Comprehensive Local Needs Assessment to Inform the State of Hawaiʻi's Perkins V Planning

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Conducted for the Office of the State Director for Career and Technical Education and Prepared by the Curriculum Research & Development Group, College of Education, University of Hawaiʻi at Mānoa[1]

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Executive Summary

Initiated by the HI-OSDCTE, this report summarizes the findings of the comprehensive local needs assessment (CLNA) of the state's Career and Technical Education (CTE) system and its programs and programs of study. The document follows the CLNA template provided in [the state plan](#) and is based on evidence from activities occurring since August 2019. The project team collected system improvement data through focus groups, electronic survey forms, spreadsheets, meeting notes, websites, documents, minutes, emails, and previous reports. The participants included (a) HIDOE CTE teachers, CTE coordinators, district resource teachers (DRTs), counselors, and principals; (b) UHCCS students and CTE administrators, including Perkins administrators, CTE deans, and program administrators; (c) representatives of industry, parents, and special populations.

This executive summary highlights the nine chapters within this report. The chapters provide detailed discussion.

1 Introduction

Chapter 1 introduces the report, provides background information, presents the theory of action, and describes the method.

2 Evaluation of Student Performance

We identified **four student performance needs** that exist across the CTE system based on examination of (a) overall student performance, (b) variations in student performance across pathways and programs or programs of study, and (c) variations in student performance of special populations.

A. There is a need for the HIDOE to consider the validity of the conclusions that are to be drawn from the student performance indicator (SPI) data. How meaningful the data reports will be for informing program improvement efforts should be the primary concern with validity. Some of the measures required by Perkins V appear to lead to weakly supported conclusions about the success of the programs of study.

B. Both the HIDOE and UHCCS are revising their data-collection and -processing procedures. The system has been accustomed to the Perkins IV reporting requirements and both eligible recipients are aware of the new requirements to examine SPIs across pathways, programs, campuses, and special populations but are still working out the process. Both are also using other sources of data besides the core Perkins SPIs (for legitimate reasons) to inform program decisions; the accuracy of these data and the appropriateness for their use in making judgments about programs' effectiveness need to be examined and documented.

C. Both the HIDOE and UHCCS are working to develop more effective ways to collect special population data in order to meet the Perkins V reporting requirements, but there is more work to be done in this regard. Data collection procedures are still being developed to account for privacy and some special-population categories, such as students' status as homeless or as single mothers, are more difficult to accurately measure than others.

D. Two versions of the data reports are effectively needed: One to authentically inform program improvement and the other to display to the public, presumably to serve accountability purposes. These two different uses will likely require different business rules for determining what gets reported, including, for example, identifying which core SPIs are actually useful for program improvement decisions and how FERPA compliance will be addressed.

3 Size, Scope, and Quality of CTE programs

We identified **20 size, scope and quality needs** that exist across the CTE system based on examination of (a) designing size across the CTE system, (b) designing scope across the CTE system, and (c) designing quality across the CTE system, including systemic gaps, disparities, and misalignments.

A. There is a need for subrecipients to gather and provide data about size for the CLNA process.

B. There is a need to examine how funds are allocated to HIDOE schools and how this allocation affects the abilities of subrecipients to provide adequate facilities and space.

C. In the HIDOE, there is a need to more closely monitor the adequacy of technology and materials and to consider ways to adjust funding when disparities are noted.

D. There is a need to examine the practice of stacking in smaller HIDOE schools and how it impacts teaching and learning processes and outcomes.

E. In both the HIDOE and UHCCS, there is a need to examine policies for hiring CTE teachers and instructors to identify ways to make hiring practices more comparable to the policies in industry and to allow more flexibility for subrecipients to fill positions and retain people in those positions.

F. There is a need to reconsider funding allocation policies so that the priorities of HIDOE school administrators and their implemented policies can better support the needs of students for career exploration.

G. There is a need to systematically describe the extent to which academic skills are integrated into CTE programs.

H. One of the design and integration issues that may need to be further examined is the degree to which accelerated learning programs offer opportunities in CTE, distinct from opportunities in core academic program acceleration.

I. There is a need to ensure that all HIDOE CTE teachers have up-to-date industry knowledge so that they can deliver high-quality CTE courses via instructional materials that reflect industry standards.

J. There is a need for sustainable connections between HIDOE schools and industries, especially for schools that have fewer industry resources in their geographic area.

K. In the HIDOE pathway advisory committees, there are opportunities to develop industry connections and provide meaningful resources to the pathways—this opportunity should be formalized as part of the committees' purposes.

L. There appears to be a need for strategies for improving how to integrate CTE counseling with the current academic skills counseling.

M. There is a need for the HIDOE to leverage their personnel resources more effectively in system improvement processes, such as program and curriculum redesign.

N. There is a need for collecting data that is informative to the programs within HIDOE subrecipients. There are also needs in identifying how programs can be promoted to members of special populations.

O. There is room for growth in how living-wage, in-demand, and high-skill are defined to include values that are consistent with the community norms of our state.

P. There is a need to better integrate HIDOE CTE programs of study into the academic planning process, perhaps through principal review of student performance on CTE performance-based assessments and identifying gaps among subgroups or needs for improvement, similar to the approach to systematic improvement of academic courses.

Q. There is a need for more systematic approaches to integrating stakeholders and industry into the system improvement process and to find ways to increase responsiveness or response rates in the CTE system to changes in labor market conditions.

R. There is a need for the HIDOE program of study objectives to be reviewed and compared to community college course objectives to determine what is most reasonable to teach at the high school level.

S. There is a need for budgeting and procurement processes to account for inequities across regions and among HIDOE schools of different sizes, particularly in terms of subrecipients' capacities to acquire equipment that meets industry standards.

T. There is a need for the HIDOE network security policies to be reexamined for their effects on students' abilities to use industry-grade software in schools and meet requirements for programs of study.

4 Evaluation of the Implementation of CTE Programs

We identified **14 needs having to do with the implementation of programs** that exist across the CTE system based on examination of (a) size, scope, and quality within CTE programs and (b) size and scope across the system.

A. There appears to be a disparity-based need in small and rural HIDOE schools for technology and materials.

B. There appears to be a need to help HIDOE school personnel and faculty understand the new CTE standards and to help them identify strategies for using their current resources to adapt to the new program descriptions and objectives.

C. There appears to be a need to communicate to internal and external stakeholders how career exploration is being addressed in high schools in which concentration is prioritized.

D. Employability skill development in the HIDOE may need to be emphasized with some special populations, such as homeless youth and those who are economically disadvantaged.

E. In the HIDOE and UHCCS, programs' entrepreneurial-skills instruction may need to be reviewed.

F. An identifiable need in the HIDOE is to improve its program reviews for how well they align with workforce skills.

G. A salient need is for industry connections and work-based learning to be available across all HIDOE schools. This is an equity issue in that access to industry connections are not available to all students.

H. There is a need to better coordinate the work of HIDOE counselors with CTE teachers in programs.

I. At the secondary level, there is a need for policy changes in the salary step system to recognize the value of CTE teachers with extensive industry experience.

J. A need at the post-secondary level appears to be for greater efficiency in recruiting faculty and lecturers in programs that prepare students for professions that do not require a bachelor's degree.

K. With regard to equity, there is a need for the HIDOE and UHCCS to collect special population membership data that allows disaggregation, particularly with categories that were not present in Perkins IV.

L. There appears to be a need to better align programs' descriptions and objectives to local values and to ensure that there is emphasis on helping students learn to adapt to changing labor needs or to develop skills that enable them to become self-employed.

M. There is a need for the HIDOE to develop strategies to specifically address systematic improvement processes for CTE.

N. There is a need for better communication across the system, both within the eligible recipients and between them, to increase understanding of how the CTE pathways are supposed to function and to increase the buy-in of the new HIDOE standards.

5 Recruitment, Retention, and Training

We identified **21 needs having to do with recruitment, retention and training**:

A. There is a need to recruit and retain industry professionals to teach CTE programs across the CTE system.
B. In the UHCCS, there is a need to
   a. report numeric data in the ARPD system that better captures the recruiting needs that the programs face;
   b. find strategies for attracting experienced talent, such as providing higher salaries or competitive benefits, while also avoiding the inequalities that could result from providing incentives to new hires and not offering them to current faculty or instructors; and
   c. streamline the process of approving minimum-qualification substitutions in job ads for faculty and lecturers.
C. In the HIDOE, there is a need to
   a. facilitate subrecipients' funding or other support for current teachers' licensure or industry-recognized certifications;
   b. consider alternate routes for teacher licensure that do not require a bachelor's degree;
   c. consider salary-step advancement strategies for teachers who do not hold bachelor's degrees and who are in industries that do not require bachelor's degrees;
   d. consistently provide coordinator positions across subrecipients;
   e. fill gaps in smaller or more rural schools, such as through leveraging technology to share teachers across subrecipients;
   f. better align program offerings with community needs by finding ways to overcome teacher shortages that can prevent subrecipients from offering certain programs of study that the communities value;
   g. support high-quality programs of study with curriculum resources and minimize reliance on teachers to develop curricula, particularly when teachers lack experience or are teaching outside of their specialty;
   h. communicate PD offerings in a way that is more easily accessible to teachers;

i. provide training to introduce CTE professionals to foundational knowledge and skills, such as (a) understanding Perkins V pathway changes, (b) where and how to find PD, and (c) administration skills as needed (e.g., budgeting);

j. provide specific and consistent PD for meeting particular industry-specific needs, which may require eligible recipients and subrecipients to establish priorities and allocate resources accordingly;

k. provide regular opportunities for teachers in the same pathways or programs of study (across subrecipients) to collaborate as part of their professional development;

l. provide teachers with sufficient time to engage in ongoing, in depth professional development;

m. provide professional development for counselors on how to align their activities with the goals of career and technical education;

n. identify specific professional development needs within programs;

o. investigate if the practice of stacking is functioning adequately and if teachers can enact a curriculum with different levels of students simultaneously;

p. provide assistance to teachers of multiple CTE courses by providing access to materials that enable them to teach the industry skills in the standards; and

q. gather accurate evidence on the effectiveness of the professional development sessions for achieving student outcomes in the classroom and beyond.

6 Equitable Access and Participation

We identified **five needs having to do with ensuring equitable access and participation of members of special populations** in high-quality CTE based on examination of (a) strategies across the CTE system, (b) program/program of study and subrecipient strategies, and (c) the extent to which strategies are improving access and increasing participation.

A. There may be a need to develop and document explicit strategies that address equitable access and participation in CTE programs through application of existing system-wide, overarching policies and strategies to address the participation barriers specific to individual special populations.

B. There may be a need for all CTE programs of study at UHCCS to work with community representatives to increase Native Hawaiian participation.

C. There is likely a need to explore culturally relevant ways to help students make choices that align with their communities.

D. There may be a need for support from other agencies, like the Division for Vocational Rehabilitation (DVR), to help teachers prepare students with disabilities for occupations in competitive, integrated settings.

E. For English learner students in CTE programs, there may be a need to continue scaffolding language use with either direct translation to their home

7 Data Infrastructure and Use

We identified **four needs having to do with data infrastructure and use** based on examination of (a) how reliability, validity, and timeliness, have been addressed, and (b) the professional development needs across the CTE system.

A. There is a need for both the HIDOE and UHCCS to establish procedures for collecting disaggregated data.
B. To strengthen validity, there is a need to identify what the proposed uses of each type of data are. Without a specified proposed use, it is difficult to identify how well the data can inform that intended use. Thought experiments about how data will be used can serve this purpose.
C. There may be a need for PD targeting HIDOE staffs' skills in locating and using labor market information to inform CTE system improvement. This need might be more pronounced in schools that are not in the academy model.
D. There appears to be a need for the system to reference research or evidence about what is known about the process of career development over the lifespan and to use this knowledge to inform decisions about HIDOE CTE systems and system components.

8 Continued Consultation and Engagement

We identified **two needs regarding continued consulting and engagement** in high-quality CTE based on examination of (a) the nature of the engagement with the stakeholders, and (b) the methods of coordinating information flow throughout the CTE system.

A. Some of the OSDCTE committees are still identifying points of contact to serve as the lead positions on those committees. The Policy Committee has yet to meet. The Human Capital Committee has yet to work with the Teacher Education Coordinating Committee (TECC), as the TECC membership is still being arranged.

B. The articulation between HIDOE and UHCC CTE programs requires attention.

Chapter 1
Introduction

This report summarizes the findings of the comprehensive local needs assessment (CLNA) of the state's career and technical education (CTE) system and its CTE programs and programs of study. It was prepared by the Curriculum Research & Development Group's 2020–2021 CLNA project team in response to the request of the Hawaii Office of the State Director for Career and Technical Education (OSDCTE). The document is organized according to the template provided in Appendix G of the State of Hawai'i Perkins V State Plan and is based on evidence and activities occurring since August 2019, after the completion of the previous CLNA.

Background

According to the *State of Hawai'i Perkins V State Plan*,

> The CLNA serves as a periodic consolidation of what's been learned from the continual and continuous improvement efforts to improve the quality of the design and delivery of the state's CTE system and its CTE programs/POS, to identify emergent workforce and economic development and educational conditions that impact the design and delivery of the CTE system and its CTE programs/POS, and to take stock of what's been accomplished and what work is needed to improve the quality of the design and delivery of the CTE system and its CTE programs/POS, including the improving of access and the equity of access to high quality CTE programs/POS that meet size, scope, and quality criteria; increasing participation and the equity of participation in those CTE programs/POS; and improving the educational and workforce outcomes and the equity of those outcomes of CTE program/POS participants. (p. 129)

Theory of Action

The CLNA has seven sections that represent elements of a theory of action (Figure 1.1). Student performance indicators are measures of the primary outcomes of the CTE system. Student performance is presumed to be produced by the CTE programs that are implemented, and program implementation is a result of system and program design; recruitment, retention, and training of faculty and staff; and the provision of equitable access. All of these inputs, activities, outputs, and outcomes are monitored through a data infrastructure, which informs iterative improvement via consulting and engagement. Each component in this theory of action is represented by a chapter in this report.

Figure 1.1 *Theory of Action Addressed in the CLNA*
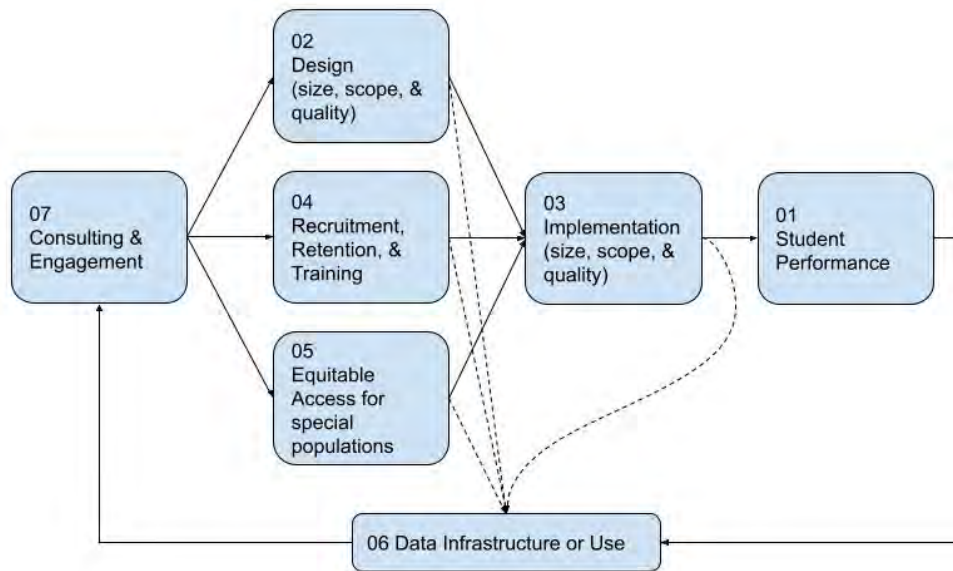
Terminology

Perkins V includes technical language (informally referred to as Perkinese in some places in this report). Though the project team was not fluent in this language, we did our best to use the terms accurately. This is an in-exhaustive list of terms we use in this report.

- *Concentrator.* In Perkins V language, concentrators are students who, at the secondary level, have taken two or more courses in a program of study. At the post-secondary level, concentrators are students who have taken 12 or more credits in a CTE program or who have completed the program.

- *Eligible recipients.* In Perkins V language, these are the recipients of Perkins funds under the OSDCTE. In Hawai'i there are two main eligible recipients that are addressed in the state plan, the Hawai'i Department of Education (**HIDOE**) and the University of Hawai'i Community College System (**UHCCS**).

- *Subrecipients.* In Perkins V language, subrecipients are the high schools and college campuses.

- *Stakeholders*. We refer to **internal stakeholders** as the people who operate within the system as faculty and staff, including the relevant employees of the HIDOE, the UHCCS, and the OSDCTE. The **external stakeholders** are the beneficiaries (students) and representatives of special populations (including the special populations listed in Perkins V and Native Hawaiians), industry, and other members of the community such as those participating in pathway advisory committees.

- *OSDCTE*. This is the Hawaii Office of the State Director for Career and Technical Education (sometimes also abbreviated as **HI-OSDCTE**) but it is commonly known

among stakeholders as the **State CTE Office**. We used *OSDCTE*, *HI-OSDCTE*, and *State CTE Office* interchangeably.

- **Performance indicators.** The Perkins V student performance indicators (**SPI)** are frequency data about CTE concentrators. For secondary, these include graduation rates (coded in Perkins V as 1S1 & 1S2); academic proficiency rates in language arts, science, and mathematics (coded as 2S1, 2S2, 2S3); placement rates into employment, post-secondary education or training, military, or other service position after exiting high school (coded as 3S1); non-traditional program concentration (coded as 4S1); and at least one measure of program quality decided on by the ER (one of the 5Ss, per Perkins V's coding) such as the proportion of CTE concentrators (who have graduated) who have attained a post-secondary credential. For the post-secondary concentrators, there are three SPIs: Post-secondary retention and placement (coded as 1P1), Earned recognized post-secondary credential (coded as 2P1), and non-traditional program concentration (coded as 3P1). These are further explained by the [Perkins Collaborative Resource Network](#).

- **Program and POS.** We try our best to conform to the conventions of Perkins V language and use the term "**Program/POS**". We sometimes use the term *programs* as the superordinate term for *programs of study* (or **POS**s; which are in the HIDOE) and *programs* (which are in the UHCCS) in data collection and reporting because most internal stakeholders in the HIDOE use the term *programs* when referring to POSs and it was more important to attend to the substance of the needs assessment rather than break participants' attention and remind them to use the correct term.

Method

Project Team

The project team consisted of two faculty members and three graduate research assistants, all from the University of Hawaiʻi at Mānoa. The team members declare that they have no conflicts of interest in the state's Perkins V system. The faculty and two of the graduate students were from the College of Education; the other graduate student was from the Department of Second Language Studies. The project lead had conducted the 2019 CLNA. Across the team members, there was experience and expertise in evaluation, career and technical education, STEM education, counseling, and working with special populations.

Data Collection and Analysis

Preparation

Using information from administrators in the OSDCTE, HIDOE, and UHCCS, the project team compiled a database of known stakeholders to represent their constituents in the system as well

as of the programs of study within the high schools in the HIDOE. The team did not have access to lists of CTE teachers, counselors, students, or parents. Nor did they have access to a complete list of external stakeholders or their representatives. The team made extensive efforts to reach external stakeholder representatives, particularly of parents, Native Hawaiians, and Pacific Islanders.

Before collecting data from internal stakeholders in the HIDOE, the team applied for and received approval from the HIDOE Data Governance board. We did not seek to collect data from vulnerable populations or students because of the risks and the limited time and resources available to us. Before collecting data from the UHCCS students, we applied for and received approval, via the Office of the Vice President for Community Colleges, from the University of Hawai'i Data Governance Office.

Data Collection Procedures

The project team collected system improvement data through focus groups, electronic survey forms, spreadsheets, meeting notes, websites, documents, minutes, emails, and previous reports. The participants included (a) HIDOE CTE teachers, CTE coordinators, district resource teachers (DRTs), counselors, principals, and state-level HIDOE education specialists; (b) UHCCS students, CTE program administrators, campus CTE deans, and UHCCS Perkins administrators and data wranglers; and (c) representatives of industry, parents, and special populations (displayed in Table 1.1).

Table 1.1 *Numbers of Participants in the System-improvement Forms, Focus Groups, and Meetings*

Stakeholder	Improvement form *n*	Focus group *n*	Meeting *n*
CTE education specialists	—	—	1
District resource teachers	7	8	—
Coordinators	20	28	—
Teachers	100	10	—
Counselors	60	0	1
Principals	10	5	—
UHCCS Perkins administrators and data wranglers	—	—	4
UHCCS campus CTE deans	—	8	—
UHCCS CTE administrators	8	—	—
UHCCS students	90	4	—

Stakeholder	Improvement form *n*	Focus group *n*	Meeting *n*
Parent of HIDOE student	—	1	—
Special population representatives	—	2	3
HIDOE Pathway advisory committee members	—	—	2
HI-OSDCTE staff	—	—	3

Note. The parent was also one of the UHCCS students. The data are from the student focus group. Em-dashes indicate the participants were not invited to participate in that data-collection method.

Most of the data came from focus groups and system-improvement forms. For these two sources of data, we developed instrument blueprints to be sure that the prompts and questions in these instruments aligned with the goals of the CLNA. For the focus-group interviews, which were conducted online through a video-conferencing platform, we developed a focus-group protocol and pilot-tested the procedures. The system-improvement forms were developed in Qualtrics for most participants. For the district resource teachers and UHCCS administrators, these forms were simply spreadsheets for the participants to complete as part of Perkins V paperwork.

Stakeholders Unreached

The project team reached out to representatives of internal and external stakeholders in an attempt to then invite prospective participants to participate in focus-groups, meetings, or survey forms. With some populations, these outreach efforts were designated to specific members of the team based on their experience with the populations. The organizations and representatives we contacted to request access to their constituents or other representatives included
- the OSDCTE director,
- HIDOE personnel, including
  - a state CTE educational specialist,
  - CTE district resource teachers,
  - an educational specialist in college and career counseling, and
  - parents of CTE students, via the parent community network center coordinator;
- UHCCS personnel, including the Systems Office Perkins specialist,
- community representatives, including
  - NGOs personnel, including those serving homeless youth service providers, Pacific Islander (PI) service providers, and Native Hawaiʻian organizations,
  - scholars known to work with NGOs and other organizations serving external stakeholders, and
  - a representative of the Workforce Development Council.

We were unable to reach representatives of every Perkins V stakeholder. For example, we had attempted to schedule focus groups with HIDOE counselors, but there were obstacles in obtaining the approval for this data collection from the HIDOE administration, though counselors were able to complete the system-improvement forms.

For many of these groups, we had allocated considerable time and energy but were ultimately unsuccessful. For example, the project team expended extensive effort to recruit parents to participate in focus groups but were unsuccessful in securing any participants from this external stakeholder group. We emailed 11 community representatives of Native Hawaiians, 3 community representatives of Pacific Islanders, 4 local non-profit organizations that had contacts with public-school parents, and 17 Parent-Community Networking Centers (PCNCs) in HIDOE schools. To the community representatives, we sent 15 emails with additional follow ups with either emails, phone calls, or Zoom meetings, but only one Native Hawaiian parent participated in a talk story session with us. To the PCNCs, we sent over 20 emails. Most responded and then forwarded the information to parents and guardians of students currently enrolled in CTE Programs. In addition to email outreach, at least 10 follow-up phone calls were made in an effort to contact PCNCs and follow up with possible interested parents. There were two PCNCs who got back in touch with us immediately and shared that due to the distance-learning setting, it was very difficult to make contact with interested parents. Given that many parents were working from home while juggling online learning for their children, this lack of participation was understandable. An interested parent from a rural community who was also a CTE teacher made contact and an interview was scheduled with this individual. In the other focus groups, there were parents present, but the focus groups were not designed to ask parent-stakeholder questions. Nonetheless, one UHCCS student provided rich information about their child's experiences and is included in our tabulation of participants as both a student and a parent.

It was a challenge to collect data from homeless student representatives due to issues with identifying specific representatives and then collecting sensitive data. Other challenges also related to identifying students who would be considered homeless without relying on self-reporting. There were also difficulties with scheduling CTE teachers, coordinators, and principals because of scheduling conflicts. Unfortunately, some focus groups were cancelled immediately before the meeting because of unexpected environmental issues, such as a power outage at a rural school or personal issues on behalf of the participant(s).

We emailed approximately 15 potential representatives of special populations, amounting to over 29 email transactions; an email request to a representative of students whose families are in the military; 5 emails to representatives of homeless youth; multiple emails to PI service providers. In total, over 23 representatives of special populations were contacted at least once. Very few stakeholder representatives volunteered to participate.

Over the course of the CLNA, there was a total of 15 focus groups, multiple meetings, 3 interviews and a meeting with HIDOE Native Hawaiian representatives. There was a total of 72 focus-group participants and over 18 hours of focus groups and interviews.

