Perkins V* and groups of students described
  in Section 1111(h)(1)(c)(ii) of the *ESEA*, for which there were quantifiable disparities or gaps in
  performance compared with all students or any other category of students; and
- action steps that will be implemented in the current program year to improve the state's performance on the core indicator(s) and for the identified categories of students.



#### Using CTE performance levels to target support

North Dakota uses CTE performance data to frame its annual Office of Civil Rights visits to grantees. Institutions are divided into five groups, with each assigned to a five-year review cycle. Student performance levels for sites within groups are assessed—based on gender, race/ ethnicity, and disability status—and compared against each site's overall CTE population. Those with large gaps are assigned a relatively higher score. Scores are assessed relative to the number of years since they last had a review, and four schools with the highest scores and largest number of years since a visit are assigned a releview visit for the year.

## **Baseline performance**

In order to set ambitious yet attainable performance targets, states were first required to establish baseline levels of performance for all indicators at the outset of the legislation. The baseline performance levels represented each state's best approximation of current performance on each measure and served as the floor for performance targets for future years. This exercise was complicated in the case of the new quality indicators, for which many states did not yet have administrative policies to guide service delivery or data systems to collect data, and for which little historical data existed. Consequently, state approaches to constructing baselines varied and in many cases were only rough estimates of expected performance.

An examination of states' initial baseline performance levels illustrates the variation in how the quality indicators are constructed. Levels ranged widely; for example, for 5S1, 10 states suggested a baseline performance level of less than 25 percent, as compared with four states that have established levels of 75 percent or higher (Table C). This range is indicative of the differing approaches states have taken in identifying CTE concentrator populations and metrics. For example, states that chose the most restrictive criteria for including students in their numerators, such as requiring only paid WBL experiences or including only a small number of recognized postsecondary credentials on their list of those eligible to be counted, might be expected to have lower baseline performance levels than states that chose less restrictive criteria.

	Number of States	Number of States	Number of States		
Baseline Performance Level Range	5S1 — Recognized Postsecondary Credential	552 — Postsecondary Credit	5S3 — Work-Based Learning		
0–25%	10	9	19		
26-50%	8	2	5		
51-75%	2	0	2		
76–100%	2	1	3		
TOTAL	22	12	29*		

#### Table C. Baseline Performance Level Range for the Quality Indicators, by State: 2019–20

\* 26 states plus the District of Columbia, the Republic of Palau, and Puerto Rico.

Source: Office of Career, Technical, and Adult Education, U.S. Department of Education. Personal communication 2021.

## **Establishing performance targets**

States typically rely on trend data to update annual targets for federal reporting purposes. The introduction of new quality indicators may present challenges for states that are still in the early stages of indicator adoption, particularly if established baselines are not reliable. Here are a few strategies that might be useful:

Assess historical performance data — It is best to establish performance levels based on the
rolling average of past performance. If your state is in the early stages of implementation, you
may wish to place additional weight on more recent statistics.

**NOTE:** States should stipulate the time period used to calculate performance. States typically adopt a three-year or five-year rolling average.

- **Conduct analysis of existing conditions** Where historical data do not exist, states may assess outcomes for a representative set of providers to establish initial estimates that can be updated as new information is collected.
- **Consult data from other states** Identify states with similar populations and accountability system characteristics that do have existing data to establish potential levels.
- Set performance levels based on first-year results Establish data-collection systems and processes and set levels based on initial results from the transition or baseline year.

It may be that performance improvements may be most readily obtainable for disaggregated student groups that are performing below the state average. When setting annual targets, consider how your overall state performance would change if relatively greater (but realistic) performance improvements were achieved for these individual groups while above-average performers remained constant (or made more modest improvement).