Data Analysis

The team transcribed the qualitative data from focus groups and meetings in Otter.ai and analyzed transcriptions and other documents using NVivo. There were 35 documents of text, totaling 499 pages, processed into NVivo. There were many other additional documents, such as slide decks, documents that were only viewable and not downloadable, and websites. The project team reviewed the NVivo codings and the raw qualitative data through extensive discussion. The quantitative data were cleaned and analyzed in R. Survey-form participants who responded to less than 20% of the closed-ended questions (that were presented to them) were removed from the analytic sample. Plots were generated to facilitate interpretation. Multiple team members reviewed the report.

Limitations

Even after our rigorous data-collection efforts, we acknowledge that there were limitations. In some chapters, we were unable to address every component of the CLNA template. We state these limitations throughout the report. We also acknowledge that our interpretations of the data can be fallible at times and that there are likely omissions that we are (as yet) unaware of.

Chapter 2
Evaluation of Student Performance

This section addresses **student performance** needs that exist across the CTE system. Per Appendix G of the *State of Hawai'i Perkins V State Plan* (2020), this chapter has three sections:
- overall student performance towards the state-determined educational and workforce achievement and outcome indicators,
- variations in student performance across CTE pathways and CTE programs or programs of study, and
- variations in student performance of special populations participating in the CTE system.

We are unable to address all the student performance needs across the system as required by Appendix G because of the current status of the data infrastructure, which is described in more detail in Chapter 7. In this chapter, we first describe the current status of reporting student performance in the HIDOE and the UHCCS and the needs that exist. We note that the needs associated with variations in student performance across CTE pathways and CTE programs or programs of study are not addressed, nor are the variations in student performance of all Perkins V-designated special populations participating in the CTE system due to the limitations of the data infrastructure.

Next, in discussing these student performance indicators and how the system is working to measure and report them, we offer suggestions that might be valuable for improving the state's Perkins V student-performance evaluation system. We also introduce the actions that the CLNA team took to attempt to obtain the data that were needed to conduct this needs assessment and describe the responses of the HIDOE and the UHCCS.

It is important to note that current systems of analyzing overall student performance are in the process of being updated and are in need of further work. The two most salient needs in this system lie in its capacity to collect new Perkins V special-populations data and in meeting the requirement of the state's Perkins plan to make comparisons across CTE pathways, programs, campuses, and special populations.

Reporting student performance

The Secondary Level

Overall Student Performance

The HIDOE tracks CTE progress via the number of concentrators, which has steadily increased since 2016 when data were first collected under Perkins IV. Current special populations that are identified in the data include students with disabilities, English learners, and economically disadvantaged students. The HIDOE high school principals already engage in systems

improvement processes as evidenced by their academic plans that address all school programs, including CTE.

Variations Across CTE Pathways and CTE Programs or Programs of Study

We are unable to report on variations in student performance across CTE pathways and CTE programs or programs of study because these data are not available.

Variations Across Special Populations Participating in the CTE System

We are unable to report on variations across all Perkins V-designated special populations participating in the CTE system because these data are not available.

The Post-secondary Level

Overall Student Performance

The UHCCS has done extensive data gathering and longitudinal analyses that focus on direct program outcomes such as degrees awarded, certificates awarded, persistence from semester to semester, and transfer to four-year colleges. The CTE deans engage in systems-improvement processes as evidenced by the ARPD and reports that analyze and interpret these data.

Variations Across CTE Pathways and CTE Programs or Programs of Study

We are unable to report on variations in student performance across CTE pathways and CTE programs or programs of study because these data are not available.

Variations Across Special Populations Participating in the CTE System

We are unable to report on variations across special populations participating in the CTE system because these data are not available.

Data Needs for the HIDOE and the UHCCS

The current processes within the HIDOE and the UHCCS are evidence of the recipients' monitoring of student performance and use of these data to engage in system improvement processes. However, there are needs for updates to these systems to include Perkins V special population information and to make comparisons across CTE pathways, programs, among subgroups of students, and across the transitions from secondary to community college to workforce. Recipients are aware of the requirements of Perkins V reporting and are working towards meeting these requirements. In this review period, the eligible recipients have been unable to evaluate variations in student performance at the levels specified by the needs-assessment template. These needs are further discussed in Chapter 7.

The Student Performance Indicators

In this section, we present our observations about the state's measurement and intended use of student performance indicators (SPIs). Although there is a list of core SPIs that are required under Perkins V (which are available, e.g., on the [Perkins Collaborative Resource Network website](#)), there is a need to address the extent to which the student performance indicator data can be used for their intended purpose—making valid inferences about program quality and informing system improvement processes. To communicate the role of these performance indicators in the Perkins V system, a logic model or theory of action would be valuable because it can help stakeholders identify activities and outcomes that should be measured and provide evidence of the action and effects of CTE programs or programs of study. There are questions about the value of certain data, such as the current academic proficiency indicator data that are student assessment scores that predate their entry into CTE programs or programs of study. It is unclear how these data describe program quality or could inform system improvement. It also seems that there likely are other data that could indicate program quality, such as information about students' career explorations, interests, and plans. Exploration is an important part of career development and current indicators do not capture that activity because they emphasize concentrators and completers. In addition to accounting for exploration as possible performance indicator, another consideration is the cultural relevance of these performance indicators, which is more broadly discussed in Chapter 6. With this, a possible action in the path forward is to include community stakeholders in discussions about the student performance indicators that are expected in Perkins V and to direct these discussions toward helping the eligible recipients meet the federal reporting requirements while also finding ways to convey (or improve) how these outcomes are relevant to the communities in our state.

Perkins V Student Performance Indicators

The student performance indicators required for Perkins V are in the legislation and listed on the Perkins Collaborative Resource Network site (and listed in Table 2.1). There are different indicators for the secondary level (i.e., the high schools) and the post-secondary level. These indicators are measured as frequency counts and reported as proportions of CTE concentrators meeting the criterion.

Table 2.1 *Student Performance Indicators*

Secondary level		Postsecondary level	
Code	**Label**	**Code**	**Label**
1S1	Four-Year Graduation Rate	1P1	Postsecondary Retention and Placement
1S2	Extended-Year Graduation Rate		
2S1	Academic Proficiency in Reading/Language Arts	2P1	Earned Recognized Postsecondary Credential
2S2	Academic Proficiency in Mathematics	3P1	Non-traditional Program Concentration
2S3	Academic Proficiency in Science		

Secondary level		Postsecondary level	
Code	Label	Code	Label
3S1	Post-Program Placement		
4S1	Non-traditional Program Concentration		
5S2	Program Quality – Attained Postsecondary Credits		

 Note. These reporting requirements are from "Section V. State-Determined Performance Levels" of the State of Hawaii Perkins V State Plan.

Overall Student Performance—Common Issues

The SPIs are intended to inform local CTE stakeholders, the state of Hawai'i CTE system, and the federal government on how well CTE programs and the CTE system are functioning. These SPIs focus on general outcomes such as academic proficiency in core subjects, numbers of non-traditional program concentrators, and post-secondary credit attainment.

The HIDOE and the UHCCS are required to annually report SPIs and produce the CTE consolidated annual report (CAR), which was also a Perkins IV requirement, and therefore, already part of the eligible recipients' expectations for what is required of them. Perkins V requires more complex disaggregation of the data and additional indicators than Perkins IV required, which has presented challenges to the recipients who were accustomed to generating the CAR. For example, at the secondary level, Perkins V, under Hawai'i's state plan, requires HIDOE to report five student performance indicators aggregated across all CTE pathways, programs, special population categories, and campuses (subrecipients), as well as disaggregated data. The number of disaggregated data-reporting cells, as displayed in Table 2.2, is more than 13,000, though many of these cells will be empty because the combination is not present. For example, not all programs are delivered in all schools meaning that of the 9,030 data cells required for consideration, many have zero data. The CAR, in contrast, only requires the first row in Table 2.2.

Table 2.2 *Perkins V Reporting Requirements of HIDOE Student Performance Indicators*

Reporting requirement	*N* of data cells
Overall student performance towards the state-determined performance levels on Perkins V indicators and on other state-determined educational and workforce achievement and outcome indicators	5
Variations in student performance across CTE pathways and CTE programs/POS	275
Variations in student performance of special populations participating in the CTE system	9

Variations in student performance within CTE programs/POS (variation across subrecipients)	9030
Variation in student performance of special populations within each CTE program/POS	1890
Variation in student performance within subrecipients, including the student performance of special populations	2150
All variations	13359

Note. These reporting requirements are from Appendix G of the State of Hawaii Perkins V State Plan. The number of data-reporting cells is based on 5 student performance indicators, 43 high schools (subrecipients), 13 pathways, 42 programs of study (as a conservative estimate of the more than 60 possible programs of study), and 9 special population categories. For the UHCCS, the number of cells is fewer, with only 3 performance indicators and 7 campuses (though still substantial).

During meetings with the administrative teams at both the HIDOE and UHCCS levels, they reported that increased attention was to be paid to the CAR and its deadline during the 2020–2021 school year. They also reported that it would be difficult to complete both the CAR and the Perkins V data analysis that is required for a local needs assessment by the deadline (i.e., summer 2021). Particularly at the HIDOE level, members of the CTE office reported in early 2021 that they did not have the appropriate expertise to conduct the data collection and analysis themselves, which is understandable given the number of reporting cells required. The tension between reporting requirements for the CAR and for Perkins V appear to be one factor preventing HIDOE and UHCCS from conducting their own analyses of and reporting on Perkins V student performance indicators. As of June 2021, the HIDOE and OSDCTE informed us that the Longitudinal Education Information (LEI) system is being developed to include data for both the CAR and for providing SPI data at the disaggregated levels that are required.

The data required to report on overall student performance were not available at the time this report was written, for several reasons. First, the current data infrastructure is still developing database fields that identify some of the special populations identified in Perkins V. Second, the CAR was not available at the time this report was written. (The most recent available CAR is dated 2018.) Third, some student performance data were not collected during COVID. The section that follows explains in detail the issues with data infrastructure, institutional capacity, policy, and practice that lie at the root of the problem and identify specific needs.

The HIDOE

At the HIDOE level, there is a need to conduct data analyses that are required under Perkins V. The Data eXchange Partnership (DXP), which is part of the Hawaiʻi P–20 partnership, supports data collection and analysis. In the project team's discussions with the state CTE office, it was explained that the data collected by the HIDOE was to be processed by DXP. DXP is responsible, in part, for developing and maintaining data for the dashboards (such as LEI or NAPE) and for addressing data governance. In this effort, HIDOE and DXP work together to ensure that all data collected and reported are appropriately used and not in violation of student

privacy rights. DXP supports HIDOE by wrangling the data collected from local high schools. This wrangling requires database management, data cleaning (such as identifying and repairing inconsistencies and duplicates), and dealing with data security. In addition, it appears that DXP is also responsible for supporting the data analysis and reporting for the CAR and seems to be providing targeted, rather than comprehensive, support for Perkins V needs-assessment data support. This is to be expected, given that the database management tasks with these large numbers of cells and identifiers are formidable.

It was deemed unlikely that a full analysis of the data needed for Perkins V needs-assessment reporting requirements would be completed by summer 2021. In a meeting with the HI-OSDCTE director and the HIDOE CTE administrator in November, it was reported that Hawai'i would not require the CAR to report any student performance indicators for the 2020–2021 school year. With this, the estimated timeline for CAR data collection and disaggregation completion would be in late spring 2021. At this time the CLNA and reporting of student performance indicators appear to be a lower priority than other more pressing matters, however, the state CTE office did acknowledge the opportunity to deliver data prior to the summer 2021 expectation. In a discussion with state CTE office representatives in February 2021, they reported that there had been relatively little movement towards producing usable student performance indicator data. The HIDOE had yet to receive any data from DXP that could then be entered into the CTE reporting dashboard system, which is intended to assist in the reporting and interpretation of the data, which during that meeting, we were under the assumption would be the NAPE dashboard system.

The state CTE office had allocated funding for the eligible recipients to use the NAPE (or some other) dashboard service. The NAPE dashboards, we had understood, are intended to graphically report data received from the eligible recipient after it had been processes by DXP. This process is intended to serve the CAR and the Perkins V student-performance reporting. As of the 2019 CLNA, the NAPE dashboard was under construction and was expected to be completed before the data were needed for the 2021 CLNA. According to our early discussions with leadership at the state CTE office, the NAPE dashboard was not yet complete. The data reports that are currently available through the NAPE dashboard are several years old (from 2017–2018) and therefore not useful for meeting the requirements of this CLNA. However, in recent discussions with the HI-OSDCTE director and with the HIDOE state specialist, it was explained that the HIDOE is likely moving away from NAPE dashboard and instead will be utilizing the LEI system that is being used for ESSA. The LEI dashboard ideally will be used to present data on CTE at the end of 2021.

The HIDOE has in its 2020 local Perkins V application a planned example of the CTE Perkins monitoring reports, specifically for documenting the SPIs at the state, geographic district, and school level, for the purpose of the CAR. These do not ask for SPI at the program level, which are required for reporting to the CLNA. They also appear to still be in the design phase.

Currently in use, though not meeting all of the Perkins V requirements, is the HIDOE strategic plan dynamic report, which provides some data on CTE concentrators statewide that can be disaggregated by some of the special populations (students with disabilities, English learners,

economically disadvantaged, gender). These data show that the system-wide percentage of CTE completers is 58% and that gaps for subgroups such as students with disabilities and English learners have decreased over time (Figures 2.1–2.5). The gaps for special populations within each complex area can also be examined using this tool. Although this tool provides useful information about who participates in CTE programs or programs of study, it does not address the secondary level indicators or the comparisons required by Perkins V, such as each performance-indicator outcome across programs and special populations within schools or campuses.

Figure 2.1 *Example Data from HIDOE Strategic Plan Reporting Tool Showing Subgroup Comparisons Across the State for CTE Concentrators in 2018–2019*

Figure 2.2 *Example Data from HIDOE Strategic Plan Reporting Tool Showing Subgroup Comparisons Across the State for CTE Concentrators in 2019–2020*
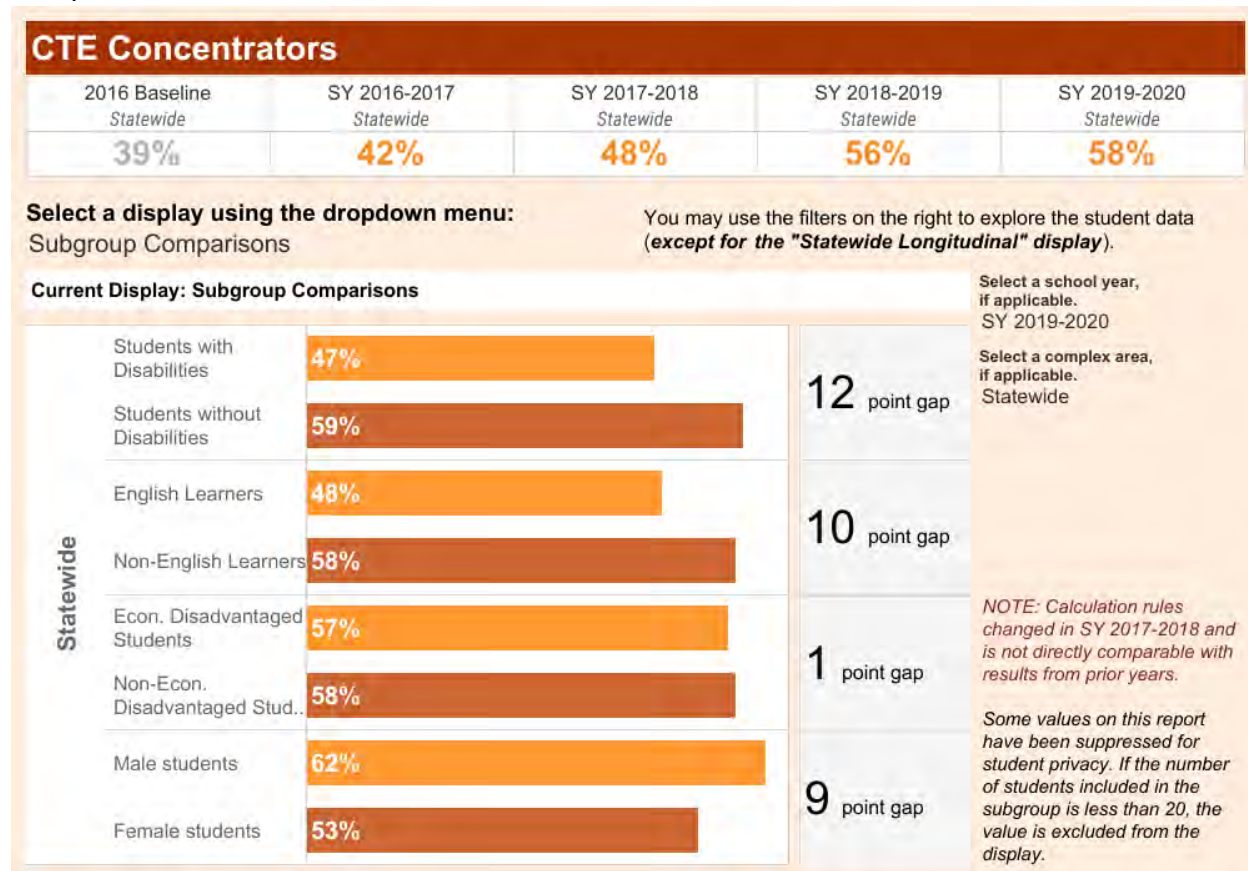
Concentrators and Completers

In the HIDOE subrecipients (i.e., the high schools), the primary method of measuring student performance is tracking the number of concentrators. By federal definition, concentrators are students who have completed two courses in an approved CTE program or program of study. The Hawai'i CTE website defines completers as students who complete a high school program of study and who have mastered all specific career pathway core, cluster, and academic course standards.

Concentrator status appears to be the unit of analysis for HIDOE student performance indicators. One issue in some high school CTE programs is the limited information that concentrator count data provide. These data help administrators determine how many students are participating in CTE programs and programs of study or how many meet an SPI criterion, but they do not describe how these CTE programs are succeeding or failing in helping students learn the program's content. With the intended use of concentrator SPI data being for driving program improvement, there appears to be a gap between what type of information the count data are expected to provide and what they actually can provide.

Figure 2.3 *Example Data from HIDOE Strategic Plan Reporting Tool Showing Complex Area Comparisons Across the State for CTE Concentrators in 2019–2020*
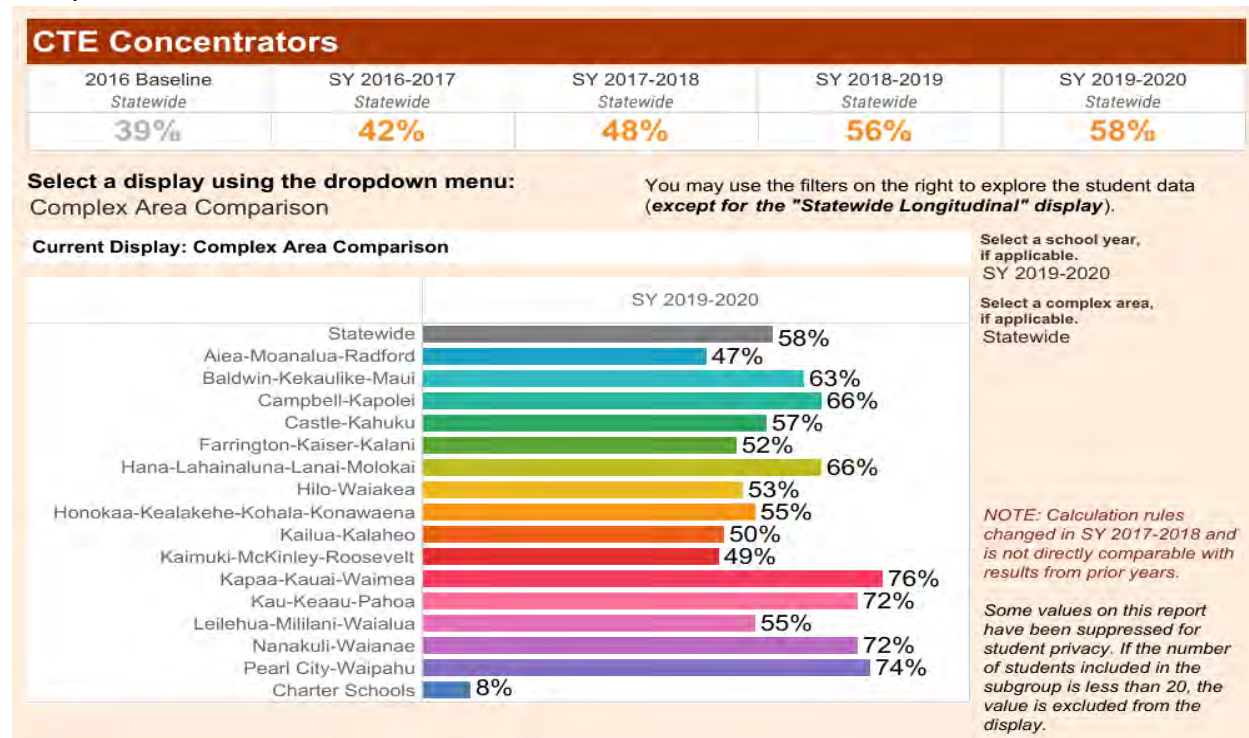
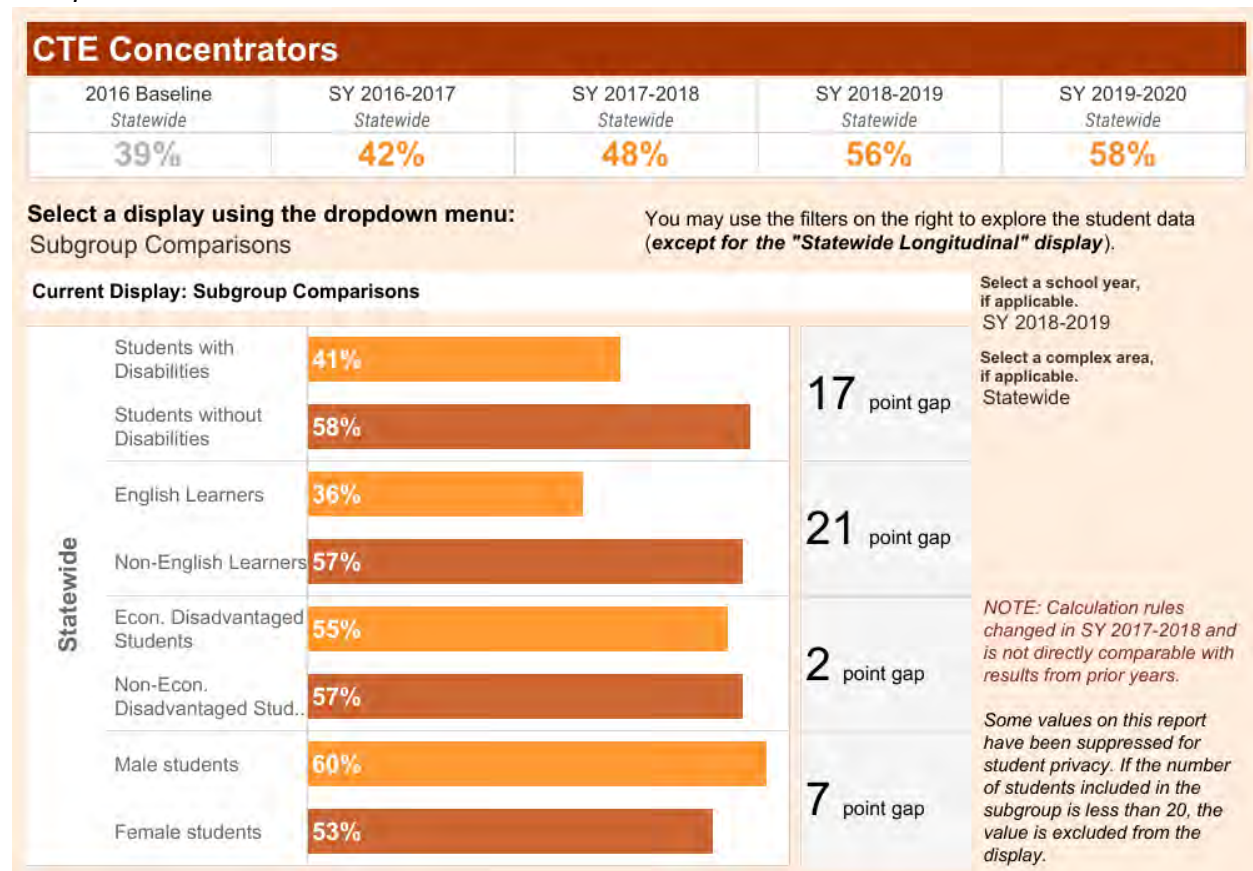**Figure 2.4** *Example Data from HIDOE Strategic Plan Reporting Tool Showing Subgroup Comparisons in a Complex Area for CTE Concentrators in 2019–2020*
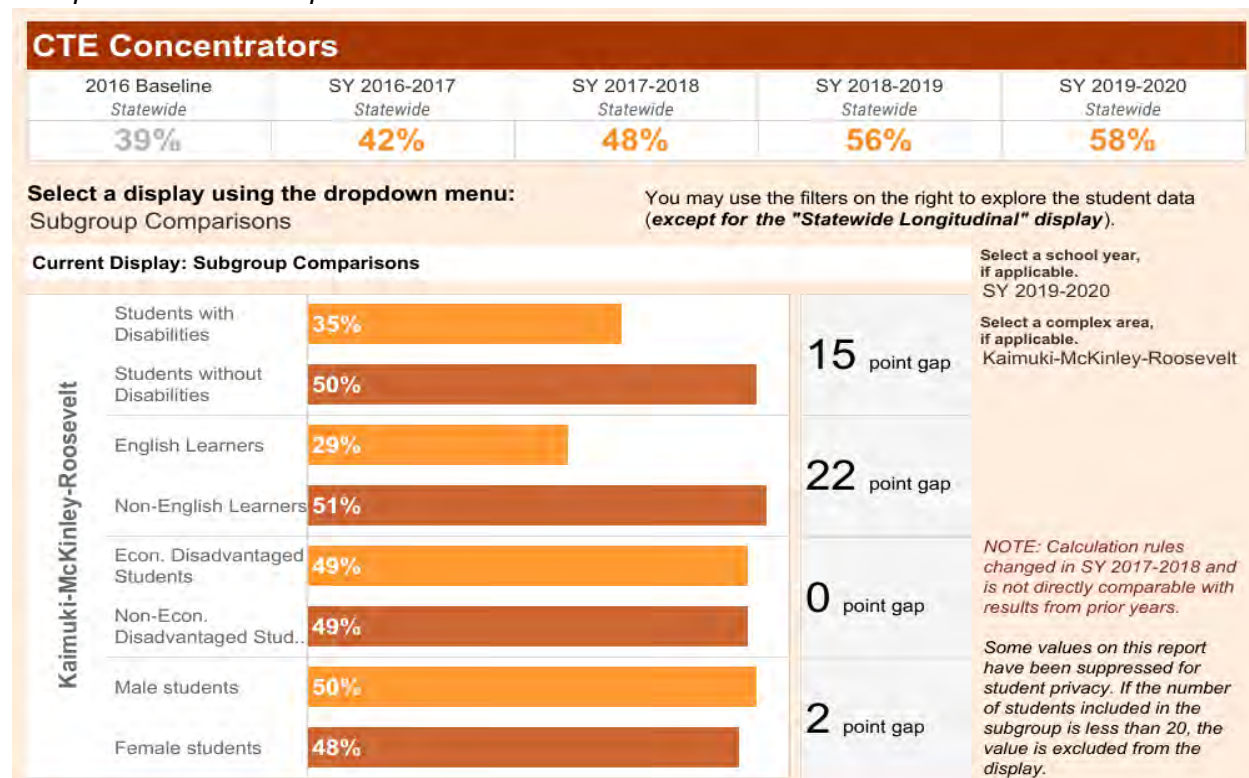
There is some data at the school level that can be used to inform individual programs such as non-traditional student data and program quality and equity data, but there is little evidence of disaggregation of data. For example, Perkins V requires schools to report student performance indicators across CTE programs and pathways and report the performance of special populations participating in CTE programs. This means there should be aggregate data indicating the performance across the CTE system and disaggregated data indicating the performance across CTE programs/programs of study and subrecipients.

While there has been some effort to report data across CTE pathways (as that is required for the CAR), at the present time, in early 2021, it appears to be beyond the HIDOE's capacity to report student performance on each of the indicators across programs or among special populations. This presents challenges for identifying needs among programs and schools, especially in regard to equitable access for special populations, which is discussed in more detail in Chapter 6. In other words, it is difficult for the HIDOE to determine which programs, pathways, and schools are successfully meeting the Perkins V standards.

Beyond Perkins V Student Performance Indicators

As of June 2021, the CLNA team learned from the HIDOE state specialist that the HIDOE is committing to the LEI system for tracking student performance. There are several promising potential results from this:

- Once the system is up and running, the data will be viewable by the relevant internal stakeholders in real time.
- Data about students can be tracked across CTE courses and academic courses and include students' course grades, attendance, standardized test scores, and certifications, as well as the student performance indicators, some of which are not feasibly measured while the student is in school (such as post-program placement, SPI 3S1) but which could be attached to the database record.
- Data from CTE and core academic courses can be considered together to make informed decisions about students, such as if a student in a building and construction course needs help with mathematics (an example provided by the HIDOE state specialist). Ideally, this feedback to students would be specific enough to guide learning. For example, if a student is weak in a particular trigonometry functions required to plan a building project, what core mathematics does the student need to help them better learn those skills?

With regard to the third bullet point, the way in which this type of student-level feedback can be used to inform program-of-study improvement efforts will likely require some careful planning. Additionally, with regard to the use of other data in the LEI, special care should be taken to ensure they are resulting in valid information for program improvement efforts. For instance, we advise caution in using course grades to evaluate program quality for at least two reasons: Course grades are not consistent across conditions or teachers and they are not intended to serve as Perkins indicators; if grades become heavily weighted indicators of program quality in the funding formulas for schools, the pressure for grade inflation will have undue effects on the system, with potential unintended effects of graduating students who are not adequately

prepared. This unintended negative effect of data use will threaten validity (per guidelines in AERA, APA, & NCME, 2014).

Student Performance in Core Content Areas

Another issue was the reporting of academic student performance indicators such as proficiency in math or science. Due to the challenges of the COVID-19 pandemic, some of the academic student performance indicators were unavailable because many standardized tests across the HIDOE were cancelled, though those students who had completed these tests in prior year would have provided indicator data for the current year's programs (albeit anachronistically, by design). With the loss of 2020 academic test data, the next needs assessment will also likely find these indicators to be lacking.

Post-program Placement

Likewise, there are challenges with reporting data for HIDOE students who have continued on to a post-secondary CTE program, have attained a post-secondary credential, have attained post-secondary credits in CTE, have placed into the military, have placed into volunteer services such as the Peace Corps, or have become employed. These student performance indicators are intended to determine how well programs are preparing secondary CTE students for subsequent CTE program participation and subsequent engagement in society. These data are difficult to obtain because of challenges associated with tracking students after graduation from high school. In terms of employment, for example, the unemployment insurance database is used for tracking this type of placement. This excludes students who become entrepreneurs or who land in employment positions that do not provide this type of insurance. These problems are not unique to Hawai'i; many Perkins V recipients face this measurement challenge (Dougherty, et al., 2020). Although there are some accessible data, it is not yet possible for the system to fully report these student performance indicators.

The UHCCS

The UHCC system is required to report three student performance indicators: post-secondary retention and placement, earned recognized post-secondary credential, and non-traditional program concentration. The UHCCS uses the Annual Report of Program Data (ARPD) to report general indicators and overall health of community college CTE programs within each campus. The ARPD reports include a section specifically for Perkins V indicators, which reports by campus and program technical skills attainment, completion, student retention or transfer, student placement, non-traditional participation, and non-traditional completion. This is a promising start for the UHCCS in its transition from Perkins IV to V, as they provide preliminary data for making decisions about how to improve programs throughout the system. Another positive aspect of the ARPD is the wide availability of the summarized data and the inclusion of goals along with an assessment of whether goals were met or not met.

At the UHCCS CTE office, there is strong capacity for data analysis. The community college CTE office has several staff members who are trained in and currently work on data collection and analysis. This group is responsible for gathering data for Perkins V, the ARPD, and the

CAR, as well as analyzing, disaggregating, and reporting it. During several meetings with their team, it became clear that they are moving forward and able to produce some examples of what their large-scale data collection will look like. It was decided in late fall 2020 that their team's goal would be to put together mock data of 1P1, 2P1, and 3P1 to present to the CLNA team. Although some data was presented at the end of spring 2021, various challenges were cited as making it difficult to produce mock data on student performance indicators and the focus was gradually shifted from creating a report to developing a way to analyze the data effectively in the future. The HIDOE and the UHCCS share some common issues, such as difficulty reporting on special populations, reporting data at the program level, and making the data widely available.

The UHCCS Perkins administration office (including administrators and data wrangling staff) identified that this year (2020–2021) would be used to attempt to better develop the procedures and infrastructure needed to meet the needs of Perkins V reporting. Specifically, they need to develop a plan for reporting disaggregated special population data without violating any FERPA student privacy protections. For example, with only seven community college campuses, there is a challenge in reporting indicator data with low-count special populations. Similarly, the UHCCS CTE team reported struggles with how to begin capturing data from certain special populations such as homeless students. Because of this and other challenges, they did not have all the special populations data for the current CLNA, though they are well equipped to report the special-population categories that were required for the CAR with Perkins IV, such as non-traditional students, as these are already identified and approved in the UH data-collection system.

The CLNA team followed up with the UHCCS CTE team in May 2021 to evaluate the status of data collection and analysis. They successfully collected and processed data on gender and ethnicity, thereby meeting some of the requirements for reporting on special populations. Unfortunately, this data was limited to the aggregate level and did not include record level data. They acknowledged that they need to have data at the record level rather than the aggregated level, as this will be processed by the NAPE system and presented using Tableau dashboards for interpretation. This was a self-reported need that will likely be addressed in the coming year or so. As of May, there had been no change to the data itself and the UHCCS CTE team was still working on producing reports for the student performance indicators 1P1, 2P1, and 3P1. These reports will be available to the community college deans and can inform program decisions.

The UHCCS has recognized needs in their student performance indicator reporting system and aspects of their current process that are being done well. Figure 2.5 displays a SWOT analysis grid drafted by the UHCCS CTE team in 2020 (with SWOT referring to strengths, weaknesses, opportunities, and threats).

Figure 2.5 *SWOT Analysis Grid Developed by UHCCS CTE Team*

Perkins V CLNA Student Performance Indicators SWOT Analysis Grid		
	Opportunities	**Trammel**
Strengths	CAPATLIZE ON THESE • Personnel with experience capturing Perkins IV data • Existing/new business rules to collect data • Planning for mock data, before actual CAR 2021 • Actual reporting not due until CAR 2021 • Extending the deadline for CAR 2021 • ARPD • Data dashboards • Self-reporting surveys • Monitoring, Evaluation, & Feedback working group	MONITOR THESE • UH procedures & policies in collecting student information • Multiple UH stakeholders and approvals needed
Weaknesses	IMPROVE THESE • Additional data on special populations • More disaggregation of data • Sharing of required information/data effectively and widely, including with students and educators • Identifying what formats can be made available, including electronically through the internet • Identifying formats that are considered "user friendly" for a variety of audiences • Analysis of the data by program or cluster by each special population group, ethnicity, and gender to identify disparities and other gaps in performance may be formidable, requiring the use of gap analysis techniques.	ELIMINATE THESE • COVID-19 • One-year-lagged data

This drafted SWOT analysis grid shows some of the major issues, such as impairments related to COVID-19 and challenges with procedures and policies related to collecting student information. These issues contribute to the lack of reportable data at the UHCCS level. Likewise, there is acknowledgement that more gap analysis is required and should be built into future year's Perkins V data collection and processing. On the positive side, there are clear indications that the UHCC system will be able to meet Perkins V reporting requirements in the future due to their strength in completing other reports such as the CAR and ARPD.

Overall Needs and Strengths of Recipients

Several challenges are apparent with the two Perkins V eligible recipients' capacity to collect student performance indicator data and provide reports to a wide public audience. First, there are design issues with the student performance indicators themselves. The reporting requirements, along with FERPA regulations, require careful decision-making in data collection and management. This takes time and dedication. The intent of these performance indicators is to inform program improvements. If the dedication to collect and interpret the student performance-indicator data is driven by this intended purpose, the legislation is assumed to be contributing to the betterment of our students' education. However, in the multiple meetings between the CLNA team and the eligible recipients, seldom was the use of these performance

indicators to improve programs highlighted. The dedication that is salient is the drive to meet reporting requirements. In the field of educational assessment (e.g., as described in AERA, APA, & NCME, 2014), this proposed use of measurement data is a fundamental component of validity. For some of these mandated indicators, such as the academic proficiency measures, the logic is flawed simply because of the lack of temporal precedence. Program quality cannot be evaluated based on data that were collected prior to the program's implementation; with this, decisions about improvement made from such data are grounded in an inadequate validity argument. The stakeholders in these systems are aware of these inconsistencies between data-reporting requirements and intended use. Given this situation, one has to question whether any confidence is placed in the value of some of these mandated indicators, which require considerable effort and expertise in collecting, managing, and reporting. Serious inquiry, not limited to Hawai'i, is needed for evaluating whether program improvements actually do result from these mandated performance indicators (as recognized in the literature, such as in Dougherty, et al., 2020). In a worst-case scenario, professionals who are supposed to use these indicator data notice the validity flaws with some of them and in turn become skeptical about the value of any of these indicators. With the heavy burden of collecting and reporting these data, what will be lost is the authentic drive to provide the best education to our students. If validity (as it is understood in educational assessment; e.g., AERA, APA, & NCME, 2014) is to be given serious attention in Perkins V, there needs to be inquiry into whether these unintended negative consequences are happening and if so what effects these have on students' learning in CTE.

One issue has to do with who gets to see the data reports and the intended uses of those data reports. Internal stakeholders, such as the HIDOE's counselors and teachers, should have access to student-level data for making local decisions about programs or students. However, as was revealed to us by OSDCTE staff, there is also a Perkins V requirement to publicly display student performance data, presumably for accountability purposes. Thus, we have two different uses of data: One at the subrecipient level, which is valuable for informing local decisions; and another at the public-facing level, intended to convey to the public that the system is doing its job of educating students in CTE. This public-facing requirement imposes more data-management work, such as for ensuring that the reports are in accord with FERPA regulations and ethics, and likely will not provide information for authentic improvement.

Next, the structure and scale of Hawai'i's state CTE needs-assessment plan presents an obstacle to collecting SPI data. With one very large school district and seven community colleges, there is a massive amount of data to gather and process. At the HIDOE level, local high schools are largely not gathering student performance indicator data and it is assumed that the state CTE office (via the needs assessment) or the HIDOE CTE administrators, in conjunction with Hawai'i P–20's DXP, will collectively gather, process, and report all secondary level student performance indicator data. Our understanding is that other states tend to focus more on having student performance indicator data gathered, processed, and interpreted at the local level, by the high schools and campuses, and then further processed and interpreted at the state level for the comprehensive portion of the needs assessment. Ideally, this local data collection and interpretation will lead to immediate use of the results for informing program improvements. Although the state CTE office has provided tools for this data collection, including access to NAPE, it appears that it is not readily feasible to collect, analyze, and report

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the data for all of the subrecipients' performance indicators, across all programs and pathways, and across all special populations, at least not with the current processes and procedures.

In response to these challenges, HIDOE has suggested that in future years, the Perkins V CLNA will be conducted through Hawaiʻi P–20. This may make the process of collecting indicator data easier and more comprehensive as the organization that will be responsible for the CLNA will also be partially responsible for collecting and interpreting the performance-indicator data. However, if the emphasis is for local decision-making about programs—that is, for schools to use indicator data to make decisions about how to change their programs—there needs to be rapid reporting available to the schools, such as through the LEI, NAPE, and Tableau dashboards. For the HIDOE, the LEI reports are anticipated to provide real-time information. If there are challenges with LEI, the Strive HI reports may serve as an available structure to build upon; alternatively, the UHCCS ARPDs may serve as a model. With this setup, the people working with the data will have knowledge about the performance indicators, the reporting requirements, timelines, and expectations, thereby removing some of the steps present in the processes with the present CLNA plan.

Alternatively, a more locally driven model can be used. With this, schools would need to allocate resources to the data collection and interpretation, on site, for reporting up to the state agency, a process that would require schools to have the capacity to conduct their own local needs assessments. A challenge they will likely face, however, is their capacity to track students' post-program placement into post-secondary education or into advanced training or military service. Nonetheless, even at the state level, this is a challenge because student identifiers, such as social security numbers, are not recorded in the database, making this performance indicator almost impossible to collect and track.

The UHCCS also struggles with overall data collection and reporting, however, it seems to be further along than the HIDOE in producing accessible and disaggregated student performance indicator data. As with the HIDOE, are challenges in having a single office collect, prepare, and report the totality of the student performance indicator data. The UHCCS is required to report fewer student performance indicators, so their data may be more manageable than the HIDOE data. Again, the local community colleges are not collecting these data and reporting them to the state CTE office where they can be further analyzed; instead, the UHCCS CTE office is collecting data from the system and from each of the seven campuses and then processing and reporting the data. The UHCCS system may explore whether a locally-driven model will result in more immediate interpretation and use of the data. With this, much of the data collection responsibilities might be assigned to the individual community colleges.

One problem that is consistent with both primary recipients is the challenge in collecting data on special populations as well as in reporting needs across the CTE system and within the CTE programs and pathways. Both of these needs are challenging in part because of the structure of data collection, analysis, and reporting that has been set up in Hawaiʻi, which is described above. However, other concerns exist such as finding appropriate means to acquire accurate data on certain populations such as students who are homeless, single parents, or children of parents in the military. Both the HIDOE and UHCCS have reported difficulty obtaining good

data, beyond self-reports, on these populations. Furthermore, other special populations are difficult to report data on because of the low number counts in certain pathways or programs and FERPA requirements. For example, while it may be possible to report on English learners across the CTE system, reporting on English learners in specific programs or pathways at local schools may present concerns with student privacy and therefore can be a barrier to reporting. These issues can be emphasized for analysis in future CLNAs.

Implications and Recommendations

The reporting of student performance indicators and the identification of needs across the CTE system and within CTE programs and pathways is incomplete, at least at the present time, and largely remains in the planning phase, although there are positive steps being taken by both the HIDOE and the UHCCS to meet Perkins V requirements. There are many questions about the relevance of the current set of student performance indicators in the state of Hawai'i and if they are useful measurements for informing programmatic decisions. This is a validity issue. In a well-designed system improvement process, stakeholders see the value of the indicator data for making program-improvement decisions. This value can emerge when they are included in the process of deciding which data can best inform how well the system is functioning; however, the current set of student performance indicators is not viewed as providing this information. The value of these indicators should be evaluated by the state CTE leadership, and perhaps at the national level given that these indicators are mandated.

To meet the requirements of the 2023 CLNA, there are several changes in progress that should be continued as well as changes that merit consideration for improving the data collection and reporting systems. First, both the HIDOE and UHCCS should continue to develop methods, strategies, and associated professional development to help subrecipients build capacity for data collection at the subrecipient level. Better definitions of the roles and responsibilities of subrecipients for data collection and reporting could produce more usable data for program improvement. Next, there is a need to collect data on special populations and report needs across and within the two CTE systems. This is a core tenet of the Perkins V legislation and both the HIDOE and UHCCS recognize the need to collect this data and report it publicly. Finally, it is unclear how much influence student performance indicator data have had or can possibly have in influencing program improvement. Based on focus-group accounts provided to us about the lack of reportable data, it is our understanding that decisions around student performance indicators are made based on incomplete data or personal understandings, philosophies, and experiences rather than data generated from formal procedures. Because program improvement is the reason for collecting and analyzing student performance indicators, there is a need for systematic data collection that informs this intended use.

Summary of Needs

    A. There is a need for the HIDOE to consider the validity of the conclusions that are to be drawn from the student performance indicator data. How meaningful the data reports will be for informing program improvement efforts should be the primary concern with

validity. Some of the measures required by Perkins V appear to lead to weakly supported conclusions about the success of the programs of study.

B. Both the HIDOE and UHCCS are revising their data-collection and -processing procedures. The system has been accustomed to the Perkins IV reporting requirements and both eligible recipients are aware of the new requirements to examine SPIs across pathways, programs, campuses, and special populations but are still working out the process. Both are also using other sources of data besides the core Perkins SPIs (for legitimate reasons) to inform program decisions; the accuracy of these data and the appropriateness for their use in making judgments about programs' effectiveness need to be examined and documented.

C. Both the HIDOE and UHCCS are working to develop more effective ways to collect special population data in order to meet the Perkins V reporting requirements, but there is more work to be done in this regard. Data collection procedures are still being developed to account for privacy and some special-population categories, such as students' status as homeless or as single mothers, are more difficult to accurately measure than others.

D. Two versions of the data reports are effectively needed: One to authentically inform program improvement and the other to display to the public, presumably to serve accountability purposes. These two different uses will likely require different business rules for determining what gets reported, including, for example, identifying which core SPIs are actually useful for program improvement decisions and how FERPA compliance will be addressed.

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Chapter 3
Size, Scope, and Quality of CTE Programs and Programs of Study

Size Criteria

This section addresses needs in **designing size** as an individual component part across the CTE system, including systemic gaps, disparities, and misalignments. Size criteria include both physical program elements and human elements. The physical program elements of size criteria include
- facilities, space, accessibility of those facilities, and
- technology and materials.

The human elements of size criteria address
- student enrollment and
- the numbers of instructors and counselors.

HIDOE Size Criteria

Designing size across the Hawai'i CTE system is complicated by the structure and scale of the system. As a single-school-district state with fifteen complex areas that vary considerably in population and urbanicity, Hawai'i has a unique set of challenges in achieving equity across regions. Ideally the CLNA team would have examined evidence of how the schools use data to determine if they are meeting size criteria, but such data , including Perkins administrators, CTE deans, and program administrators were not available at the time of reporting. Size criteria may be considered by high school principals as they prepare their academic plans in which they identify and prioritize their school's needs. However, the Perkins V criteria are not always explicitly integrated in academic plans and the 43 academic plans are not easy to compare with each other. Academic plans do integrate many other HIDOE and school initiatives and CTE may overlap with school design initiatives and academy initiatives. It may be that CTE is a lower priority than more pressing needs at some schools, such as addressing equity in students' academic achievement. Therefore, this CLNA was constrained by the lack of quantitative data at the HIDOE level to determine how size criteria are used by subrecipients. There is a need for subrecipients to gather and provide data about size for the CLNA process. The project team gathered evidence of HIDOE size criteria through focus groups with CTE coordinators, resource teachers, and classroom teachers.

UHCCS Size Criteria

Designing size across the UHCCS is much more systematic and transparent. The campuses analyze size criteria through a common Annual Report of Program Data (ARPD), which is available publicly (UHCCS, 2020a). Programs also publish annual reviews of program data in which ARPD data are analyzed and interpreted (UHCCS, 2020b). This review includes recommendations for program changes that are based on the analyses.

Facilities, Space, and Accessibility

Perkins V requires recipients to provide adequate classroom and lab facilities that are consistent with industry standards for the types of spaces and activities, accessible by all students, and large enough to support program enrollments. The Hawai'i Perkins V Plan design does not specifically address how to fund these elements equitably. Sub-recipients are tasked with determining how to prioritize the funds they are allocated by the state to meet Perkins V requirements. The focus group participants described situations that suggest there are large variations in classroom and lab facilities across the HIDOE, which indicates that there is a disparity. Some participants stated that their schools lacked facilities to provide experiences that prepare students for work in industry, such as a lack of commercial kitchen facilities. This disparity is particularly noticeable for smaller schools, which was attributed to funding mechanisms that are purely determined by the number of completers and concentrators. While smaller schools serve smaller numbers of students, they are still expected to maintain the same levels of facilities and provide access to similar programs. There is a need to examine how funds are allocated to schools and how this allocation affects the abilities of subrecipients to provide adequate facilities and space.

Technology and Materials

Perkins V requires recipients to provide appropriate technology, equipment, supplies and materials to support academic and technical learning requirements. The design for technology and materials is not well defined at the state level. Programs and programs of study are defined at the state level and then complexes and schools are responsible for local implementation, which is limited by resources that vary by school size. The funding that schools receive is calculated by the numbers of concentrators and completers, which means that funding provided to smaller schools is often insufficient to acquire the technology or materials they need to meet industry standards. Some schools cited outdated technology as a limiting factor in their ability to deliver programs that meet industry standards. Many HIDOE teachers cited lack of materials that were comparable to industry standards as affecting their abilities to deliver programs and programs of study that would prepare students for work in industry. There is a need to more closely monitor the adequacy of technology and materials and consider ways to adjust funding when disparities are noted.

Student Enrollment

Perkins V requires recipients to meet minimum enrollment requirements for instruction as defined by the Board of Education and Board of Regents policies or those of the Hawaiʻi Department of Education or the Hawaiʻi Community Colleges.

HIDOE Enrollment

Actual student enrollment data were not available for HIDOE. CTE program staff described how they delivered CTE programs and programs of study. Many program staff said that student enrollment numbers were appropriate. In one school, a practice that was noted was *stacking*, which is a suboptimal practice that may not breach recommended pupil-to-teacher ratios, but makes teaching substantially more complex by asking teachers to instruct up to four different levels of students simultaneously. Stacking may also negatively impact the student experience by decreasing the quality of instruction and level of instructor attention. There is a need to examine the practice of stacking and how it impacts teaching and learning processes and outcomes.

UHCCS Enrollment

The ARPD includes efficiency indicators such as class size, fill rate, number of program faculty, and ratio of majors to faculty. These reports also include an analysis of each program, which tends to address the program's specific enrollment conditions that are not captured by the ARPD indicators. These ARPD elements are evidence that the UHCCS is systematically evaluating its program enrollments.

Numbers of Instructors and Counselors

Perkins V requires programs to meet professional association-recommended pupil-to-teacher/instructor ratios for classrooms/labs, including pupil-to-counselor ratios.