## Consider the consequences of the COVID-19 pandemic on your state-established performance levels

School closures and the shift to remote learning had profound effects on the provision of CTE programming. As a consequence, data from the 2019–20 and 2020–21 school years may be significantly different than prior years. Lost instructional time may also complicate providers' capacity to achieve pre-pandemic levels of performance. Advance CTE and the Association for Career and Technical Education have examined the issues associated with setting performance targets during the pandemic in a white paper titled *Mitigating Unanticipated Circumstances: Resetting Perkins V State Determined Performance Levels During the COVID-19 Crisis.* 

Source: https://www.acteonline.org/wp-content/uploads/2021/02/Resetting\_Perkins\_SD-PLs\_2021.pdf



### Disaggregate data across multiple dimensions to assess student outcomes

Students are not singular constructs. To obtain a finer grain of detail, consider running crosstabulations to assess performance outcomes for students who may fall into multiple groups (for example, a female student with a disability who is also an English-language learner). Some examples could include:

- WBL by gender and grade level
- dual-credit attainment by program type and disability status
- recognized postsecondary credential by urbanicity and race-ethnicity

While small cell sizes may complicate analysis, where data permit, the results can be used to identify equitable accessibility and performance gaps across student groups with multiple differentiating characteristics.

## **Questions for consideration**

- How effective are you in engaging state stakeholders in setting performance targets? Do they understand the process or are they simply rubber-stamping estimates?
- What criteria are you using to establish annual performance targets? For example, are they tied to state goals or aligned with that of other federal legislation?
- Do underperforming providers understand how many more students would need to achieve a positive outcome to flip their performance on the indicator? Could percentage deficits be turned into numbers so that school staff have actionable information?



- Disaggregate your data and calculate the level of improvement that each underperforming student group would need to achieve to attain your state target. Is the annualized rate of change needed to achieve the state target realistic?
- Examine the professional development services being offered in your state and assess whether the type and level of investment are proportional to the size of observed performance gaps. Might there be a different allocation to achieve your annual performance targets?



#### Supporting providers in improving performance

Wyoming state agency staff meet annually with all *Perkins V* grantees on an individual basis to review their performance outcomes—overall and for disaggregated student groups. These Technical Education and Assistance Meetings, known as the Wyoming TEAM initiative, support local educational agencies in identifying equity gaps and strategies to address them. A customized data dashboard also is produced for each site.

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# **Concluding Thoughts**

The addition of new *Perkins V* program quality indicators introduces reporting requirements that will require some changes to your existing data system procedures and practices. Consider using this as an opportunity to review and fine-tune the operation of your overall CTE data system and, where feasible, apply the lessons contained in this guidebook to all indicators.

As you move forward, here are some practices that you should consider adding to your repertoire:

- **Conduct annual systems audits** The educational system is dynamic. Consider conducting an annual audit of your policies and procedures to assess whether existing data-collection practices are still relevant. This may entail updating data dictionaries and programming code, reviewing reporting timelines, and considering what worked well and what needs to change. Time this audit to occur immediately following the close of the prior academic year while the experience is still fresh.
- Conduct an annual data system equity audit Use an equity audit to identify data collection and/or analysis procedures that may produce biased or discriminatory information. This may include investigating the processes used to gather data and assessing any gaps in coverage. The information contained in your CTE databases must be accurate, comprehensive, and representative of your student populations if your outcomes are to be trusted.
- Apply an improvement vs. compliance mindset The high stakes associated with *Perkins V* performance can lead to a focus on achieving performance levels. While avoiding consequences is important, adopting an improvement mindset is vital, for example by seeking to understand the root causes for performance differences across program types and diverse student groups (root cause resource https://cteresearchnetwork.org/sites/default/files/2021-02/CTE-DataPractitonerModule2-508.pdf).
- Contextualize district performance in terms of individual students Outcomes reported as percentages may disguise underlying performance. Translate district shortfalls into the number of students who need to achieve a given outcome for the target to be attained. Knowing that nine more students need to participate in a WBL experience may be more understandable than reporting a percentage gap.