HIDOE Instructors and Counselors

Actual data were not available to examine these ratios and there was limited evidence of these ratios having been examined by the recipients in terms of professional association recommendations. At the HIDOE level, classes need minimum enrollments to be conducted.

UHCCS Instructors and Counselors

The ARPD includes efficiency indicators such as the number of program faculty and ratio of majors to faculty. These ARPD elements are evidence that the UHCCS is systematically evaluating its number of instructors.

Common Issues with Numbers of Instructors

Many focus group participants at both the HIDOE and UHCCS levels cited a shortage of qualified teachers as a limiting factor in delivering CTE programs and pointed to a design factor that contributes to this concern. People who have industry certifications and qualifications in certain fields often do not have a bachelor's degree or teacher certification, while people with teacher certifications do not have industry certifications or the skills needed to teach CTE courses. The system design specifies that high school CTE teachers must have a bachelor's degree to be certified and must be certified to be on the teacher pay scale. Without the bachelor's degree, high-skilled and qualified people in industry cannot even make teacher pay. For those in high-demand, high-wage occupations, they certainly cannot even come close to earning what they would while working in industry. This is a severe disincentive that affects schools' capacity to recruit and retain highly qualified teachers for several CTE programs, such as transportation, engineering, and information technology. This design feature stands in contrast to industry, where people with expertise developed on the job over many years are recognized as having equivalent skills and deserving equivalent pay to those with college degrees. Principals described strategies to fill high-need CTE faculty positions, such as converting science and mathematics teachers to CTE teachers. Although this strategy may work well in some instances, it is very challenging for a science or mathematics teacher to attain high-level industry credentials or skills that they need to teach high-level courses in CTE programs of study. There is a need to examine policies for hiring CTE teachers and instructors to identify ways to make hiring practices more comparable to the policies in industry, and to allow more flexibility for subrecipients to fill positions and retain people in those positions.

Scope Components

This section addresses needs in **designing scope** as an individual component part that exists across the CTE system, including systemic gaps, disparities, and misalignments. The scope components include the following:
- overall CTE program design elements, such as
  - breadth of program content,
  - career exploration and development activities, and
  - employability skills;
- program of study design elements, such as
  - skill development,
  - alignment of coursework with industry standards or credentials,
  - integration of academic skills,
  - accelerated learning programs, and
  - instructional materials;
- industry connections, such as
  - work-based learning, and
  - employer engagement;
- counseling;

- recruitment and retention of staff; and
- professional development

Overall CTE Program Scope Design

Breadth of Program Content

The breadth of program content is its range or extent. HIDOE and UHCCS determine the breadth of program content in different ways.

HIDOE Breadth of Program Content

The design breadth of program content is largely determined by the pathways that were created at the state level. HIDOE is currently in the process of transitioning from six to thirteen pathways, which represents a reorganization of existing programs into more logical pathway groupings and an increase in CTE program breadth. Complexes and schools are beginning to adjust their offerings and programs to the new structure as HIDOE rolls out new sequences and course objectives. This year the first set of new pathways was rolled out.

UHCCS Breadth of Program Content

The design breadth of program content is determined by the program mission statement or program description. Each program has design goals to prepare students for specific careers, with specialty tracks for those careers. UHCCS programs are also designed to facilitate student transfer to specific UH programs. Programs at individual campuses are coordinated through program coordinating councils and there are written articulation agreements of the same programs across campuses.

Career Exploration and Development Activities

At the state level, the Employability/Transferable Skills working group within the OSDCTE's Sectors and Pathways—Program Quality Committee is described as working in collaboration with the Workforce Development Council to inform the CTE system's career exploration and development coursework, activities, and services. There are resources specific to pathways or industries. For example, according to the OSDCTE's documents, P–20 has a work-based manual under development to provide employer engagement resources that include career exploration and development activities.

Many focus group participants cited the need for students to have access to more career exploration programming prior to high school. Some school-level policies have the unintended consequence of limiting students' opportunities for career exploration during high school. For example, representatives from several schools stated that students may only change their CTE program of study once. This school-level decision is an unintended consequence of a state design decision to tie funding formulas to the number of concentrators and completers, rather

than the number of students who enroll in CTE courses overall but may only take one course in a pathway. It seems likely that many students may need to change pathways more than once to determine which is the best fit for them as the career exploration life stage encompasses ages 14 to 24 (Hartung, 2013). Parents and secondary CTE staff have suggested that there needs to be more career exploration, possibly in middle school or elementary school. A UHCCS dean commented as a parent about her son who is now in his 20s, "ninth graders now have to enter high school, they have to choose a pathway and they really can't explore as much as they used to. Same as when they come to college, right?" She elaborated that more collaboration is needed to integrate more exploration as the system is "forc[ing] to choose at a younger age" a pathway to college because "by the time they hit us, it's almost too late. You know, they're making these decisions way before they get to college." There is a need to reconsider funding allocation policies so that the priorities of school administrators and their implemented policies can better support the developmentally appropriate needs of students for career exploration.

Employability skills

At the state level, the Employability/Transferable Skills working group that is housed within the OSDCTE's Sectors and Pathways—Program Quality Committee is tasked with addressing the development and delivery of employability or transferable skills across the state's CTE programs.

HIDOE

The redesigned HIDOE course descriptions include standards that address employability skills, including appropriate dress, grooming, and interview etiquette in addition to job-specific skills, as evidenced by our review of the new Principles of Fire and Emergency Services (FES) course description. The focus group participants mentioned how they prepare students for the workforce by contextualizing their academic courses within career pathways or preparing them for the workforce by having students practice for parts of the hiring process—such as creating a resume or filling out a job application—or by using skills such as collaboration and getting along with coworkers.

CTE pathway courses also address employability skills that are broader than the pathways and programs themselves—skills that students will need for any future job. A CTE Teacher explained that since only a few students will eventually work as graphic designers, half of the course focuses on professions in the community and then "the other half is... soft skills and so ...if they decide to stay on Island, and ... work within the businesses here, that they at least have those beginning skills to get into a job."

UHCCS

At the post-secondary level, each program's ARPD report includes a link to employability skills (the term *soft skills* is used in this site) that are included in the program. For example, Kapiʻolani Community College's medical assisting program includes communications, customer service, attention to detail, and several other soft skills. The site is interactive and each soft skill listing is

a hyperlink to a site that lists local companies that include that skill in their job advertisements. However, some programs' ARPD links to soft skills do not function, suggesting that this is still in development for some programs.

Program of Study Design Elements

Skill Development

HIDOE

The redesign of pathways and programs of study that is underway at HIDOE includes analysis of required industry skills and the creation of course objectives that address these skills. New pathway documents will be rolled out over the next several years. This year, materials were rolled out for criminal justice and fire and emergency services (FES). The Principles of FES document was examined as an example of the evidence for skill development in program design.

UHCCS

Current UHCCS programs undergo annual reviews that document the alignment of courses with industry occupations and certifications. Programs at individual campuses are coordinated through program coordinating councils and there are written articulation agreements. For example, Information and Computer Science shares common program outcomes across the UHCCS campuses. Success on industry certification exams is used as evidence of skill attainment.

Alignment of Coursework with Industry Standards or Credentials

At the state level, the OSDCTE's Data Management and Technology Committee is tasked with gathering and using state, regional, or local labor market data to determine how well the eligible recipients' programs align with the needs of in-demand industry sectors and occupations.

HIDOE

The HIDOE CTE courses are in the process of a major revision. An external consulting company has been hired to redevelop the course objectives to align with industry standards and credentials. The new program documents specify the industry certifications that the program supports. The course materials themselves are to be developed by CTE teachers.

UHCCS

At the UHCCS level, the ARPD describes how each program aligns with standard occupational classifications (SOCs). For example, Information and Computer Science at Leeward Community College aligns with four SOCs—computer and information research scientists, computer and information system managers, computer network architects, and computer other occupations. The ARPD describes the industry credentials that each program supports. For example,

Information and Computer Science at Leeward Community College supports six industry certifications (CompTIA A+, CompTIA Network+, CompTIA Security+, CompTIA Linux+ Powered by LPI, Certified Ethical Hacker, EnCase Certified Examiner).

Integration of Academic Skills

Integration of academic skills is a goal of CTE programs, but the level to which this should occur seems to not be specified in the design documents. Integration could be documented in ways that emphasize the connections between CTE courses and core academic courses. For example, CTE program-of-study documentation could cross-reference course objectives to relevant content area standards in academic domains such as computer science, English language arts, mathematics, science, and social studies to explicitly show how academic skills are integrated into CTE programs. In our review of the Principles of Fire and Emergency Services draft course description, we noted several standards and benchmarks appeared to have connections to academic skills, but they were not specifically called out or cross referenced. For instance, one course objective is "write a summary describing the occupation's primary academic skills, technical skills, and employability skills traits." This objective integrates English language arts and could be labeled as supporting CCSS.ELA-LITERACY.W.9-10.2. Explicit links could help teachers in integrating CTE and academic subjects and show families how CTE supports academics. In sum, there appears to be a need to describe the extent to which academic skills are to be integrated into CTE programs.

Accelerated Learning Programs

At the state level, the OSDCTE's Counseling and Advising working group, within the Sectors and Pathways—Program Quality Committee, is responsible for reviewing the opportunities for accelerated learning, such as the Early College and dual credit programs. One of the design and integration issues that may need to be further examined is the degree to which these accelerated learning programs offer opportunities in CTE, distinct from opportunities in core academic program acceleration.

Instructional Materials

Instructional materials are primarily developed or selected by the CTE teachers. In the HIDOE, many of the teachers who are developing materials might not have experience in that industry, which can result in wide variations in the quality of the design of the instructional materials. One district resource teacher shared two examples of programs created by teachers. One program was of such high quality that it continued to be used after the teacher left the school: "A social studies teacher that transferred into digital media, but had a very strong passion for it...created this very awesome digital media program at a school not initially in digital media, it was his passion." In contrast, some teachers who have prior industry experience are unable to modernize courses to reflect current industry standards. The district resource teacher explained that "(they) learned it 10 years, 20 years ago, (they) really need to either be retrained or retire because...the laminated lessons is what I call them,...they haven't...updated their skills." There

is a need to ensure that all CTE teachers have up-to-date industry knowledge so that they can deliver high-quality CTE courses via instructional materials that reflect industry standards.

Industry Connections

At the state level, the OSDCTE's Work-based Learning working group, within the Sectors and Pathways—Program Quality Committee, has documented initiatives that connect students with industry. One example is the ClimbHI Bridge, which connects HIDOE students and teachers with career, internship, and mentorship opportunities at Hawaiʻi businesses and nonprofits.

Focus group data show that another strategy for establishing industry connections for work-based learning is to hire an intermediary, which is someone who builds and maintains connections with industry. Some districts have temporary intermediary positions, while other districts have permanent positions. For instance, in one neighbor island district the intermediary position will only continue until work-based learning sites are established, while an academy high school in another district has hired a permanent intermediary and intends to increase the intermediary positions for other academies. If the industry connections remain healthy after the temporary position ends, it may be reasonable to assume this can occur in other contexts. In more rural areas, connections with industry are tenuous and depend on the ongoing efforts of the person in the intermediary position.

However, as was shared by an HIDOE administrator (and a theme that had also emerged in the 2019 CLNA), these intermediaries or other structures for initiating industry connections need to be established so that the connections are between the institutions—that is, the programs of study and the business as a whole—rather than between persons. When people retire or move—from either side of this connection—the relationship is at risk of falling apart. In other words, there needs to be a means to ensure these connections between schools and industries are sustained.

Industry connections are also established and maintained through pathway advisory committees in the HIDOE and UHCCS. These are designed to provide industry-specific expertise for reviews of the content standards (Hawaii DOE, n.d.). For example, in the HIDOE's education pathway advisory committee, there are industry representatives from educational institutions, including Kamehameha Schools and a middle school, but also representatives from industry in the community, including from an energy company, a shopping center, and a law organization. Ideally, these industry representatives will know about resources that pathway educators can use in their work, such as work-based learning sites, and valuable information that educators can take into their classrooms, such as whether a particular certification is more highly recognized in their field than other certifications. For example, according to one of the Education Pathway Advisory Committee members, industry representatives might include people who work with elementary schools' hiring committees in their search for paraprofessional teachers. This kind of feedback will reveal whether the credential that is currently listed on the standards for this pathway (the ParaPro certification, which costs students $55 to take) is indeed a credential that local hiring staff are seeking. In the HIDOE pathway advisory committees, there

are opportunities to develop industry connections and provide meaningful resources to the pathways—this opportunity should be formalized as part of the committees' purposes.

Work-based Learning

Work-based learning does not seem to be a system-level design feature because it varies considerably by subrecipient. Smaller schools report having fewer industries nearby and therefore, fewer opportunities for work-based learning sites. Work-based learning is included in HIDOE documents, such as in the descriptions and objectives of the programs, as they are being rolled out in the 13-pathway structure. At the system level, one of the OSDCTE's subcommittees (the Sectors and Pathways—Program Quality committee) has reported that there is pilot-testing of a program to train staff in four different organizations who will work with at-risk youth.

Employer Engagement

There is evidence of employer engagement at the design level. Engagement is included in both eligible recipients' pathway advisory boards. According to an OSDCTE staff member, the intended strategy is to identify potential job growth and anticipated labor-market information to then see if the alignment of the programs with industry can be improved. She cites a past example in finance and the types of jobs that were anticipated to be available in the banks because of the reduction in need for tellers. A workforce development council representative confirmed this engagement process and added that within one year, the UHCCS responded with adjustments to the curriculum in this respective pathway and successfully retrained the bank tellers for the new positions that were anticipated.

In the HIDOE, an example provided by industry was that of an artificial intelligence company that partnered with the Department of Transportation (DOT), which resulted in the creation of a curriculum to include students in design thinking. As a participant in the industry stakeholder focus group expressed,

> educators are not going to find the way to bridge education and industry. They create the future at Oceanit. Oceanit partnered with DOT to improve traffic conditions and DOT wanted to include students. No curriculum existed, so they created it. The students had gone through the process, they did a briefing with the client after having analyzed the data—So, the students, who are the future, are "creating the future". The students also developed skills in design thinking; and ….how innovation occurs in the real world. It was purportedly successful: Now, they have two more projects with DOT Highways.

This example shows the importance of employer engagement as they are at the forefront of innovation in industry and can easily provide real-world context for higher order thinking.

As previously mentioned, pathway advisory committees are a structure that facilitates employer engagement, as they are designed to include industry-specific expertise in reviews of the pathways' curricula. Ideally, these industry representatives will know what employers are seeking—which credentials are valued—when they review job candidates; they will know about the resources that pathway educators can use in their work, such as work-based learning sites.

In the HIDOE, the design of these pathway advisory committees (as they are being developed with each pathway's rollout) should include explicit statements about this employer engagement role and provide examples of tasks that industry committee members can engage in. At the present time, at least with one of the pathway advisory committees, this is still in development and not yet formalized. This need was specified previously in the section on industry connections.

Counseling

At the state level, the OSDCTE's Counseling and Advising working group, within the Sectors and Pathways—Program Quality Committee, is responsible for reviewing the opportunities for accelerated learning, such as the Early College program, as well as for addressing student-to-counselor ratios.

The project team was unable to acquire enough information to determine the design needs with regard to counseling. On the system-improvement forms, the counselors were asked if the programs included structures to coordinate the work of CTE teachers and counselors, to which 60% responded 'yes'. At some schools certain counseling kinds of activities are addressed by teachers, implying that the design of this is left to the subrecipient. There is also a perception that principals and counselors see CTE as an add-on and do not attend as closely to issues that are important to CTE program enrollment or improvement as they do to core academic programs, such as how to integrate CTE advising into academic advising. This suggests that there is a need for strategies for improving how to integrate CTE counseling with the current academic skills counseling.

Recruitment and Retention of Staff

At the system level, the OSDCTE's Human Capital Committee is charged with addressing the development and enhancement of the recruitment and retention of the CTE educators, including teachers, instructors, and counselors. Part of their intended work is to pursue revisions of the HTSB requirements for HIDOE CTE teachers, identify and make recommendations pertinent to educator preparation programs, and identify high-priority gaps in CTE educators. Much of this work is still in development. One of the committees that is intended to work with the Human Capital Committee is the Teacher Education Coordinating Committee (TECC), but the TECC membership is still being arranged, with many people who had been slated to serve this past year needing to focus on covid concerns and reorganizations in their own institutions.

One design issue within the eligible recipients is that there does not yet seem to be a consistent method for recruiting and retaining industry-qualified but non-bachelor's-degree-holding personnel into teaching. The regulations force these individuals into low-paying teaching jobs with no way to advance in HIDOE teaching careers without earning degrees, even when degrees are not required for the particular jobs that they are preparing students for in industry. For example, a HIDOE coordinator for the EMT pathway described how the average salary for an EMT (a job that does not require a bachelor's degree) could be used to determine reasonable compensation for an industry professional to teach a course. The average salary for

an EMT is $72,000. If a full-time teaching load is six classes, then that is equivalent to paying a teacher $12,000 per class. The EMT coordinator wondered if he could hire an experienced EMT to teach one class at that rate, how much could that help to build up that pathway.

Another HIDOE teacher with industry expertise in industrial and technical engineering shared a similar concern about not having the opportunity to contribute to the HIDOE's redesign efforts. When HIDOE schools are able to recruit and retain industry-qualified personnel, the expertise of those individuals does not seem to be leveraged well in the system. Industry experts who are qualified teachers seem ideally positioned to help develop and refine CTE pathways, but their expertise is not valued or utilized in that way. Although a consulting agency from outside Hawaiʻi is managing the redevelopment of the pathways, the extent to which they include local expertise merits closer attention. There is a need for the HIDOE to leverage their personnel resources more effectively in system improvement processes, such as program and curriculum redesign.

Professional Development

The OSDCTE's Human Capital Committee, through its Leadership and Educator Professional Development and Capacity Building working group, is charged with identifying the professional-development needs for providing professional-development opportunities for CTE teachers, counselors, and training providers.

Most professional development is offered at the state level and promoted to the complexes and schools through the district resource teachers. The professional development program is being revised as part of the transition from six to thirteen pathways and the development of new course sequences. The first year of professional development was rolled out this year. Teachers shared that the new PD helped them to break down the new standards so they could write lesson plans.

Quality Criteria

This section addresses needs in **designing quality** as an individual component part that exists across the CTE system, including systemic gaps, disparities, and misalignments. The quality of a program is to be evaluated based on information about
- equity of program access to special populations,
- alignment of programs to occupations with a living wage, that are in demand, or high skill,
- review of programs,
- employer feedback, and
- findings of the system improvement process.

Equity of Access to Special Populations

Several of the OSDCTE's subcommittees include equity of access to special populations as a component of their committee work. For example, the Sectors and Pathways—Program Quality

Committee, through its Employability/Transferable Skills working group, is charged with addressing special populations in the CTE system, including the preparation for high-skill, high-wage, or in-demand occupations; equal access to CTE courses, programs, and programs of study; and the assurance that members of special populations are not discriminated against. In the Accountability working group in the Quality Assurance and Continuous Improvement Committee, members are tasked with identifying disparities, misalignments, or inequities in program offerings and participation among special populations. This committee has begun meeting this past year.

A first step in determining quality design needs would be to assess the existing conditions with regard to equity of access to special populations. However, because of the present challenges in data collection and management, which are further addressed in Chapter 6, there appears to not yet be a means for accurately comparing students of some special populations with their non-special-population counterparts in regard to their access to programs and programs of study. For some special populations, particularly those that are new in Perkins V, there are simply no available data, at least not yet. Once these data are available, they can inform design decisions, such as which special populations should be targeted for equity interventions. However, the OSDCTE's Data Infrastructure, Reporting, and Use working group, within the Data Management and Technology Committee, is tasked with identifying the needs in the data infrastructure, reporting, and use throughout the system, with attention to the use of dashboards for revealing CTE program and program of study access and performance. In the meanwhile, both the HIDOE and the UHCCS have overarching policies in place that are designed to address equity of access, such as frameworks for aligning with Native Hawaiian values, and Multilingualism and Equitable Education Policies (see Chapter 6). However, it is not clear how these frameworks and policies are being applied within CTE programs and programs of study to design for equity of access. Because much of this design work is in the planning stages, the needs with this criterion have to do with collecting data that is informative to the programs within subrecipients. There are also needs in identifying how programs can be promoted to members of special populations, which is further addressed in Chapter 4.

Alignment of Programs to Occupations with a Living Wage, that are In-Demand, or are High Skill

The OSDCTE's Data Management and Technology Committee, through its Data infrastructure, Reporting, and Use working group—has been working with P–20, with funds from the Castle Foundation, to develop metrics to address the intersection between education and the economy, including education's preparation for students in living-wage and in-demand jobs. Some of this work is intended to examine the effect of a credential or degree in securing a living-wage job in our state. The Promising Credentials online resource, which is intended to inform the state's CTE programs and stakeholders, is one example of the types of information that are available for informing design-level decisions having to do with alignment of programs.

The Perkins V quality criteria for programs include alignment with in-demand and economic-development occupations. There appears to be some tension in the state in how this criterion

aligns with definitions of quality occupational pathways in the community. For example, Native Hawaiian community norms are for young adults to prioritize occupational choices by examining family and community needs, which take precedence over wages and skill levels. This reflects differences in value systems between the United States as a whole and many people of Hawai'i and suggests that there is room for growth in how CTE pathway quality is defined by expanding the quality criteria beyond living-wage, in-demand, and high-skill to include family and community values. This design shift can in turn guide CTE programs in their approaches for helping young adults choose a career while also acting within community norms.

Review of Programs

The design and integration of this component of program quality is through the program advisory committees, which are to be held at the state and county levels, across agencies, at least once per year. The OSDCTE staff have reported that these program reviews at the state level have occurred, as planned with the OSDCTE's subcommittees, with the exception of the policy subcommittee, which has yet to meet.

Additionally, the OSDCTE's Monitoring, Evaluation and Feedback working group, within the Quality Assurance and Continuous Improvement Committee, is charged with monitoring feedback from stakeholders to document (a) how well students' learning experiences in CTE programs and programs of study have served them and (b) the experiences of employers hiring new graduates.

With the HIDOE, program review is conducted in the pathway advisory committees, with those pathways that are being rolled out this year, such as the education pathway, now having those committees. Primarily, this review process is of the program descriptions rather than of the program performance, at least in these early stages of the redesign process.

At the post-secondary level, advisory committee engagement occurs and is documented in the ARPD documents. The UHCCS programs state that they use this information to improve their programs. Programs at individual campuses are coordinated through program coordinating councils and there are written articulation agreements of the same programs across campuses.

Employer Feedback

This program-quality criterion concerns the solicitation of employer feedback about their satisfaction with employee recruitment, hiring, and work performance. Presumably, programs are to obtain this feedback to inform their curriculum development. It seems as though feedback is to be shared with program developers either from data that is provided to them such as from the subcommittees of the OSDCTE or directly from employers.

The OSDCTE's Monitoring, Evaluation, and Feedback working group, within the Quality Assurance and Continuous Improvement Committee, is charged with designing and administering tools to collect employer feedback. In this effort, the OSDCTE staff have reported that they are revamping their monitoring and evaluation procedures.

In other subcommittee work, the OSDCTE's Sectors and Pathways— Program Quality Committee has partnered with organizations, including the Chamber of Commerce Hawaii, the Workforce Development Council, and healthcare employers to align CTE education in both eligible recipients with industry needs. This indicates that there is work toward integrating this criterion across the system. However, the design seems to be more strongly in place for the health-services pathway than others. There is limited evidence that HIDOE programs are yet designed to collect employer feedback.

At the UHCCS level, advisory committees are established across the pathways, with some, such as in health services, actively seeking and using employer feedback, whereas others can use some improvements. In sum, the design and integration of this criterion seems to vary by career cluster.

Findings of the System Improvement Process

There is good evidence that there is an established design in place for systematic evaluation at the UHCCS level. At the HIDOE level, this design is under development. At the UHCCS level, departments use the ARPD system to examine some evidence, but it is not explicitly linked to all Perkins criteria and categories. The HIDOE seems to need to develop strategies to specifically address systematic improvement processes for CTE. Currently, CTE improvement falls within the purview of schools' academic plan requirements, but some schools do not have CTE specifically called out in those academic plans, while others do. The size, scope, and quality criteria need to be clearly communicated to schools and these criteria should be used to inform existing system improvement processes. Schools' academic plans primarily focus on addressing needs identified through large-scale assessment, such as achievement gaps among subgroups or between schools and the rest of the HIDOE (i.e., increasing school-wide performance in specific content areas). There is a need to better integrate CTE programs of study into the academic planning process, perhaps through principal review of student performance on CTE performance-based assessments and identifying gaps among subgroups or needs for improvement, similar to the approach to systematic improvement of academic courses.

Design of Size Criteria and Scope Components as Integrated, Interdependent Parts

This section addresses the extent to which the size criteria and scope components are designed as integrated, interdependent parts of a system of CTE learning experiences. Integration and interdependence were examined:
- across the CTE system
- across CTE programs and programs of study, and
- across geographic regions.