- Identify "benchmark" states to compare results States are applying differing methodologies to identify CTE concentrator populations and establish quality indicators. Use the criteria profiled in this guidebook to identify similar states—inclusive of population demographics, geography, and measurement approaches—that you can use to assess your relative performance.
- **Provide annual training to local data administrators** Collecting CTE data can be a complicated undertaking for district office staff, who may lack understanding of CTE offerings and legislated language. Schedule annual trainings to update staff on reporting expectations and consider developing online modules that can be viewed asynchronously.
- Institutionalize your systems: What would happen if everyone left? Your data systems are
  more complicated than you realize. Review your system operations to identify if your processes,
  databases, and reporting procedures are clearly documented. In the event of unexpected turnover,
  replacement staff should be able to replicate critical reports using written guidance as a reference.

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#### Seek out best practices: Never stop learning

The field is constantly evolving, both in terms of CTE program delivery and information technology capabilities. Keep up to date with the professional literature and share with staff publications and white papers of high value. The CTE Research Network is dedicated to strengthening the capacity of the field to conduct and use rigorous CTE *resea*rch.

Source: CTE Research Network | https://cteresearchnetwork.org/



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# Resources

## **Federal resources**

CAR Guide: U.S. Department of Education, Office of Career, Technical, and Adult Education, *The Carl D. Perkins Career and Technical Education Act of 2006, as amended by the Strengthening Career and Technical Education for the 21st Century Act (Perkins V): Guide for the Submission of Consolidated Annual Reports*, OMB Control Number: 1830–0569. Expiration Date: 06/30/2022. https://cte.careertech.org/sites/default/ files/files/resources/Beyond\_Numbers\_Design\_Principles\_CTE\_Data\_2020.pdf

Data Stewardship Publication: https://studentprivacy.ed.gov/resources/data-stewardshipmanaging-personally-identifiable-information-student-education-records

Joint Guidance on Matching: https://studentprivacy.ed.gov/resources/joint-guidance-datamatching-facilitate-wioa-performance-reporting-and-evaluation

*Perkins V* Legislation: *Strengthening Career and Technical Education for the 21st Century Act* (Public Law 115–224): https://www.congress.gov/115/plaws/publ224/PLAW-115publ224.pdf

Perkins State Plans and Data Explorer: https://cte.ed.gov/dataexplorer/

Protecting Student Privacy: https://studentprivacy.ed.gov/

SCED Finder: https://nces.ed.gov/scedfinder/Home/Resources

## **General indicator resources**

Advance CTE. 2021. *Beyond the Numbers: Design Principle for CTE Data Reporting*. Silver Spring, MD: Advance CTE. https://cte.careertech.org/sites/default/files/files/resources/Engaging\_Special\_ Populations\_April\_2021.pdf

Advance CTE. 2021. Career Readiness Data Quality and Use: Policy Benchmark Tool. Silver Spring, MD: Advance CTE. https://dataquality.careertech.org/
Advance CTE. 2021. Case Study: Kentucky Center for Statistics and Department of Education Data Partnership. Silver Spring, MD: Advance CTE. https://dataquality.careertech.org/sites/default/files/case-studies/ DataQualityCaseStudy5\_Kentucky\_2021.pdf

Advance CTE. 2021. Perkins V *Promotes Cross-System Collaboration*. Silver Spring, MD: Advance CTE. https://cte.careertech.org/sites/default/files/files/resources/PerkinsV\_CrossSystem\_2021\_0.pdf

Advance CTE and the Association for Career and Technical Education (ACTE). 2021. *Mitigating Unanticipated Circumstances: Resetting* Perkins V *State Determined Performance Levels During the COVID-19 Pandemic*. Silver Spring, MD: Advance CTE and ACTE. https://cte.careertech.org/sites/default/files/ files/resources/Resetting\_Perkins\_SDPLs\_2021.pdf

Association for Career and Technical Education. 2021. *High-Quality CTE During COVID-19: Challenges and Innovations*. Alexandria, VA: Association for Career and Technical Education. https://www.acteonline.org/wp-content/uploads/2021/04/HighQualityCTE\_COVID\_ChallengesAndInnovations\_ March2021\_Final.pdf