Across the CTE System

Across the CTE system, stakeholders have specific roles in the OSDCTE and learning hubs (subcommittees). There is some evidence of alignment and engagement across the system, such as one example of a new UHCCS program being created to meet a need that was brought up by a stakeholder in the banking industry. In that scenario, the industry person stressed the importance of training students to become universal bankers. Within one year the UHCCS came out with a curriculum and retrained the current bank tellers. However, the alignment and engagement may be more sporadic than systematic. Systematic approaches to alignment are constrained by the amount of time that passes between improvement phases, such as the time between data gathering and analysis and system response. For example, the analysis of the labor market was conducted in 2018 and the roll out of new courses several years later makes it very difficult for the system to adjust to more rapidly changing circumstances, such as the COVID pandemic. According to an industry representative, the Workforce Development Council (WDC) is concentrating on retraining retail, travel, and hospitality sectors because about 40% of these positions will disappear and will need transitioning to more resilient industries in the pandemic, such as Healthcare and IT. There is a need for more systematic approaches to integrating stakeholders and industry into the system improvement process and to find ways to increase responsiveness or response rates in the CTE system to changes in labor market conditions.

Across CTE Programs and Programs of Study

Across CTE programs and programs of study the extent of clear integration and interdependence varies considerably. There does not appear to be clear integration and interdependence across the HIDOE and UHCCS programs. Clearer integration and interdependence would likely improve the ways in which students progress from high school to community college CTE programs. For example, at least two focus-group participants stated that the high school program of study objectives seemed more appropriate for college than high school and that they did not have teachers with the appropriate skills or expertise to teach advanced courses. A coordinator shared comments from CTE teachers who are retired financial professionals. The retired industry professionals expressed disbelief about the feasibility of the content standards. For example, one said "I can't believe you guys are trying to teach this in high school. This is what I learned in college. And even in college, it was kind of beyond what I could do." The coordinator continued to explain that the retired professional understood the concept only after he became vice president of the bank, which underscored the difficulty of the concept. There is a need for the program of study objectives to be reviewed and compared to community college course objectives to determine what is most reasonable to teach at the high school level.

Across Geographic Regions

HIDOE

Across geographic regions, it does not appear that the funding formulas have been designed to adjust for geographic inequities, though they are under consideration and will be in preparation. The HIDOE CTE administrator indicated that their funding formula committee has been established and will be working on a new formula to be implemented the 2022–2023 academic year. At the present, it appears that the formulas are based on numbers of concentrators and completers, which can impact the capacity of subrecipients to implement programs that meet size and scope requirements. Two DRTs, two coordinating teachers, and a neighbor island teacher commented on the need to adjust funding formulas for smaller schools. First, one said

> the difference between a completer and concentrator is still confusing…(this is) not a strong data point and (how it is) used to justify funding is not fair. The calculation is detrimental to small schools. For example, if a small subrecipient needs to fund equipment for multiple sites, but their number of concentrators is low (sometimes zero because the students are officially enrolled in another school), their funding is low.

On the other hand, a coordinating teacher discussed disparities among schools needing to achieve industry standards for certification because smaller schools are not receiving the funds they need to purchase equipment. "But do we have the actual right equipment to do the industry certification? ... [I]t's not fair to the students at a small school that they don't get the same industry standards as the students (at) a large school...to me, that's just not right."

Smaller schools (i.e., rural schools) indicated insufficient funding to purchase equipment needed to implement programs as they are intended. For example, in the culinary program, participants mentioned relying on outdated equipment from prior home economics programs to teach commercial culinary programs. In a neighbor island focus group, participants discussed that their 100-year-old school did not have the basic infrastructure, such as the electrical system, needed to support professional kitchen equipment. One questioned the feasibility of building out pathways when the high cost of professional equipment (e.g., grease traps) makes purchasing such equipment impossible. The combination of insufficient funding and an inequitable funding formula creates disparities among programs of study across regions, with some not able to purchase the equipment they need while others are able to purchase needed equipment. For example, a graphic design instructor described his need to replace his "dying computer lab" of aging Windows 7 PCs as well as their software, but he was offered a budget of only $1,000. He described that his budget needs were so great that they would exceed what could be allocated to his program of study and take away from needs for other programs of study. He said "...if I wanted to redo my computer lab...nobody gets any money." There is a need for budgeting and procurement processes to account for inequities across regions and among schools of different sizes, particularly in terms of subrecipients' capacities to acquire equipment that meets industry standards.

Another issue of concern with regard to scope is how IT policies, such as network security, impact the ability of students to use industry-grade software. There seems to be an

unwillingness to adjust network security policies to allow industry-grade software to function properly on the HIDOE network. The instructor described how the district IT specialist blamed the teachers for Adobe Photoshop Creative Cloud not running anymore after a month. However, the specialist may not have considered that "the security that they have on our internet is so strict that the Creative Cloud can't access and verify its software every month like it's supposed to." There is a need for the HIDOE network security policies to be reexamined for their effects on students' abilities to use industry-grade software in schools and meet requirements for programs of study.

Summary

The needs having to do with the design of programs, as identified by the size, scope, and quality criteria, include the following:

A. There is a need for subrecipients to gather and provide data about size for the CLNA process.

B. There is a need to examine how funds are allocated to HIDOE schools and how this allocation affects the abilities of subrecipients to provide adequate facilities and space.

C. In the HIDOE, there is a need to more closely monitor the adequacy of technology and materials and to consider ways to adjust funding when disparities are noted.

D. There is a need to examine the practice of stacking in smaller HIDOE schools and how it impacts teaching and learning processes and outcomes.

E. In both the HIDOE and UHCCS, there is a need to examine policies for hiring CTE teachers and instructors to identify ways to make hiring practices more comparable to the policies in industry and to allow more flexibility for subrecipients to fill positions and retain people in those positions.

F. There is a need to reconsider funding allocation policies so that the priorities of HIDOE school administrators and their implemented policies can better support the needs of students for career exploration.

G. There is a need to systematically describe the extent to which academic skills are integrated into CTE programs.

H. One of the design and integration issues that may need to be further examined is the degree to which accelerated learning programs offer opportunities in CTE, distinct from opportunities in core academic program acceleration.

I. There is a need to ensure that all HIDOE CTE teachers have up-to-date industry knowledge so that they can deliver high-quality CTE courses via instructional materials that reflect industry standards.

J. There is a need for sustainable connections between HIDOE schools and industries, especially for schools that have fewer industry resources in their geographic area.

K. In the HIDOE pathway advisory committees, there are opportunities to develop industry connections and provide meaningful resources to the pathways—this opportunity should be formalized as part of the committees' purposes.

L. There appears to be a need for strategies for improving how to integrate CTE counseling with the current academic skills counseling.

M. There is a need for the HIDOE to leverage their personnel resources more effectively in system improvement processes, such as program and curriculum redesign.

N. There is a need for collecting data that is informative to the programs within HIDOE subrecipients. There are also needs in identifying how programs can be promoted to members of special populations.

O. There is room for growth in how living-wage, in-demand, and high-skill are defined to include values that are consistent with the community norms of our state.

P. There is a need to better integrate HIDOE CTE programs of study into the academic planning process, perhaps through principal review of student performance on CTE performance-based assessments and identifying gaps among subgroups or needs for improvement, similar to the approach to systematic improvement of academic courses.

Q. There is a need for more systematic approaches to integrating stakeholders and industry into the system improvement process and to find ways to increase responsiveness or response rates in the CTE system to changes in labor market conditions.

R. There is a need for the HIDOE program of study objectives to be reviewed and compared to community college course objectives to determine what is most reasonable to teach at the high school level.

S. There is a need for budgeting and procurement processes to account for inequities across regions and among HIDOE schools of different sizes, particularly in terms of subrecipients' capacities to acquire equipment that meets industry standards.

T. There is a need for the HIDOE network security policies to be reexamined for their effects on students' abilities to use industry-grade software in schools and meet requirements for programs of study.

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Chapter 4
Evaluation of the Implementation of CTE Programs and Programs of Study

This chapter summarizes the needs with the implementation of the CTE programs (including UHCCS programs and HIDOE programs of study). Per Appendix G of the *State of Hawai'i Perkins V State Plan* (2020), this is in two sections: the needs having to do with (a) size, scope, and quality within CTE programs, including those across and within subrecipients (where subrecipients are the HIDOE schools and UHCCS campuses), and (b) size and scope across the system, including those across subrecipients.

Implementation has to do with the size, scope, and quality criteria in the delivery of the CTE programs. These criteria are documented on Pages 32–37 of the *State of Hawai'i Perkins V State Plan* (2020). To make them measurable, the project team decomposed the criteria by translating them into yes/no questions and creating a blueprint that was then used to design the questions and prompts that were included in the program-improvement survey forms and focus groups. The project team gathered evidence of these criteria in programs through the system-improvement survey forms, focus groups, documents, and meeting notes. The participants included (a) HIDOE CTE teachers, CTE coordinators, district resource teachers (DRTs), counselors, and principals; (b) UHCCS students, CTE program administrators, and CTE deans; and (c) representatives of industry, parents, and special populations.

Limitations

Although the Perkins V legislation attributes size, scope, and quality criteria to programs, Hawai'i's criteria are also worded to be attributes of the eligible recipients (ERs), which resulted in some of the questions being about the ERs. For example, one quality criterion question is "Does the ER have an improvement plan for the Perkins V system?", which when administered to the HIDOE principals, was worded as "Does the HIDOE have an improvement plan for the Perkins V system?". It is worth noting that most other states' criteria are shorter and more simply worded.

Representation of the population of internal stakeholders was a limitation. On the system improvement forms, the number of respondents for some types of internal stakeholders (i.e., within the HIDOE and UHCCS) was only a small proportion of their population in the state. Among the HIDOE respondents, there were
- 100 CTE teachers,
- 20 CTE coordinators,
- 8 district resource teachers (which was all of them in the state),
- 60 counselors, and
- 10 principals.

There are far more CTE teachers, coordinators, and principals in the HIDOE than those who responded. Among the UHCCS respondents, there were

- 8 CTE program administrators and
- 90 students.

This is far fewer than the population of community college program administrators and students. Although for some of these internal stakeholders, the numbers are respectable and there were respondents from every county and from rural and non-rural campuses, we do not know how well those who did respond represent those who did not respond.

Ideally, for a comprehensive local needs assessment (CLNA), there would be a summary of reports of data that had been collected at the local level; that is, data collected from within the subrecipients (high schools and college campuses) about each of their programs on each criterion. However, this work was limited by the lack of quantitative data that can be collected from within the HIDOE's schools and UHCC campuses. Within the UHCCS, some size criterion data were available through the annual review of program data (ARPD) site; for example, Leeward Community College's Information & Computer Science program has a 2019–2020 student-enrollment fill rate of 87.8%, which was rated by the ARPD rubric as being healthy. Kapiʻolani Community College's Medical Laboratory Technician program's fill rate was 92.4%, which was healthy by their rubric. However, the Perkins V criteria are not intentionally measured in these ARPD rubrics, nor is there a Perkins V local-needs-assessment process for interpreting and reporting (up to the ER) the status on each of these criteria. Additionally, because the project team believed it was important to maintain the confidentiality of participants in the system-improvement survey forms and focus groups, our capacity to drill down to specific subrecipients and programs was limited. Nonetheless, we attempted to target two pathways, industrial and engineering technology (IET) and health services, to identify needs at least at the pathway level. We selected these two pathways because of their perceived importance in the state's demand and because of their prevalence across subrecipients (participants in the HIDOE focus groups still referred to the six-pathway terminology). The number of data points in these two pathways was small, however. For example, with the system-improvement forms, of the 100 teachers responding, only 15 came from the health services pathway and 12 from IET pathway. Given these constraints, the project team's conclusions about needs are at a broad level and should be taken with caution when applied to decisions about specific programs within specific schools or campuses.

Size, Scope, and Quality within CTE programs

This section addresses the needs having to do with the implementation of programs (including UHCCS programs and HIDOE programs of study) according to the size, scope, and quality criteria. Needs include gaps, disparities, and misalignments and can occur in programs within high-school and college campuses.

Size Criteria

The size criteria include both physical program elements and human elements. The physical program elements of size criteria include
- facilities, space, and accessibility of those facilities and
- technology and materials.

The human elements of the size criteria address
- student enrollment and
- the numbers of instructors and counselors.

Facilities, Space, and Accessibility

The focus groups revealed that large variations in classroom and lab facilities across HIDOE schools are a disparity. Some schools indicated a lack of facilities to provide experiences that prepare students for work in industry, such as a lack of commercial kitchen facilities. This disparity is particularly noticeable for smaller schools, which was attributed to funding mechanisms that are mostly determined by the number of completers and concentrators.

When asked on the system-improvement forms to consider a specific program in their school or campus, HIDOE teachers tended to rate the adequacy of the program's facilities at a lower rate than their counterparts, as displayed in Figure 4.1. With regard to facilities being consistent with industry standards, only about 40% of the principals recognized this was so (the other HIDOE staff were not asked this question). It makes sense that principals would rate the adequacy of the facilities high even though they rated their consistency with industry standards as low because they are charged with making decisions about all of the programs in their schools and they are likely comparing the CTE program facilities to that of academic programs. In contrast, consistency with industry standards is a criterion that is not applicable to academic programs. With regard to accessibility, most staff and faculty evaluated their program as being accessible by all students.

With the HIDOE teachers reporting on programs in the IET and health services pathways in the system-improvement forms, there seems to be only moderate success of the criteria having to do with facilities, particularly when it comes to meeting student enrollment demand (Figures 4.2 and 4.3). (The numbers at the end of the bars indicate the number of respondents.) For both pathways, more than 50% of the teachers (7 in IET and 8 in health services) said that the facilities were not adequate for student demand.

Technology and Materials

The delivery of technology and materials is difficult to evaluate accurately. The focus group results suggested that local implementation in the HIDOE is limited by resources that vary by location. The funding that schools receive is calculated by the numbers of concentrators and completers, which means that smaller schools often have insufficient funding to acquire the technology or materials they need to meet industry standards. Some schools cited outdated technology as a limiting factor in their ability to deliver programs that meet industry standards.

Many teachers cited lack of materials that were comparable to industry as affecting their ability to deliver programs and programs of study that would prepare students for work in industry.

Figure 4.1 *Reports about Facilities*
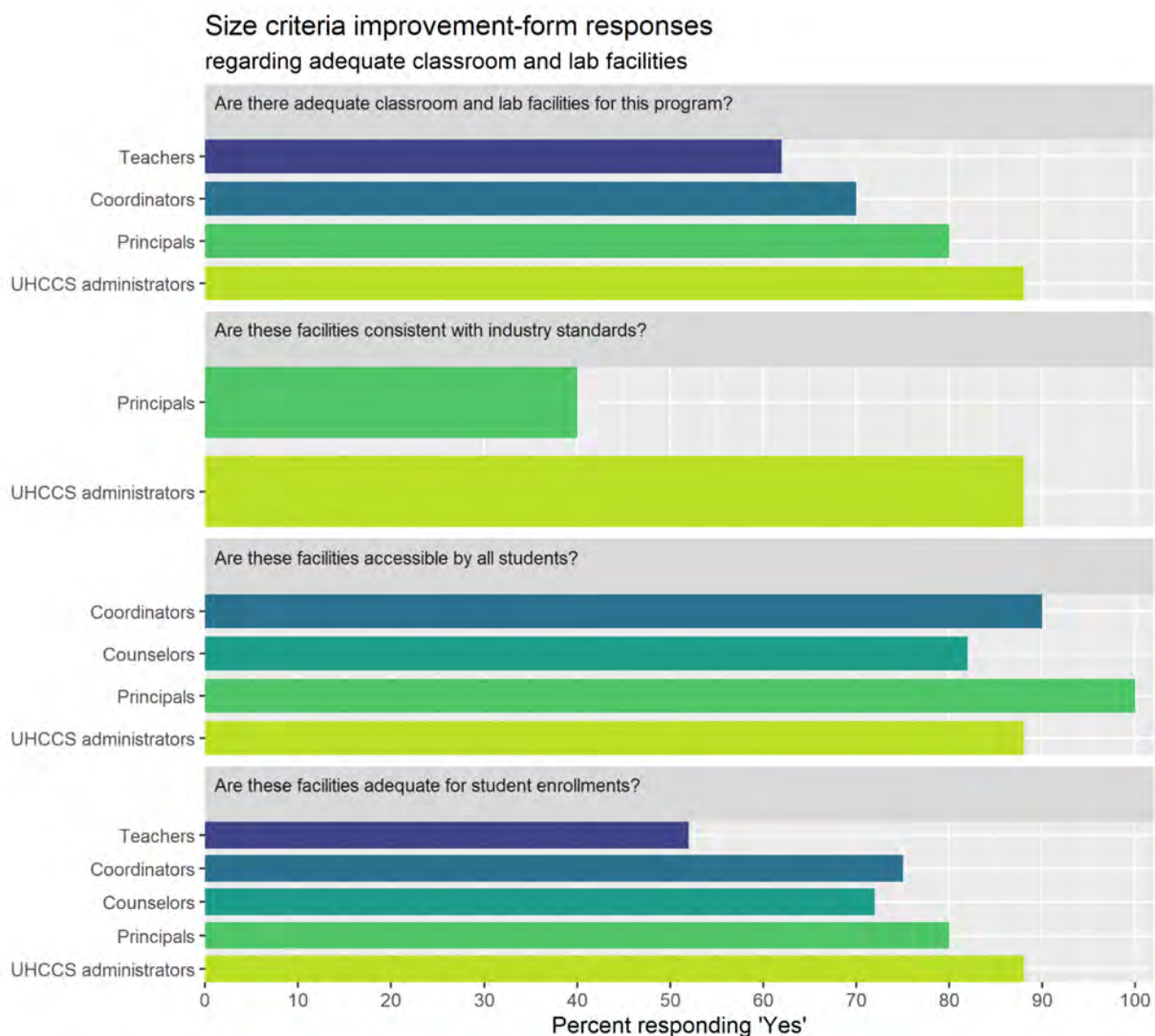
The system-improvement-form responses displayed in Figure 4.4 revealed that fewer than two-thirds of the HIDOE teachers and coordinators perceive the technology and materials as being appropriate for learning the technical objectives. Academic content was less of a concern than technical objectives, but still perceived by around 75% of the HIDOE staff and faculty as being appropriate.

With the HIDOE teachers reporting on programs in the IET and health services pathways in the system-improvement forms, there seems to be only moderate success of the criteria having to do with technology, equipment, and materials (Figures 4.5 and 4.6). In the open-ended questions, one of the IET teachers targeted "consumable resources and materials for student projects," and said that "equity between small and large school[s], urban vs rural school[s]" was

a problem. There appears to be a disparity-based need in small and rural schools for technology and materials.

Figure 4.2 *IET Teachers' Reports about Facilities*

IET teachers' responses to questions about their program's facilities

Are there adequate classroom and lab facilities?

Yes	6
No	6

Are these facilities adequate for student enrollment demand?

Yes	5
No	7

Percent
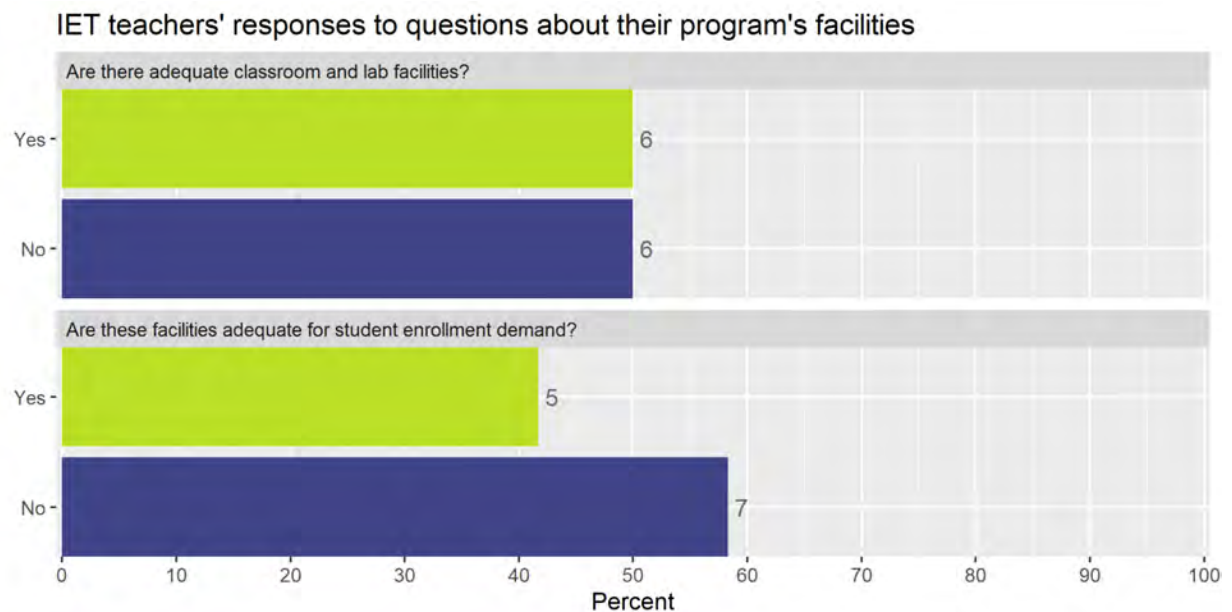
Figure 4.3 *Health-services Teachers' Reports about Facilities*

Health teachers' responses to questions about their program's facilities

Are there adequate classroom and lab facilities?

Yes	8
No	7

Are these facilities adequate for student enrollment demand?

Yes	6
No	8

Percent
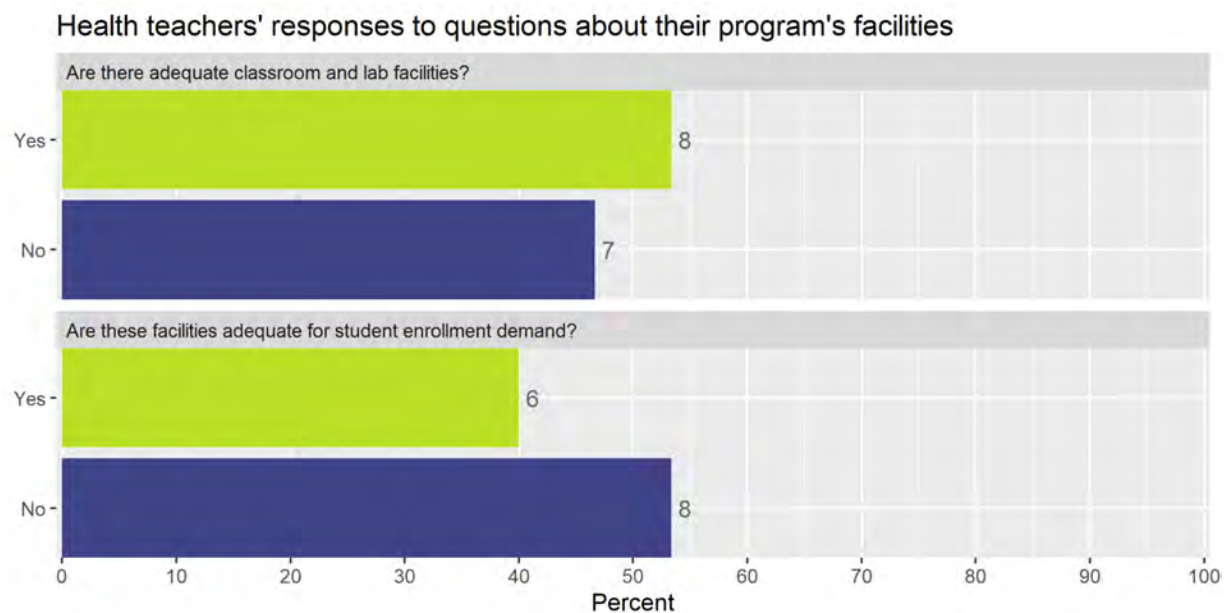
Figure 4.4 *Reports about Materials*

Size criteria improvement-form responses
regarding equipment and supplies

Are the technology, equipment, supplies, and other materials provided in the program appropriate for students to learn the required technical objectives?

Are the technology, equipment, supplies, and other materials provided in the program appropriate for students to learn the required academic content?

Percent responding 'Yes'

Figure 4.5 *IET Teachers' Reports about Materials*

IET teachers' responses to questions about their program's materials

Are the technology, equipment, supplies, and other materials appropriate for students to learn the required technical objectives?

Yes — 6
No — 6

Are the technology, equipment, supplies, and other materials appropriate for students to learn the required academic content?