Career and Technical Education Research Network: https://cteresearchnetwork.org/

Ezeugo, E., Klein, C., and Whitfield, C. 2021. *Privacy and Security in State Postsecondary Data Systems: Strong Foundations 2020*. Denver, CO: SHEEO. https://postsecondarydata.sheeo.org/wp-content/ uploads/2021/07/SHEEO\_StrongFoundations\_2020\_PrivSec.pdf

Michigan CTE Information System Training Videos: http://support.cteis.com/Training/Training-Videos

New Jersey *CTE Submission Data Handbook*: https://www.njsmart.org/njr/ks/CTE%20Submission/ CTE%20Submission%20Student%20Data%20Handbook.pdf

Ohio CTE Data and Accountability: http://education.ohio.gov/Topics/Career-Tech/CTE-Performance-Data-and-Accountability

Oregon CTE Participation Explorer: https://public.tableau.com/app/profile/amy.arneson/viz/ CTEParticipationExplorer/AnnualParticipation

South Carolina 2020–21 Career and Technical Education (CTE) Student Reporting Procedures Guide: https://ed.sc.gov/instruction/career-and-technical-education/performance-accountability/cte-data-collection-and-reporting/2020-21-srpg/

South Dakota Perkins Web Portal: https://doe.sd.gov/cte/data.aspx

Utah System of Technical Colleges Data Dictionary: https://ushe.edu/wp-content/uploads/pdf/utech\_ docs/policies/Final-FY2021-data-dictionary.pdf

## **Equity resources**

Advance CTE. 2021. *Engaging Representatives of Learners with Special Population Status through* Perkins V. Silver Spring, MD: Advance CTE. https://cte.careertech.org/sites/default/files/files/resources/ Engaging\_Special\_Populations\_April\_2021.pdf

Advance CTE. 2020. *Making Good on the Promise: Ensuring Equitable Success Through CTE*. Silver Spring, MD: Advance CTE. https://cte.careertech.org/sites/default/files/files/resources/Ensuring\_Learner\_Success\_CTE\_2019.pdf

Advance CTE. 2020. Improving Equity in and Access to Quality CTE Programs for Students Experiencing Homelessness. https://blog.careertech.org/?p=16914

Advance CTE. 2019. *Making Good on the Promise: Building Trust to Promote Equity in CTE*. https://cte. careertech.org/sites/default/files/files/resources/Building\_Trust\_Promote\_Equity\_CTE\_Jan\_2019. pdf

Brock, T., and Slater, D. 2021. Strategies for Improving Postsecondary Credential Attainment Among Black, Hispanic, and Native American Adults. Community College Research Center, Teachers College Columbia University. https://ccrc.tc.columbia.edu/media/k2/attachments/credential-attainment-blackhispanic-native-american-adults.pdf

Colorado – Pathway to Affordability: Annual Report on Dual and Concurrent Enrollment in Colorado. July 2021. https://highered.colorado.gov/Publications/Reports/Enrollment/FY2020/2020\_Concurrent\_Enrollment\_July\_2021.pdf

Colorado Equity Champions Coalition 2020. *Report on Educational Equity: Creating a Colorado for All.* https://highered.colorado.gov/Publications/Reports/Equity/EquityReport 2020.pdf

Education Strategy Group 2020. *The Equitable Outcomes Imperative Strategies for Advancing Racial Equity in Postsecondary Attainment*. https://edstrategy.org/wp-content/uploads/2020/12/The-Equitable-Outcomes-Imperative.pdf

Institute of Education Sciences. 2021. REL Central Event: District-Level Strategies to Advance Equity in Career and Technical Education Programs. https://ies.ed.gov/whatsnew/ calendar/?id=12455&tid=14&cid=6&va=1

Massachusetts High Quality College and Career Pathways Initiative 2020. https://www.doe.mass.edu/ ccte/ccr/hqccp/

Minnesota – Example of Student Engagement Data Dashboard 2019. https://rc.education.mn.gov/ #engagementAndSafety/orgId--999999000000\_groupType--state\_year--2019\_grade--11\_p--9 National Alliance for Partnerships in Equity. (n.d.). *Conducting an Equity Gap Analysis*. Gap, PA: NAPE. https://napequity.org/wp-content/uploads/NAPE-Perkins-V-State-Equity-Gap-Analysis-At-A-Glance.pdf

National Alliance for Partnerships in Equity. 2018. *Perkins V* State Data Dashboards. Gap, PA: NAPE. **https://** napequity.org/member-services/accountability/dashboards/perkins-state-data-dashboards-subpopulation-postsecondary/

Nebraska Department of Education 2018–2019. *College, Career, and Civic Ready Commitment to Equity, 5–6.* https://cdn.education.ne.gov/wp-content/uploads/2018/07/2018EquityCommitments.pdf

Oklahoma CareerTech – Diversity, Equity, and Inclusion Professional Development Division. https://oklahoma.gov/careertech/about/diversity/training.html

Rodel. 2020. *Delaware Public Education At A Glance*. https://rodelde.org/ataglance/flipbook%20 2019\_2020\_digital\_all.pdf

Tennessee Department of Education 2017. *Frequently Asked Questions – Work-Based Learning:* Special Education. https://www.tn.gov/content/dam/tn/education/ccte/wbl/wbl\_faq\_special\_ education.pdf

Texas Education Agency. 2018–2019. *Secondary School Completion and Dropouts in Texas Public Schools*. https://tea.texas.gov/sites/default/files/dropcomp\_2018-19.pdf

U.S. Department of Justice, Civil Rights Division, Disability Rights Section. 2010. Understanding Testing Accommodations. Washington, DC: U.S. Department of Justice. https://www.ada.gov/regs2014/

#### testing\_accommodations.html

Wisconsin Department of Public Instruction. 2021. Access for ELLs Assessments. https://dpi.wi.gov/assessment/ell

### **5S1 resources**

Advance CTE. 2021. Opportunities to Advance Statewide Industry Collaboration and Engagement in Career Technical Education. Silver Spring, MD: Advance CTE. https://cte.careertech.org/sites/default/files/files/resources/Engaging\_Business\_Industry\_April\_2021.pdf

Arizona Credential List: https://www.azed.gov/cte/cte-industry-credentials

Arizona Industry Certification Approval Process: https://www.azed.gov/sites/default/files/2020/09/ IndustryCertApprovalProcess.pdf

Arizona Industry Credential Incentive Program Business Rules: https://www.azed.gov/sites/default/files/2020/09/AZIndustryCredentialIncentiveProg-BusinessRules.pdf

Credential Engine. 2021. Credential Transparency and P-20W Data Systems: Aligning Education and Employment Information to Meet State Talent Goals. Washington, DC: Credential Engine. http://credentialengine.org/wp-content/uploads/2021/01/Policy-Brief-1.pdf

Credential Engine. 2021. *Making Information About Credentials More Actionable Through Increased Transparency and Quality Assurance*. Washington, DC: Credential Engine. http://credentialengine.org/ wp-content/uploads/2021/05/Policy-Brief-4-Quality.pdf

Education Strategy Group. 2019. Building Credential Currency: Resources to Drive Attainment Across K–12, Higher Education, and Workforce Development. Washington, DC: ESG. https://edstrategy.org/resource/building-credential-currency/

Iowa Department of Education/Community Colleges and Workforce Development. *Iowa Community Colleges Joint Enrollment Annual Report*. 2020: https://educateiowa.gov/sites/default/files/documents/ Joint%20Enrollment%20Annual%20Report%20AY20%20-%20Website.pdf

Kansas Excel in CTE: https://www.kansasregents.org/workforce\_development/excel\_in\_career\_ technical\_education\_initiative\_senate\_bill\_155

Kentucky Credential Legislation (9KRS 158.6455): https://apps.legislature.ky.gov/law/statutes/statute. aspx?id=52910

Lassiter, Jessie. 2019. CTE Analysis and Reporting System, 551 Program Quality – Attained Recognized Postsecondary Credentials, LPS Performance Indicator 551 – Statewide/Region/LEA/School: Requirements Specification. Raleigh, NC: Public Schools of North Carolina.