Yes — 8
No — 4

Percent

50
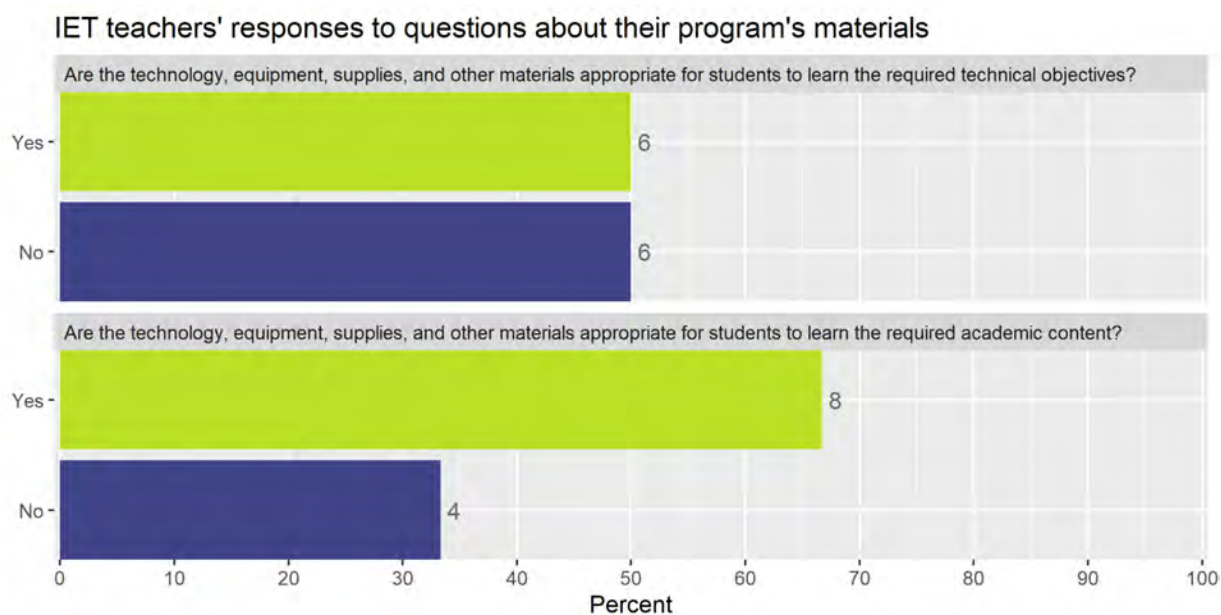
Figure 4.6 *Health-services Teachers' Reports about Materials*

Health teachers' responses to questions about their program's materials

Are the technology, equipment, supplies, and other materials appropriate for students to learn the required technical objectives?

Yes — 9
No — 4

Are the technology, equipment, supplies, and other materials appropriate for students to learn the required academic content?

Yes — 9
No — 4

Percent (0 10 20 30 40 50 60 70 80 90 100)
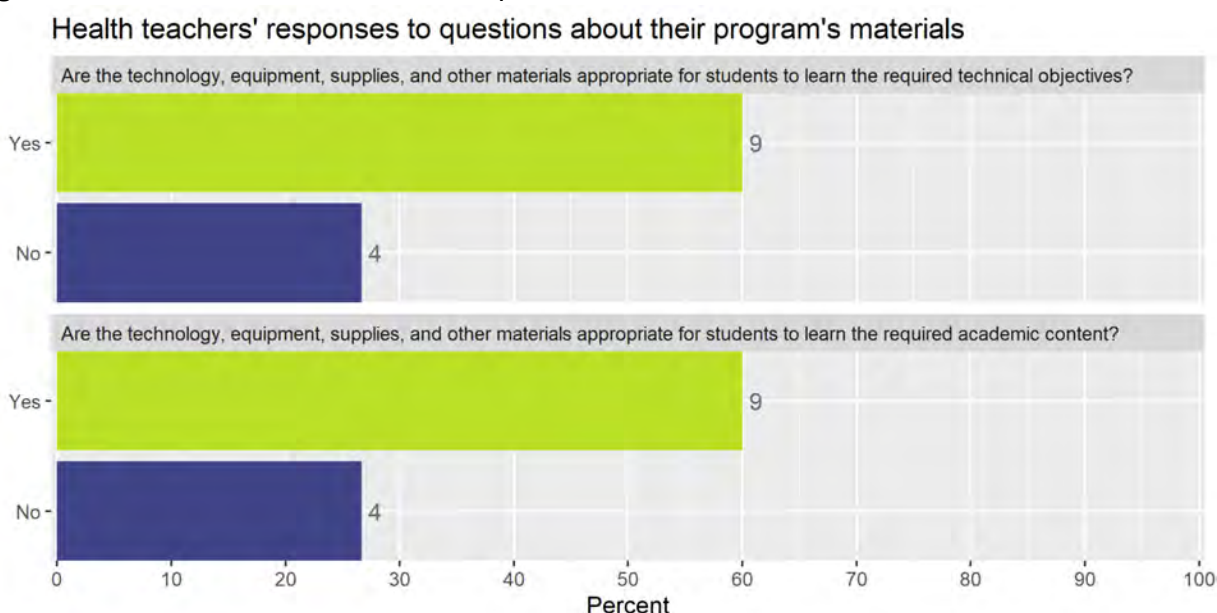
Student Enrollment and Numbers of Instructors and Counselors

Actual student enrollment data were not readily available for HIDOE Perkins reporting. In the focus groups, CTE program staff described how they delivered CTE programs. Many program HIDOE staff said that student enrollment numbers were appropriate. In one school, a practice that was noted was *stacking*, which is a suboptimal practice that may not breach recommended pupil-to-teacher ratios, but makes teaching substantially more complex by asking teachers to instruct up to four different levels of students simultaneously. Stacking may also negatively impact the student experience by decreasing the quality of instruction and level of instructor attention.

As was reported in Chapter 3, we found that many HIDOE focus-group participants cited a shortage of qualified teachers as a limiting factor in delivering CTE programs and pointed to a design factor that contributes to this concern. People who have industry certifications and qualifications in certain fields often do not have a bachelor's degree or teacher certification, while people with teacher certifications do not have industry certifications or the skills needed to teach CTE courses, particularly at the more advanced levels in the program of study. Principals described delivery strategies to fill high-need CTE faculty positions, such as converting science and mathematics teachers to CTE teachers. Although this strategy may work well in some instances, it can be very challenging for a science or mathematics teacher to attain high-level industry credentials or skills that they need to teach high-level courses in CTE programs of study.

At the post-secondary level, the UHCCS CTE deans explained that the ARPD system provides gross indicators of how healthy the student-to-instructor ratio is, but that the ARPD numbers can be misleading. In one common scenario, the distinction between lecture and contact hours is not accounted for. Some programs, such as culinary and automotive, require intensive contact

hours and result in colleges' needing to pay overload salaries because of the challenges in hiring lecturers. In another scenario, the program's ARPD health is rated low because of the student-to-instructor ratio, but this is because they have been unable to fill positions.

HIDOE Counselors, principals, and UHCCS administrators were asked about these components in the improvement forms because they tend to have a school-level perspective. The verbiage of the questions reflects the criteria proposed in the state plan. Nonetheless, only about 60% of counselors saw the program (that they had in mind while responding) as meeting criteria in student enrollment and student-to-counselor ratio. In contrast, most principals saw these criteria as being met, with the exception of professional-association-recommended student-teacher enrollment ratios. At the post-secondary level, there may be a need for more counselors or advisors.

Overall, in both the HIDOE and UHCCS programs, the need with this criterion is closely tied to the needs in recruiting and retaining educators in their programs.

Figure 4.7 *Reports about Enrollment*
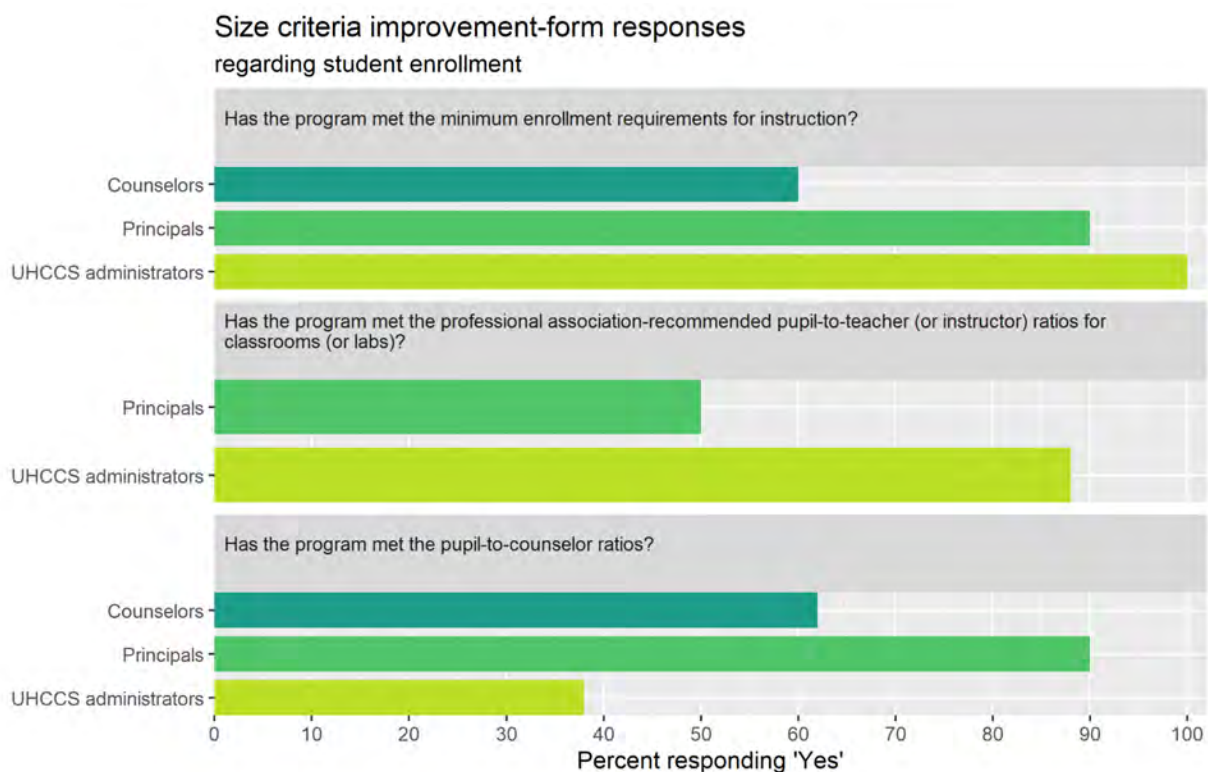
Scope Components

The scope components include the following:
- overall CTE program elements, such as
  - breadth of program content,
  - career exploration and development activities, and
  - employability skills;

- program elements, such as
    - skill development,
    - alignment of coursework with industry standards or credentials,
    - integration of academic skills,
    - accelerated learning programs, and
    - instructional materials;
- industry connections, such as
    - work-based learning and
    - employer engagement;
- counseling;
- recruitment and retention of staff; and
- professional development.

Overall CTE Program Delivery

Breadth of Program Content

The focus groups with HIDOE faculty and staff revealed that some of these internal stakeholders are worried about how they are going to deliver programs under the new 13-pathway structure and standards. There seemed to be a belief among some personnel that their schools will be expected to teach more programs. With regard to the overall delivery of programs, one principal described the restructuring as a demolition. The breadth of program content within the CTE programs and subrecipients is largely determined by the resources available onsite. Complexes and schools are beginning to adjust their offerings and programs to the new pathway structure as HIDOE rolls out new sequences and course objectives. There appears to be a need to help school personnel and faculty understand the new standards and to help them identify strategies for using their current resources to adapt to the new program descriptions and objectives.

Career Exploration and Development Activities

Many focus-group participants cited the need for more career exploration programming prior to high school to address students' needs. Several schools stated that students are allowed to change their CTE program of study only once. Career development is embedded in programs of study. However, as one teacher suggested,

> [the] plan to roll out new programs of study wasn't thought out well. Little or no resources or training was done at the middle school level to properly prepare and educate eighth graders on programs of study in high school. We're asking our eighth graders to make a decision to enter a specialized program of study as they become ninth graders.

The need to select a pathway and stick with it was poignant with a parent (who was a UHCCS student focus-group participant). They expressed frustration and dissatisfaction with having their child be "pigeonholed into this track" in the academy school in which their child was initially enrolled. This prompted the parent to move their child to a different school that did not have this restriction. According to this parent, "[the CTE experience] definitely depends on the school.

They are not created equal. That's for sure." This same sentiment about limits on exploration was volunteered by another parent in another focus group (one of the UHCCS deans), "they have to choose a pathway and they really can't explore as much as they used to." As mentioned in Chapter 1, the project team expended extensive effort to recruit parents to participate in focus groups but was unsuccessful in capturing their voices beyond those who were in other focus groups and who happened to also be parents of students in HIDOE schools. There may be a need for parents to be included in some capacity, such as on the pathway advisory committees or in future local needs assessments, to determine if these concerns about limited exploration are shared across the population of parents of HIDOE students.

This is in contrast to the perceptions presented by principals. One principal expressed satisfaction with moving into the academy program of study model because their completer rate increased, bringing in more funds, whereas prior to this the school had dabblers from one program to another, which did not help their completer rates.

A safe conclusion is that for some school administrators, the number of completers or concentrators their high school has is more important than the students' exploration opportunities—likely because of funding calculations and requirements of the academy model. The expectation is that students will have experienced some career exploration before coming to high school. There is a need for the funding stream to account for students' developmental needs in career exploration. The research supports this; for example, Turner and Lapan (2013) stated that "children enter the tentative stage of career awareness at 11, when they begin to become aware of themselves in relation to the world of work, and then at about age 18 they enter the realistic stage, where interests and choices become more crystallized" (p. 540). The implication is that career exploration should continue throughout high school without constraints such as limits on switching pathways. The Perkins V legislation, however, emphasizes concentrators, who—compared to explorers who merely dabble—are "dedicated to a single CTE program area" (Brustein et al., n.d., p. 30). In sum, there appears to be some tension between (a) parental interests and the developmental concerns noted by research, and (b) the interests of school staff and of the law in valuing student commitment to concentrate in at least one program of study. There appears to be a need to communicate to internal and external stakeholders how career exploration is being addressed in high schools in which concentration is prioritized.

The system-improvement form results suggested that across schools, exploration has room for improvement. These questions were not as nuanced as the information in the focus groups, as these primarily addressed informing students about what programs were available and how to plan their CTE education for developing career opportunities. Compared to principals, fewer HIDOE counselors responded *yes* to these questions. Pre-enrollment activities seem to occur with about half of the programs. Most participants agreed that students are informed about CTE course offerings. Informing special populations about CTE programs may be a need, given that fewer counselors responded *yes* to this question compared to its counterpart with the general student population. At the post-secondary level, these criteria were perceived as having been met.

Figure 4.8 *Reports about Exploration*

Scope criteria improvement-form responses
regarding career exploration

Has this program provided pre-enrollment activities that help students plan for their education and career opportunities?

Counselors
Principals
UHCCS administrators

Has this program informed students about CTE course offerings?

Counselors
Principals
UHCCS administrators

Does the program communicate program information to families of prospective students?

Counselors
Principals

Has this program informed students who are members of special populations about CTE course offerings?

Counselors
Principals
UHCCS administrators

0   10   20   30   40   50   60   70   80   90   100
Percent responding 'Yes'

Employability Skills

At the state level, the OSDCTE's Sectors & Pathways—Program Quality Committee includes the Employability/Transferable Skills working group. One initiative in the HIDOE that appears to be in place for delivering these skills is the K to Career Engineering Pathway Project Pilot Project, in which the Academy of Engineering (in the Waipahu complex area) is tasked with forming a student ambassador program in which engineering students will be trained on important employability skills.

On the improvement forms, the respondents perceived employability skills (traditionally referred to as soft skills) as being present. This may not reflect the need for instruction in employability skills to specific students. In the focus groups, on-site work-based learning opportunities can be limited to students who already have these skills. With the representative of homeless youth, for example, this was recognized as a need; through non-profit organizations, students can get access to extra instruction where "you practice showing up for work on time, getting along with

your co-workers, taking direction from the boss—that kind of stuff." According to the homeless-youth representative, in prior years, this non-profit led work was done with HIDOE teachers, but the HIDOE funding had stopped. This is an example of how employability skill development in the HIDOE may need to be emphasized with some special populations, such as homeless youth and those who are economically disadvantaged.

The state plan's list of scope criteria collapses employability and entrepreneurial skills in one criterion. Entrepreneurial skills were not investigated well, primarily because they were collapsed with employability skills (to be faithful to the state plan's criteria, at least with the first two survey forms), which is why some of the survey questions included these as double-barreled questions. They should be considered separately if the information is to be used to inform programs. In the focus group with industry representatives, the participants emphasized the need for students to learn entrepreneurial skills because of the rapidly changing conditions in business. Only about 60% of the coordinators reported entrepreneurial skills as being included in programs. However, in our review of the new HIDOE CTE pathway curriculum plans, we did notice that every new pathway now has an entrepreneurial focus, indicating an increased emphasis on entrepreneurial skills since the 2019 CLNA. Given that the new pathways are in the process of development and rollout, the coordinators are likely reporting based on the old pathways. At the secondary level, programs' implementation of the entrepreneurial-skills component of the slated descriptions and objectives will require further investigation if the programs are to help students learn to adapt to the uncertainties of future working conditions.

Figure 4.9 *Reports about Employability and Entrepreneurial Skills*
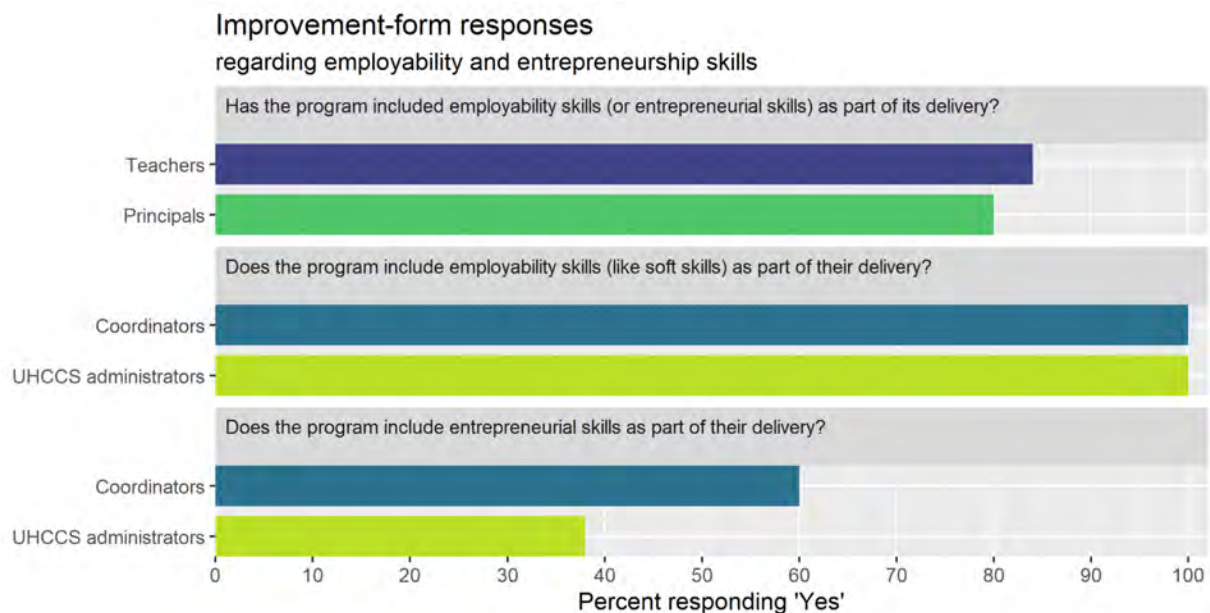
At the post-secondary level, each program's ARPD report (with the 2020 reports available online) includes a link to employability skills (the term *soft skills* is used on this site) that are included in the program; for example, Maui College's Electronics & Computer Engineer Technology program includes troubleshooting, communications, and management, among other skills. The site is interactive, and each soft skill listing is a hyperlink to a site that lists local companies that include that skill in their job advertisements, though some programs' ARPD links

to soft skills appear to not yet be activated. Not surprisingly, in the system-improvement forms, the administrators perceived the employability skill criterion as being met. However, entrepreneurial skills were given less endorsement. Entrepreneurial skills at the post-secondary level may be a topic in future advisory committee meetings if the programs are to help students learn to adapt to the uncertainties of future working conditions.

Program Elements

Skill Development

This is a difficult criterion to measure from self-report methods such as focus groups and survey forms because most internal stakeholders believe the programs are providing students with these skills, at least insofar as they have the faculty to teach those skills. Whether students are actually developing these skills is a question at the program level—one that can be addressed using certification tests or end-of-course exams, for example. However, an obvious precursor to assessing skill development is specifying what those skills are. This step is still in preparation as new pathways are being introduced into the HIDOE CTE system. These redesigned pathways and programs of study are purportedly based on analyses of required industry skills and the creation of course objectives that address these skills.

The industry side representatives had a different perspective about skill development. The industry representatives we interviewed emphasized their beliefs about the value of project-based learning in high schools, especially when the problem is something that has stakes for the community. Under these learning conditions, the students are motivated to apply their academic learning. These industry representatives' perspective was that a discrete set of advanced industry skills is not helpful for CTE students; instead, they see value in students' learning to solve real-world problems in an environment that still allows them to make mistakes without there being real-world consequences. This harkens back to the performance assessments in Perkins IV, which unfortunately were deemed to be too expensive and unreliable for use as measures of skill development. In sum, measuring students' CTE skill development does not appear to be an easy endeavor.

Defining skills as those that are required for high-skill, high-wage, or in-demand occupations is another approach. In the focus group with the UHCCS deans, they cited advisory boards and external resources such as O*Net and EMSI as being valuable for informing college programs about labor market information (though it was mentioned that EMSI had been discontinued). The ARPDs provide "a great resource for data, but faculty may not have a high degree of trust in the data being reported from ARPD because there have been issues with reporting in the past." Most program's ARPD includes a list of "hard skills" on its site (though some programs' links are not active) and links to their respective local occupations and companies on the Hawaiʻi Career Explorer site. One of the challenges the UHCCS faces is the discrepancies in the timelines they have for presenting the same types of data, such as employment rates, for different reports in the system.

While responding to the system-improvement forms, most of the HIDOE teachers and counselors asserted that the program they were reporting about had provided learning opportunities that led to high-skill, high-wage, or in-demand industry; however, these programs do not seem to have been reviewed for how well they align with in-demand workforce skills. When they are reviewed, the findings seem to not be used to update the program curricula. With this, an identifiable need in the HIDOE is to improve its program reviews for how well they align with workforce skills, particularly if the course descriptions and objectives are assumed to be informed by industry.

Figure 4.10 *Reports about Workforce Skills*

Scope criteria improvement-form responses
regarding workforce skills and alignment with industry
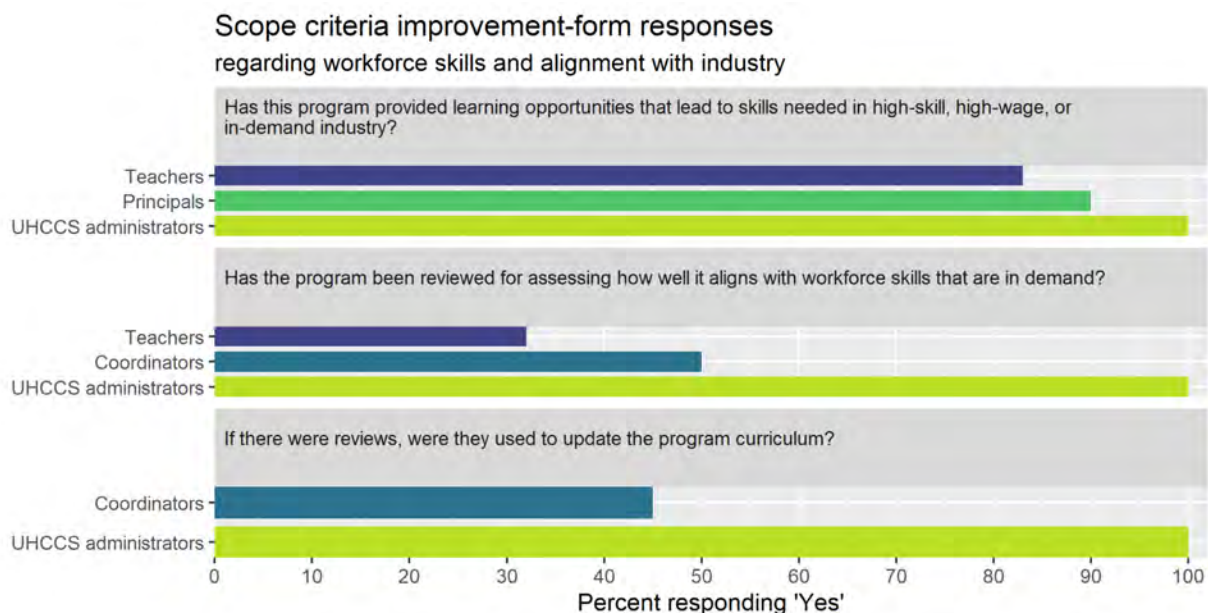
Alignment of Coursework with Industry Standards or Credentials

The HIDOE CTE curriculum (i.e., its descriptions and objectives) is in the process of a major revision. An outside company has been hired to redevelop the course objectives to align with industry standards and credentials. The course materials themselves will be developed by CTE teachers. Only one set of pathways has been rolled out and professional development for course material development began this year.