Nevada Credential List: https://gov.nv.gov/uploadedFiles/govnvgov/Content/OWINN/NV-Eligible-Credentials-List.pdf

Portland Public Schools. 2018. Racial Equity and Social Justice Lens. Portland, OR: Portland Public Schools. https://www.pps.net/Page/2305

Wyoming Department of Education. 2020. *Carl D. Perkins Policies and Procedures*. Cheyenne, WY: Wyoming Department of Education. https://edu.wyoming.gov/wp-content/uploads/2021/08/2020-22-Perkins-Procedure-Manual-FILLABLE.pdf

Wyoming Department of Education. 2021. *Wyoming Guide to Industry-Recognized Credentials and Certifications*. Cheyenne, WY: Wyoming Department of Education. https://edu.wyoming.gov/wp-content/uploads/2021/03/2021-Wyoming-Guide-to-Industry-Recognized-Credentials-and-Certifications.pdf

### **5S2** resources

Advance CTE. 2021. Intentional Acts of Dual Enrollment: State Strategies for Scaling Early Postsecondary Opportunities in Career Pathways. Silver Spring, MD: Advance CTE. https://cte.careertech.org/sites/ default/files/files/resources/Intentional%20Acts%20of%20Dual%20Enrollment.pdf

Advance CTE. 2019. *Measuring Secondary CTE Program Quality: Postsecondary Credit Attainment*. Silver Spring, MD: Advance CTE. https://cte.careertech.org/sites/default/files/files/resources/Measuring\_ Program\_Quality\_Postsec\_Credit\_2019.pdf

Florida Student Data Elements: https://www.fldoe.org/core/fileparse.php/18758/urlt/1920-197283.pdf

Kansas Transfer KS: https://www.kansasregents.org/students/transfer-articulation

Matthews, Jr., Lowell. 2020. Accelerating Students from High School to College and Careers. ExcelinEd. https://www.excelined.org/wp-content/uploads/2020/05/ExcelinEd.Innovation. CollegeAcceleration.Playbook1.pdf

Mehl, G., Wyner, Joshua, Barnett, Elisabeth, Fink, John, and Jenkins, Davis. *The Dual Enrollment Playbook: A Guide to Equitable Acceleration for Students*. Washington, DC: The Aspen College Excellence Program. https://ccrc.tc.columbia.edu/media/k2/attachments/dual-enrollment-playbook-equitableacceleration.pdf

New Mexico All Templates Submission Schedule: https://webnew.ped.state.nm.us/bureaus/ information-technology/stars-manual/submission-schedule/

New Mexico 2019–2020 Dual Credit Annual Report. https://webnew.ped.state.nm.us/wp-content/ uploads/2021/02/SY-2019.20-Annual-Report-PDF.pdf

New Mexico Sample Memorandum of Agreement: https://webnew.ped.state.nm.us/wp-content/ uploads/2017/12/CCRB\_dualcredit\_Dual.Credit.Master.Agreement.Sample.pdf

Texas Dual Credit: https://tea.texas.gov/academics/college-career-and-military-prep/dual-credit Williams, Amy, and Perry, Alex. 2020. *Prioritizing Equity in Dual Enrollment. Denver, CO: Education Commission of the States.* https://www.ecs.org/wp-content/uploads/Prioritizing\_Equity\_in\_Dual\_ Enrollment.pdf

## **5S3** resources

California Longitudinal Pupil Achievement Data System WBL Data: https://documentation.calpads.org/ OnlineMaintenance/StudentDataMaintenance/StudentDetailsWBLR/#work-based-learning-wblr

Delaware Department of Education Career and Technical Education. 2020. *Work-Based Learning Policies and Procedures. Wilmington, DE: Delaware Department of Education.* https://education.delaware.gov/wp-content/uploads/2020/05/cte\_2020\_04\_WBL\_policies\_and\_procedures.pdf.pdf

District of Columbia *Perkins V* State Plan: https://s3.amazonaws.com/PCRN/docs/stateplan/DC\_2020\_ State\_Plan.pdf

Iowa CTE Standards: https://educateiowa.gov/adult-career-comm-college/career-and-technical-education/iowa-quality-cte/programs-study/cte

Iowa High School Internship Guidance. https://educateiowa.gov/sites/default/files/documents/ High%20School%20Internship%20Programs%20Guidance%202020.pdf

Iowa Perkins V: 553 Work-Based Learning Indicator for Secondary Schools. https://educateiowa.gov/sites/ default/files/documents/Perkins%20V%20Work-based%20Learning%20Indicator.pdf

Iowa Resources for Pre-Apprenticeships and Apprenticeships: Visit the Earn and Learn Website: https://www.earnandlearniowa.gov/

Iowa SCED Codes for Work-Based Learning: https://educateiowa.gov/sites/default/files/2022-09/ Perkins%20V%20WBL%20Indicator%20SCED%20Codes%20Guidance.pdf

Iowa School-Based Enterprise Guidance: https://educateiowa.gov/sites/default/files/2022-09/School-Based%20Enterprise%20Toolkit.pdf

Iowa Work-Based Learning Guide: https://educateiowa.gov/sites/default/files/documents/WBL%20 Guide%202021.pdf

Iowa Work-Based Learning Training Phase: https://educateiowa.gov/adult-career-comm-college/ career-and-technical-education/iowa-quality-cte/work-based-learning/work-1

Iowa Work-Based Learning Website Resources: https://educateiowa.gov/adult-career-comm-college/ career-and-technical-education/iowa-quality-cte/work-based-learning/work-1

Minnesota Department of Education. Work-based learning framework: A planning document for Minnesota school districts for implementing rigorous work-based learning programs. October 2020.

https://education.mn.gov/mdeprod/idcplg?ldcService=GET\_

FILE&dDocName=PROD035086&RevisionSelectionMethod=latestReleased&Rendition=primary

Nebraska Career Education Foundational and Specialty Course Codes: https://cestandards.education. ne.gov/Courses/NCE\_CourseCodes\_20202021.pdf

Nebraska Department of Education. 2019. *Guidelines for Implementing the Nebraska Workplace Experiences Act in Three Phases*. Lincoln, NE: https://www.education.ne.gov/wp-content/uploads/2019/01/WBLweb.pdf

Nebraska Workplace Experiences Continuum: https://www.education.ne.gov/workplace-

#### experiences/continuum/

Nevada State Plan for Program Year 2020–2021: https://s3.amazonaws.com/PCRN/docs/stateplan/ NV\_2020\_State\_Plan.pdf North Dakota Sustained Interaction Definition: https://www.cte.nd.gov/sites/www/files/documents/ Perkins/WBL\_Guidance.docx

Ohio Work-Based Learning for Schools and Educators: http://education.ohio.gov/Topics/Career-Tech/ Career-Connections/Work-Based-Learning/Work-Based-Learning-for-Schools-and-Educators Ohio Work-Based Learning Options: http://education.ohio.gov/getattachment/Topics/Career-Tech/ Career-Connections/Work-Based-Learning/Ohio-Work-Based-Learning.pdf.aspx?lang=en-US Oklahoma WBL Website: https://www.okcareertech.org/about/state-agency/divisions/work-basedlearning/implementing-wbl/timeline-and-definitions-1/timeline-and-definitions

Oklahoma WBL Implementation Guide: https://www.okcareertech.org/about/state-agency/ divisions/work-based-learning/implementing-wbl/wbl-implementation-guide

Portland Public Schools Work-Based Learning Program: https://napequity.org/member-services/ accountability/dashboards/perkins-state-data-dashboards-sub-population-postsecondary/