The same proportion of teachers and principals (70%) agreed that the program they had in mind (while completing the system-improvement form) provided courses and activities that will help students to eventually obtain industry-recognized credentials (Figure 4.11). The UHCCS students received a similar question on their survey form and were asked to reflect on their high-school experience if they had been a student in a public high school in Hawaiʻi in the last three years (Figure 4.12). Only a third (5 out of the 15 students asked—where these 15 were UHCCS students who had also said they had attended public high school in Hawaiʻi) agreed that their high-school courses helped them to get closer to getting a degree, certificate, or license. However, these students did not fairly represent the present population of students in Hawaiʻi public high-schools because (a) this was a very small sample size, (b) these

respondents were not current high-school students, and (c) these are the students who had elected to pursue a post-secondary education, which ironically is a part of the process of getting

Figure 4.11 *Reports about Alignment of Courses to Industry Credential Attainment*

Scope criteria improvement-form responses
regarding aligning sequences of courses

Does the program provide a sequence of courses or other activities that will help students obtain industry-recognized degree(s), certificate(s), or credential(s)?
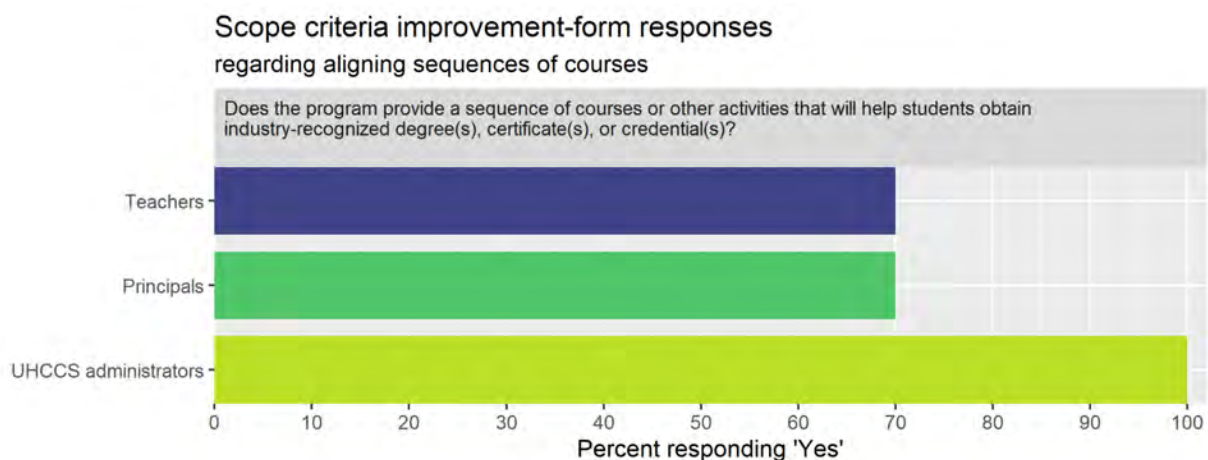
Figure 4.12 *UHCCS Students' Reports about Their High-school Programs' Alignment to Credentials*

Students' reflections about their high school programs helping them get credentials
Many careers value a degree, certificate, or license.
Did the high-school CTE courses help you get closer to that?
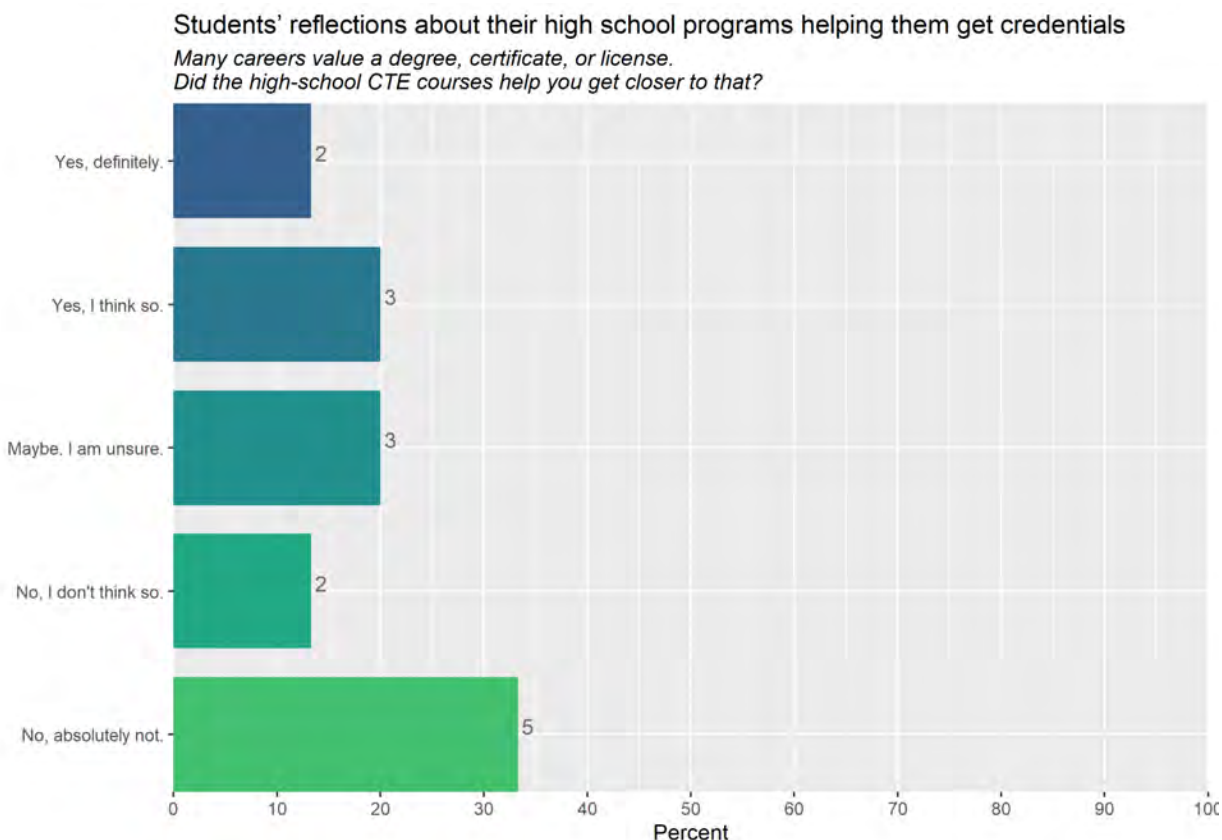
closer to obtaining a credential. Furthermore, it is likely that they are comparing their college experience to their high school CTE experience. This challenge in collecting student data was because our capacity to collect data from minors was limited. In future CLNAs, local internal

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stakeholders will be better positioned to collect information from students than will external evaluators.

The UHCCS administrators were uniformly in agreement their programs lead to a degree, certificate, or credential (shown in the bottom bar of Figure 4.11), which is not surprising given that this is the purpose of college programs. The students' reports were also high: More than 85% of the UHCCS students agreed that their college CTE courses were helping them to obtain an industry-recognized credential (78 out of 90 responded "yes, definitely" or "yes, I think so"; Figure 4.13)).

Figure 4.13 *UHCCS Students' Reports about Their College Programs' Alignment to Credentials*

Students' reports about their college programs helping them get credentials

Many careers value a degree, certificate, or license. Have the college CTE courses helped you get closer to that?
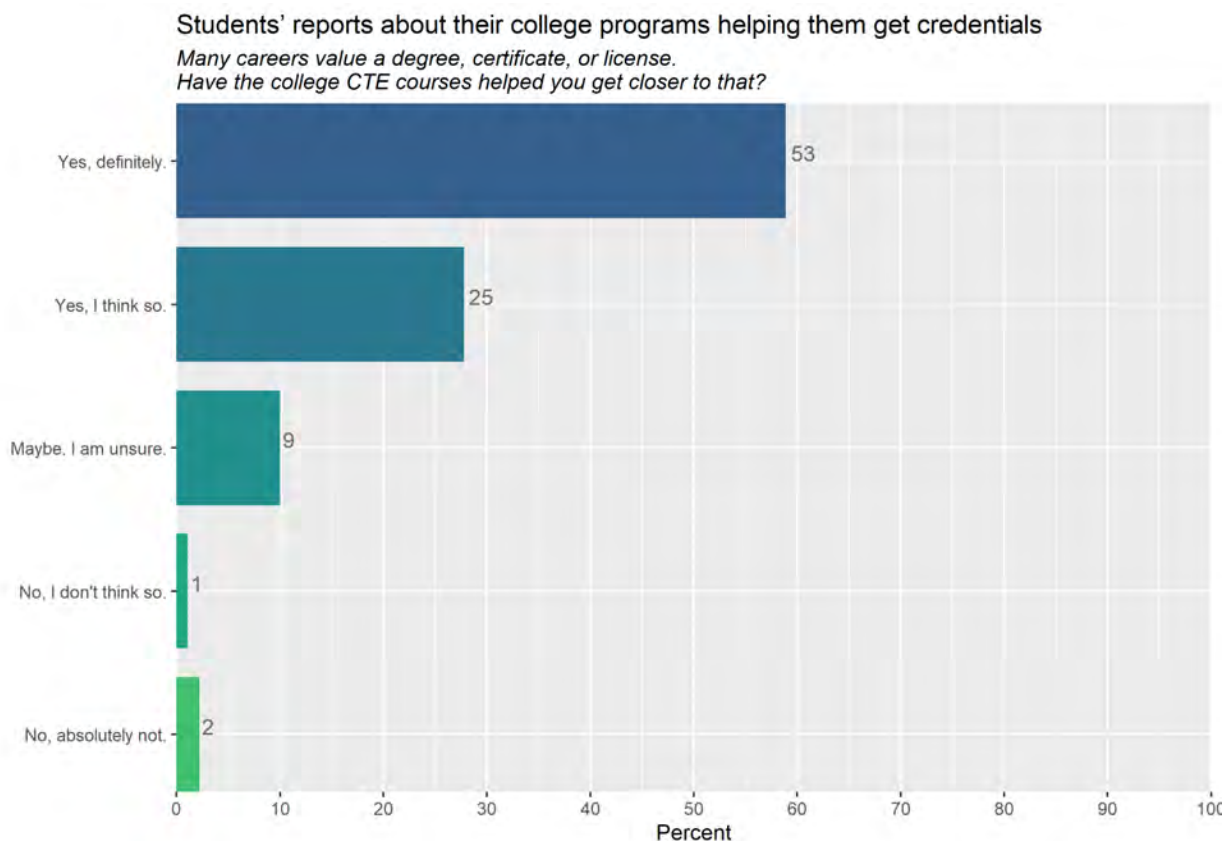
Integration of Academic Skills

The high frequencies of *yes* responses to the system-improvement-form question administered to the teachers, coordinators, counselors, and principals suggest that academic skills are being integrated into the programs (Figure 4.14). The open-ended responses suggested that the academy structure has been valuable for integrating academic skills. In both the IET and health services pathways (not displayed in the figure), most teachers reported academic-skills-integration as being present. District resource teachers also endorsed this, with one saying that the clinical health program "uses academic skills 100% of the time." System-improvement form results also showed that this is not a high priority for CTE teachers in terms of their professional-development needs. When asked about their interest in professional development about

strategies to collaborate with core teachers to integrate academic knowledge in CTE courses, about 50% of teachers indicated they were very likely to attend that kind of professional development session whereas other professional development topics, such as in developing industry-specific skills (where about 75% selected "very likely"), were higher; these results about professional development are further discussed in Chapter 5 (and displayed in Figure 5.4).

Figure 4.14 *Reports about Integrating Academic Skills into CTE Programs*

Scope criteria improvement-form responses
regarding integrated academic skills and aligning sequences of courses

Has the program integrated academic skills into its courses or other activities?

Teachers	
Coordinators	
Counselors	
Principals	
UHCCS administrators	

Percent responding 'Yes'
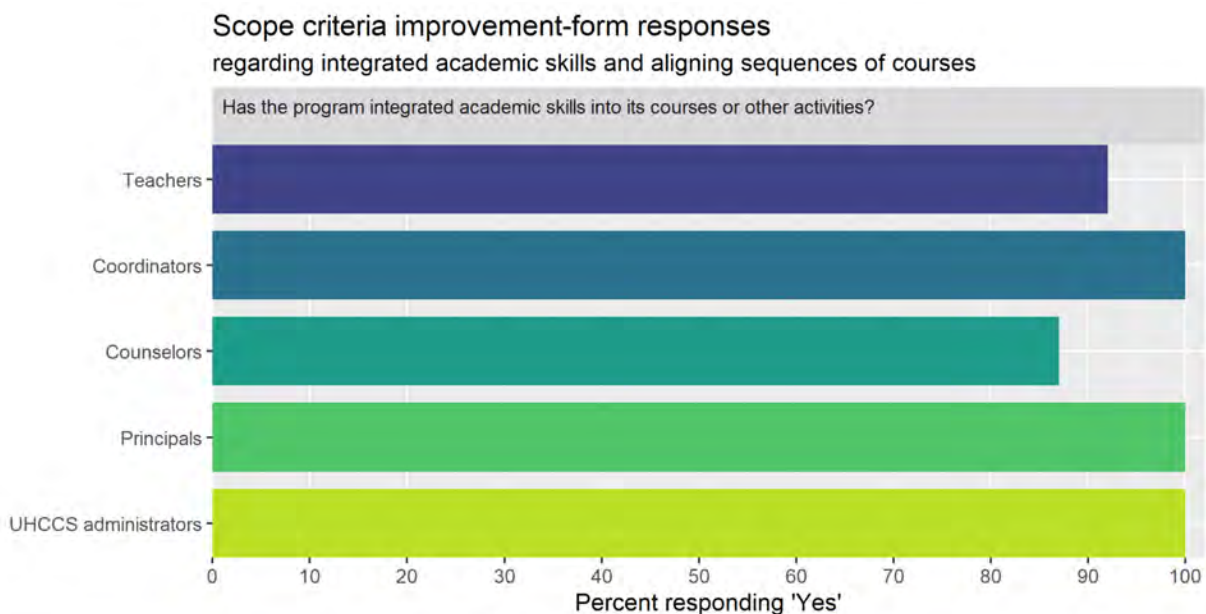
Accelerated Learning Programs

Compared to other features of programs, accelerated learning programs with CTE appear to be lacking in many programs, as revealed by the system-improvement forms. Other documents, such as the HIDOE web site, suggest that these programs are indeed present in high schools throughout the state. The UHCCS Dual Credit website reported that in the 2020–2021 academic year, 43 high schools partnered with 10 UH campuses in the statewide Early College program, though the extent to which these opportunities include dual credit with CTE programs (in contrast to core academic programs) is not specified on the site. There are success stories, as illustrated in the OSDCTE's documentation of its subcommittee work, including a student at Waipahu High School in engineering who has taken college courses and earned national recognition for her participation in a Greek honor society. The GEAR UP program provides scholarships to economically disadvantaged students in Running Start programs. These are promising bright spots.

Beyond these, based on the focus groups and system-improvement forms, there either seems to be a need to further promote the accelerated learning programs available to CTE students or to make these more closely related to the CTE programs' curricula. CTE-specific articulation agreements with colleges may also need further development and assistance. As one principal put it, "We need help with the partnership between HCC and our school in order for students to get college credit. It is in the works, but we will need continued support.".

Figure 4.15 *Reports about Accelerated Learning Programs for Secondary Level Students*

Scope criteria improvement-form responses
regarding accelerated learning
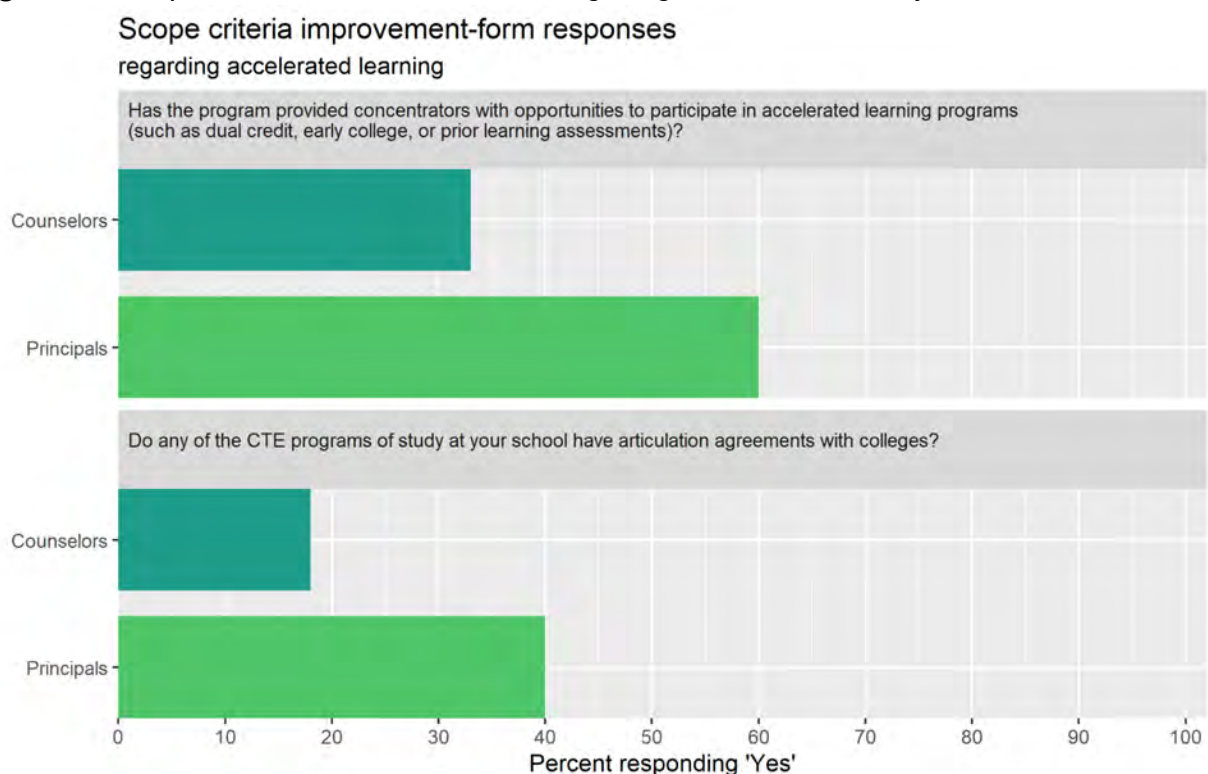
Instructional Materials

As was also explained in Chapter 3, instructional materials are primarily developed by or selected by the CTE instructors and teachers. In the HIDOE, CTE teachers might have come from a core academic teaching profession and adapted themselves to their CTE courses; other teachers may have entered the teaching profession from industry, yet have less experience in developing educational materials. In other words, among the teachers tasked with developing materials, many might not have experience in that industry, making the development of materials sometimes difficult, while others may not have strong capacity in translating industry into learning materials. This has resulted in noteworthy variations in the quality of instructional materials—with some success stories but also some gaps. One district resource teacher shared two examples of programs created by teachers. First, one program was of such high quality that it continued to be used after the teacher left the school: "A social studies teacher that transferred into digital media, but had a very strong passion for it...created this very awesome digital media program at a school not initially in digital media, it was his passion." In contrast, some teachers who have prior industry experience are unable to modernize courses to reflect current industry standards. The district resource teacher explained that "(they) learned it 10 years, 20 years ago, (they) really need to either be retrained or retire because...the laminated lessons is what I call them,...they haven't...updated their skills." Leaving the development of instructional materials entirely up to teachers seems to be a risky endeavor. There may be a need to provide some core set of instructional materials if the objective of Perkins is to provide the same types of learning experiences and opportunities to students across the state.

Industry Connections

The focus groups and meetings with school faculty and staff as well as representatives of local industry suggested that there are some success stories of students working with industry through connections but that there are some needs. Hawaiʻi Pacific Health was cited by focus-group participants from both the HIDOE and UHCCS as a valuable organization for developing industry connections and work-based learning. One UHCCS dean stated that they are using Hawaiʻi healthcare reports as an example for drafting other programs' plans for strengthening industry connections.

With several partners (the Chamber of Commerce Hawaii, the Department of Labor and Industrial Relations, the Harold K.L. Castle Foundation, the Hawaii Regional Council of Carpenters, and the Pacific Resources Partnership), the HIDOE's Career Connections program in the building trades has reached 26 public high schools on six islands. This is a three-year credit curriculum that begins in students' sophomore year; students are exposed to classroom- and hands-on experience using materials developed by the United Brotherhood of Carpenters' International Training Center. The ClimbHI Bridge also provides a means to connect teachers and students to local industry.

From the industry side, a successful project with the Department of Transportation was referenced in which the students had a safe place to innovate and apply ideas to help solve real-world problems. The challenge for industry, however, is that their purpose is to conduct business and the time taken for their scaffolding young learners is time taken away from their immediate business enterprise. Their message was that it is too expensive for industry folks to spend time with students. This might indicate a need for alternative ways to accomplish this, such as via technology. The Nepris company had been contracted to provide this service to HIDOE schools in prior years, but as described in the 2019 CLNA, the participants on the continent are often several time zones away and not available to students in Hawaiʻi during regular CTE class hours.

Though the Hawaiʻi Career Pathways web site was launched in late 2020, the focus-group respondents from both secondary and post-secondary levels did not reference it, and, when asked, many seemed to be unaware of this resource. This suggests that there is a need to inform internal stakeholders about these resources.

Coordination between programs and industry in non-academy schools seems to depend more on the industry side's initiation than the school side; as one district resource teacher put it, "industry has been the driver for the coordination." There is a disparity in schools' access to industry; one principal said that what is needed is "more industry and university partners to support all high schools." Another principal said "I have an academy director now; all she does is go out and network and rub elbows with industry partners." In some rural geographic locations, there are fewer opportunities. In the East Hawaiʻi geographic district, for example, high schools in Kaʻu and Pahoa were referenced in a focus group as having few opportunities for business partners. Both of these are Title I schools with very high proportions of Native Hawaiian and Pacific Island students (according to NCES). In other rural locations, such as on Molokaʻi, the connections already exist but there may be other challenges, such as the lack of

faculty available to teach the content that is needed for that industry connection to develop to its full potential. In the Kauaʻi geographic district, there is some success in developing industry connections through a temporary position, with this person serving as an intermediary between schools and industry until those connections are established. A similar position exists in a school in the Windward district.

A concern with intermediary positions, and with industry connections in general, is that these connections are often between people rather than between programs and industries. This is a sustainability problem when people on either side, industry or the school, retire or move away. This was brought up in the 2019 CLNA but also by a HIDOE administrator in this year's data collection.

It appears that the industry connections are primarily established by persons at the school level rather than a HIDOE structure, which presents challenges. As one district resource teacher mentioned,

> I don't think schools know much about the industries that they may be serving. Schools are not always close to the industries due to the fact that training may need to continue through the community colleges. A school's philosophy may also deter them from becoming an 'employee factory' due to misunderstood goals of the CTE programs.

There appears to be inconsistency in the HIDOE system in how these connections are developed and maintained, which is a similar finding to what was summarized in the 2019 CLNA. There seem to be unequal opportunities for industry access across schools.

A salient need is for industry connections to be available across all HIDOE schools. This is an equity issue in that access to industry connections is not being made available to all students. This is a poignant need if the schools with higher proportions of special-population students are the schools that have less access to industry connections. The Career Connections program that has been established with the building and construction industry provides a good example of how this expansion might occur in other pathways.

Work-based Learning

In the system-improvement survey forms, about 70% of the HIDOE teachers and coordinators (and slightly fewer counselors) responded *yes* to the question about whether the program has provided work-based learning opportunities. Given the emphasis of work-based learning in Perkins V, this seems to be low, suggesting that this is a topic for improvement efforts to target.

The responses to the open-ended questions in the forms and in the focus groups indicated that work-based learning opportunities depend on the industry and the geographical location, which is consistent with the previously summarized findings having to do with industry connections.

Figure 4.16 *Reports about Work-based Learning*

Scope criteria improvement-form responses
regarding workbased learning and employer engagement

Has the program provided work-based learning opportunities?

Teachers	
Coordinators	
Counselors	
UHCCS administrators	

Do the program's advanced courses include work-based learning opportunities that simulate authentic work environments?

Teachers	
Coordinators	
Counselors	
UHCCS administrators	

Percent responding 'Yes'
0 10 20 30 40 50 60 70 80 90 100

Two pathways were given more attention in our needs assessment prompts: a) industrial and engineering technology (IET, which collapses pathways that are in the newer pathway system) and b) health services. In the health services, some schools have partnered with local hospitals and other institutions. Hawaiʻi Pacific Health was cited among multiple open-ended responses as being a valuable organization for this endeavor. However, the opportunities for real-world project-based learning can be limited because students cannot legally work on patients and because of HIPAA regulations. In IET, project-based learning examples were noted by industry representatives, such as a project involving students in real-world problem solving in a project with the Department of Transportation. In rural geographic locations, it is not surprising that there are fewer opportunities. In Hawaiʻi county, for example, high schools in Kaʻu and Pahoa were referenced as having few opportunities for business partners. As the 2019 needs assessment (Harrison et al., 2019) reported, schools in these rural settings are good targets for expanding web-based opportunities in industrial and engineering technology.