Rapid City Area Schools WBL Continuum: https://rcas.org/work-based-learning/

Robeson, K., O'Neal, S., and Lammers, J. 2021. *Working to Learn and Learning to Work: A State-by-State Analysis of High School Work-Based Learning Policies*. Washington, DC: American Student Assistance and Bellwether Education Partners. **https://www.asa.org/research-study/working-to-learn-and-learningto-work/** 

South Carolina Work-Based Learning Manual: https://ed.sc.gov/instruction/career-and-technicaleducation/career-guidance/work-based-learning/2017-18-work-based-learning-manual-pdf/ Tennessee WBL Toolbox: https://www.tn.gov/education/career-and-technical-education/workbased-learning/wbl-toolbox.html

Utah State Board of Education WBL Continuum: https://www.schools.utah.gov/cte/wbl/manual

# **Project participants**

The **Quality Indicator Project**, funded by the Office of Career, Technical, and Adult Education, U.S. Department of Education, is a nationwide initiative to build states' capacities to implement the *Perkins V* quality indicators led by Manhattan Strategy Group, in partnership with Education Northwest. Project activities are intended to assist states in strengthening the validity, reliability, and accuracy of their indicators and data collection systems.

### **Subject Matter Experts**

Each QIW was facilitated by a former state CTE director with decades of experience. Each subject matter expert participated in planning sessions to help develop meeting content, led bimonthly calls, and coordinated with QIW members to identify reporting challenges and solutions. These included:

- 5S1 Marie Barry, former state CTE director, New Jersey Department of Education
- 5S2 Russell Weikle, former state CTE director, California Department of Education
- 5S3 Richard Katt, former state CTE director, Nebraska Department of Education

#### Additional content expertise was provided by:

- Equity Lakshmi Mahadevan, Associate Professor, Texas A&M AgriLife Extension Service
- Policy Alisha Hyslop, Director of Public Policy, Association for Career and Technical Education

### State Agency Staff

Project work entailed convening and facilitating three QIWs—one for each indicator—to consider effective data collection and analysis protocols as well as challenges and possible solutions to issues complicating state indicator adoption.

The QIWs included the following members:

- Ms. Felicia Swanson, Alaska Department of Education and Early Development
- Ms. Cathie Raymond, Arizona Department of Education
- Dr. Lydia McDonald and Ms. Jennifer Boyett, Arkansas Department of Education
- Mr. Peter Callas, California Department of Education
- Mr. Harold Ben Carter, Canton City School District, Ohio
- Dr. Jonathan Wickert, Delaware Department of Education
- Ms. Karen Lockhart and Ms. Kristina Valentine, Illinois State Board of Education
- Dr. Jeffrey Fletcher, Iowa Department of Education
- Ms. Karla Tipton, Kentucky Department of Education
- Ms. Therese Marzouk, Nebraska Department of Education
- Dr. Gabriel Hill, Nevada Department of Education
- Ms. JoAnne Beuerle, New Mexico Public Education Department
- Ms. Kimberly MacDonald, North Carolina Department of Public Instruction
- Ms. Paula Marschner and Mr. Mark Wagner, North Dakota Career and Technical Education
- Ms. Leah Amstutz, Ohio Department of Education
- Ms. Angel Malone, South Carolina Department of Education
- Ms. Wendi Morton, Utah State Board of Education
- Mr. Chris Dula, Washington Workforce Training and Education Coordinating Board
- Dr. Michelle Aldrich, Wyoming Department of Education

The following agencies also participated on a drop-in basis throughout the year by joining meetings and/ or contributing state-specific resources:

- California Department of Education
- Colorado Department of Education
- Connecticut State Department of Education
- Idaho Department of Education
- Kansas Department of Education
- Massachusetts Department of Education
- Michigan Department of Education
- Minnesota Department of Education
- Mississippi Department of Education
- New York Department of Education
- Oklahoma Department of Education
- Oregon Department of Education
- Puerto Rico Department of Education
- West Virginia Council for Community and Technical College Education

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- Dr. Michelle Aldrich, Wyoming Department of Education



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