One theme that emerged, which had also arisen in the 2019 needs assessment, was the need to be sure that students had adequate employability skills before introducing them to on-site work-based learning opportunities. This can be understood in several ways: (a) Schools with industry connections that depend on good relationships are incentivized to send their most prepared students to work-based learning opportunities, (b) access to industry may be limited to

students who already have access to these skills, limiting access to students who need this development the most, (c) when students are put in the context in which they need these skills, they will likely more readily be learned, and (d) industry may need to more flexibly view students as "works in progress" and not expect them to be 100% like adults in terms of employability skills.

The results of this section indicate that the needs in work-based learning have to do with equity across geographic locations and types of industry. This is likely not surprising information to internal stakeholders, as it is consistent with the previous needs assessment results.

Employer Engagement

The OSDCTE's subcommittees have documented initiatives with employer engagement. There is evidence of employer engagement at the design level, such as an example of the bank industry's need for staff to expand their skills beyond that of the bank-teller occupation and the UHCCS's response by developing a program to provide the needed training and credentials. An example in the HIDOE is that an artificial intelligence company partnered with the Department of Transportation (DOT) and created a curriculum to include students in design thinking. As a participant in the industry stakeholder focus group expressed,

> Educators are not going to find the way to bridge education and industry. They create the future at Oceanit. Oceanit partnered with DOT to improve traffic conditions and DOT wanted to include students. No curriculum existed, so they created it. The students had gone through the process, they did a briefing with the client after having analyzed the data—So, the students, who are the future, are 'creating the future'. The students also developed skills in design thinking; and ...how innovation occurs in the real world. It was purportedly successful: Now, they have two more projects with DOT Highways.

However, this feedback from industry came from work-based learning rather than from employers of students who have completed their CTE program of study and exited high school. There appear to be challenges in collecting data from employers of graduates. This is not an uncommon problem in efforts to measure the effects of Perkins V programs (e.g., Dougherty, et al., 2020).

Counseling

The project team attempted to schedule focus groups with HIDOE counselors, but there were obstacles in obtaining the approval of this data collection from the HIDOE administration, thereby excluding their focus-group voices from this report, though counselors were able to complete the system-improvement forms.

On the forms, in evaluating the programs by whether they include a counseling component, we see that nearly 70% of the HIDOE counselors and principals perceive this criterion as being met (Figure 4.17). Compared to the principals, fewer counselors reported that there are structures for coordinating their work with teachers. The perception of how well counselors are coordinating with teachers may be influenced by some counselors', as well as some principals', incomplete understanding of the purpose of CTE. "The only 'stop-gate' is our counseling staff

who sometimes (per the students) try to steer students into what they feel are more academic type subjects." Career exploration and development constitute important components of counseling, as well. These are rated as being met by less than 75% of the counselors. It seems that there is a need to better coordinate the work of counselors with CTE teachers in programs. This can be a question for specific programs to investigate.

Figure 4.17 *Reports about Career Counseling*
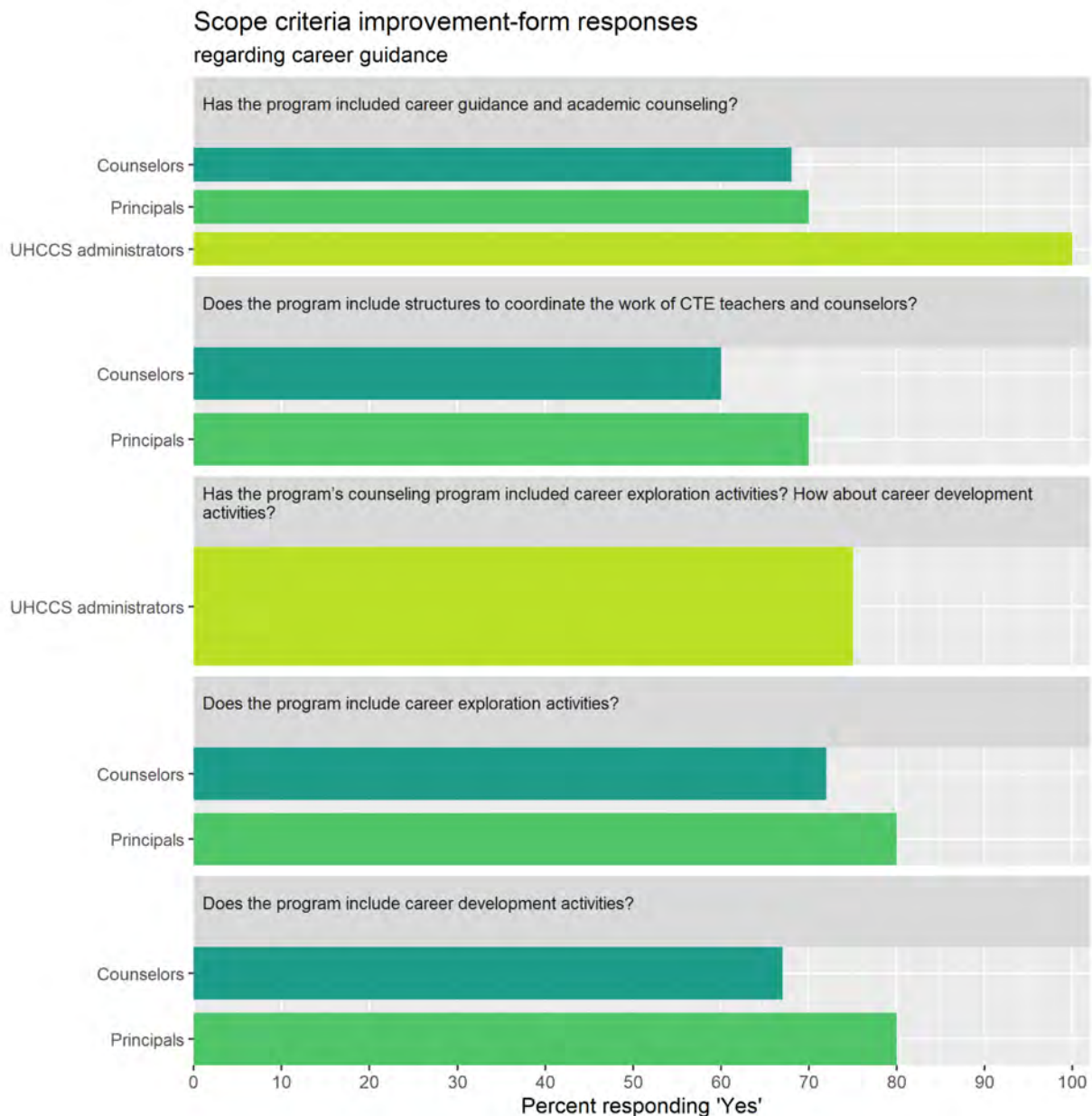
Recruitment and Retention of Staff

Several focus group participants noted recruitment and retention of staff as an ongoing issue of concern. As discussed in the design section, there are system design parameters that create

barriers to having individuals with industry certifications and skills as CTE teachers. HIDOE focus-group participants were very vocal on this subject. Among the participants were several industry experts who are qualified teachers. Two of them made the point that teachers coming from industry are not utilized or valued in the pathway development process. Teachers who came from industry with extensive work experience and strong lifetime connections with the community are not recognized for their value and are not given a reasonable living wage. Some of them enter teaching after decades of industry work and may be at a point in their lives where they see no intrinsic value in returning to university to obtain a bachelor's degree, particularly when such a degree is unavailable in their field of expertise. They are highly skilled and in-demand, but this value is not reflected in their low-wages. After their emergency hire period ends, they leave.

Recruiting CTE teachers from the continent is risky for schools, as many new hires leave after a short time; in one principal's words, "Teachers come in from the continent, teach, and then realize it is not for them." There is a need to retain local industry experts who seek to give back to their communities and who will show students that they can achieve this same success in life.

Many participants mentioned that the teachers' union had apparently begun considering changing the policy for teachers' pay advances, to address the need for retaining and hiring industry experts, but that nothing has transpired. If the Perkins V legislation is to be taken seriously in its endeavor to improve the education of our children, there is a need for the teachers' union to support policy changes in the salary step system. There is a need to show that we value these professionals for their expertise and their dedication to the community.

Although the closed-ended question about recruitment and retention was only asked of principals, the teachers' responses to the open-ended questions on the form revealed that many teachers perceive salary as a cause of the teacher shortage. Again, a recurring theme is the need to pay CTE teachers for experience, such as experience in industry or years of teaching experience, as the present system does not permit advancement in salary steps beyond a certain level without a bachelor's degree.

Retention and training are connected; one teacher suggested the teacher preparation programs allocate more time to internships:

> The college programs need to make sure they have more time for internships, actually being in the classroom with a mentor. I know when I did it, I had three semesters. That's barely enough. The ones that we train and educate can get frustrated in the first three years, which is what's happening. We need to retain the new teachers and continue to recruit.

Another teacher lauded the program at Leeward Community College: "In the recent past Leeward Community College created a special certification program for industry professionals without a bachelor's degree to receive a 'conditional teaching certification'. This has helped move in the right direction for industries that do not professionally require bachelor's degrees such as automotive technology and building and construction." It is teachers in these types of industries—those that do not require a bachelor's degree—that we risk losing if we do not recognize their value.

At the UHCCS level, recruitment and retention figure highly in the needs. Only 50% of the administrators responded yes on the system-improvement forms. In the focus group with the CTE deans, the same theme that occurs in high schools was present: The UHCC salary for industry experts cannot be competitive with the salary in their industry; as one dean put it, "[it is] difficult to find individuals who would leave lucrative paid jobs," making it difficult to find lecturers. What does attract applicants are the benefits and security, but this may not offset retirements and losses of faculty. A second theme is that the industry experts might not meet the minimum qualifications; for instance, a dental assistant industry expert does not likely hold a higher degree. Some professions do not require advanced degrees and the process of approving the hiring of industry experts into these positions can be burdensome and time consuming, disincentivizing applicants from pursuing a position. What is valuable is that there are examples of the exceptions for the minimum qualifications in job postings, such as having an associate's degree along with five years of related work experience and a relevant professional certification. A need at the post-secondary level appears to be for greater efficiency in recruiting faculty and lecturers in programs that prepare students for professions that do not require a bachelor's degree.

Figure 4.18 *Reports about Recruitment and Retention in Programs*

Scope criteria improvement-form responses
regarding recruitment and retention

Has the program been provided support for recruiting and retaining program staff?

(A deeper analysis of recruitment, retention, and training is in Chapter 5.)
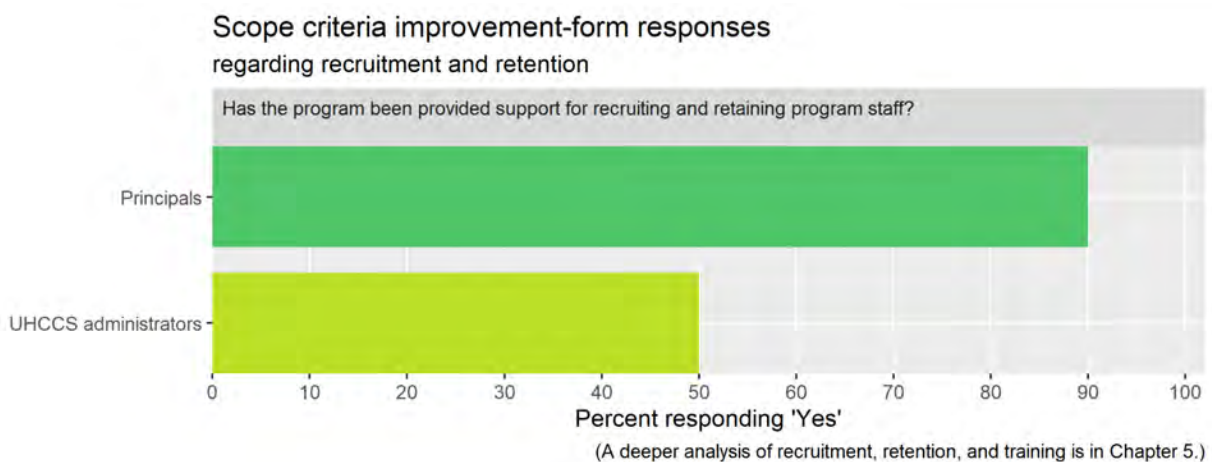
Professional Development

Most HIDOE professional development (PD) is offered at the state level and promoted to the complexes and schools through the district resource teachers. The professional development program is being revised as part of the transition from 6 to 13 pathways and the development of new course sequences. The first year of professional development was rolled out this year. Teachers shared that PD helped them to break down the new standards so they could write lesson plans. However, some teachers expressed dissatisfaction, as they were hoping to receive guidance in how to translate the standards into practice but were instead given the conceptual task of "deconstructing the standards." Some teachers reported that the PD they need is not available and that they seek out their own but then do not get PDE3 credit (which counts toward salary step increases).

Figure 4.19 *Reports about Professional Development in Programs*

Scope criteria improvement-form responses
regarding recruitment, retention, and training

Has the program been provided support for professional development of its staff?

Percent responding 'Yes'

(A deeper analysis of recruitment, retention, and training is in Chapter 5.)
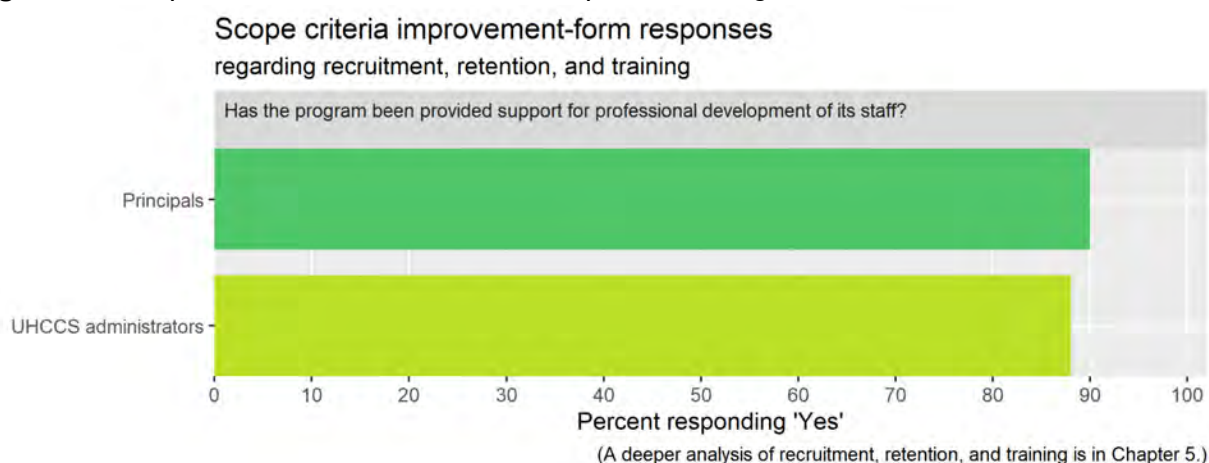
One HIDOE teacher asked "why do we have to pay for professional development?" when they attend PD that helps them teach their course content. However, as explained by a HIDOE CTE state specialist, it is important to note that Perkins V funding is available for PD if it does not contribute to salary increases but does help teachers perform their jobs better. The expectation that some teachers have that they must pay for their own PD may reflect how the funding system is organized, as the schools face decisions in how they divide up the Perkins funds they receive.

Quality Criteria

This section addresses needs in delivering quality *within* the CTE *programs/programs of study and subrecipients*, including systemic gaps, disparities, and misalignments. According to the state plan, quality of a program is supposed to be measured by

- equity of access to special populations,
- alignment of programs to occupations with a living wage, that are in demand, or high skill,
- review of programs,
- employer feedback, and
- findings of the system improvement process.

Equity of Access to Special Populations

Precise comparisons of access across Perkins-identified special populations cannot be made due to issues with data infrastructure. The summarized data of every Perkins V special population are simply not yet available to subrecipient staff and faculty who are being asked to ensure equity of access and quality. In the UHCCS, the challenge is that some special-population data—such as whether the student is a single parent—are not being collected. One of the HIDOE focus-group participants' statements reflects this situation:

If the data is provided to us, that could better answer those questions and we could address, like how we can you know do things to reduce these disparities, but until that's

sort of like explicitly in place I think it's difficult for for myself to be able to address that without having that provided for us or something in place where we can collect that information on our kids.

Beyond simply getting the data, there is also the issue of how to use that information, as one district resource teacher strongly emphasized. Based on the focus-group discussions, there appear to be no systematic implementations in place for promoting programs to special populations beyond simply advertising to all students about what CTE courses are available (an exception is programs' strategies for attracting non-traditional students). There may be a need to communicate to school staff and faculty some of the resources for attracting special populations into programs. One possible resource (by Williams, 2021) is provided on NAPE's website. The more urgent need, at both the HIDOE and UHCCS levels, appears to be in getting the disaggregated data, as this is needed to identify the students who are members of special populations, particularly with categories that were not present in Perkins IV.

Figure 4.20 *Reports about Access and Special Populations in Programs*
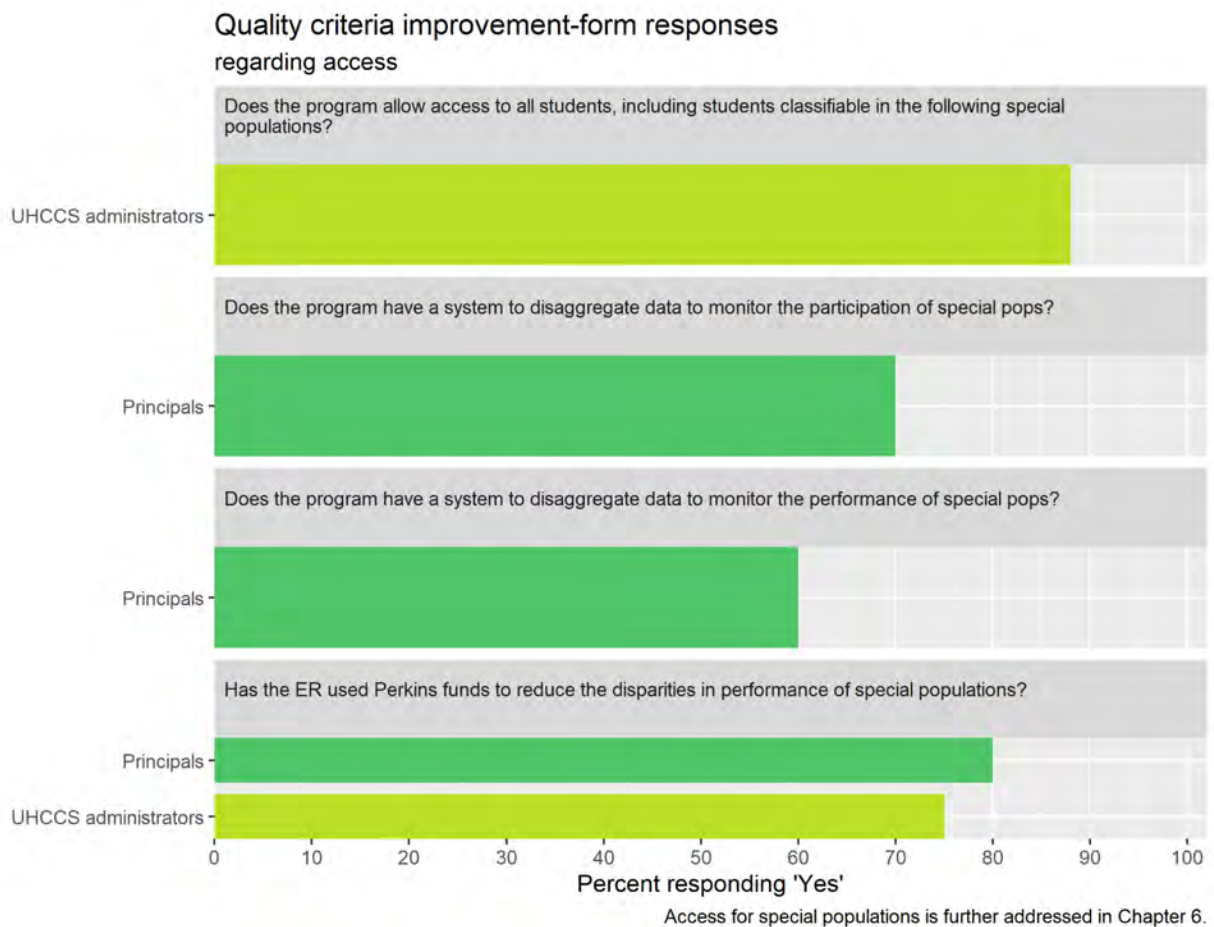
Quality criteria improvement-form responses regarding access

Access for special populations is further addressed in Chapter 6.

Alignment of Programs to Occupations with a Living Wage, That are In Demand, or are High Skill

The new pathways are aligned to in-demand and economic development occupations. Although this meets Perkins V definitions of quality, there is tension in the state as to how this aligns with definitions of quality or industry demands in the community. In one focus group, an industry representative suggested that the HIDOE place less emphasis on teaching students to code and more emphasis on problem solving, design thinking, and entrepreneurial skills because the employment competition among coders has no geographic borders whereas the need for innovation of the future problems in our state will require innovators who are familiar with our local conditions. In a meeting with a representative from the Workforce Development Council, two needs stood out: (a) the retraining of adults into more resilient occupations, particularly those who are at risk of losing their jobs during the pandemic or other periods of economic instability, and (b) an emphasis on entrepreneurship, particularly for people in rural settings because employers are not going to move to these small towns and residents need to learn about how to apply for business licenses and become self-employed. Among the Native Hawaiian community, priorities are for young adults to choose occupations based on community needs, rather than personal characteristics such as wage and skill. This reflects differences in value systems between the United States as a whole and the people of Hawai'i. With this information, there appears to be a need to better align programs' descriptions and objectives to local values and to ensure that there is emphasis on helping students learn to adapt to changing labor needs or to develop skills that enable them to become self-employed.

Figure 4.21 *Reports about Alignment to Industry*

Quality criteria improvement-form responses
regarding alignment to industry
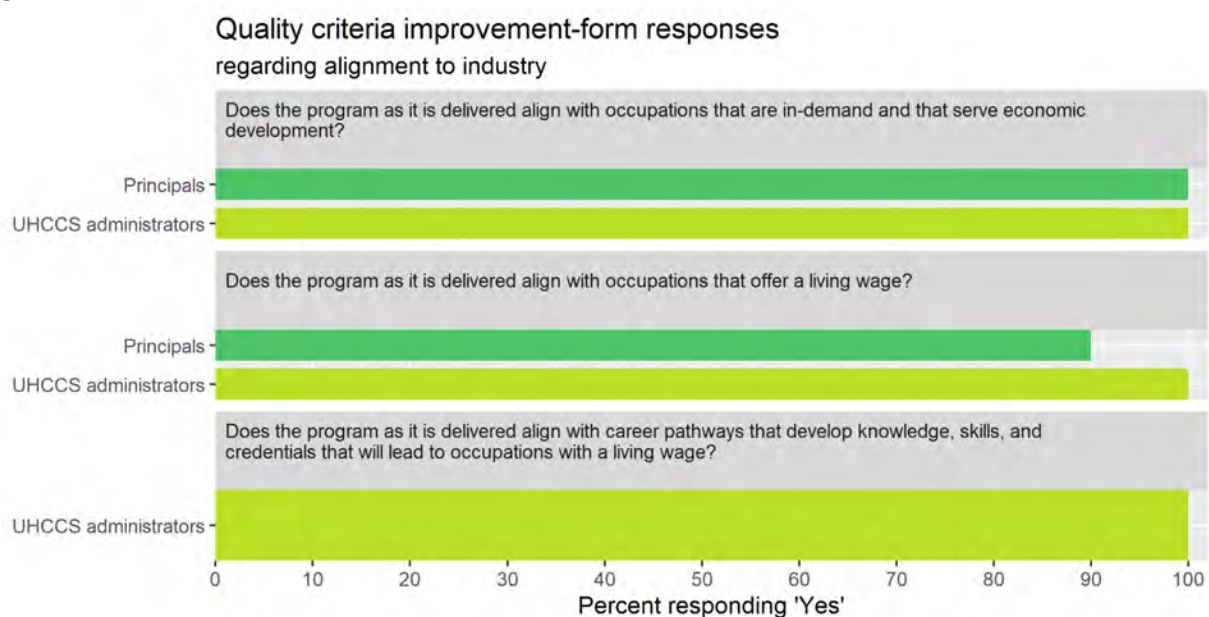
The UHCCS students were also asked whether their college CTE courses will help them get a job (a) as a skilled worker, (b) with a good wage, and (c) that our Hawai'i economy needs. The skilled-worker question received the most positive responses but the one about wage was endorsed by only 57% of the students (52 of the 90 students responded "yes"). Less than 70%

of the students seemed to believe that their college program would help them get a job that our Hawaiʻi economy needs. (This last question is complex, however, in that students responding "no" or "maybe" may believe they will not be able to get a job or that the job they do get is not one that will contribute to our state's economic needs.) There may be a need for programs to remind students that their community college education can serve as a step toward higher degrees that lead to higher wage occupations.

Figure 4.22 *College Students' Reports about Alignment to Industry*

Students' perspectives on programs' high-skill, high-wage, and in-demand preparation
Do you believe your college CTE courses will help you in the following ways?
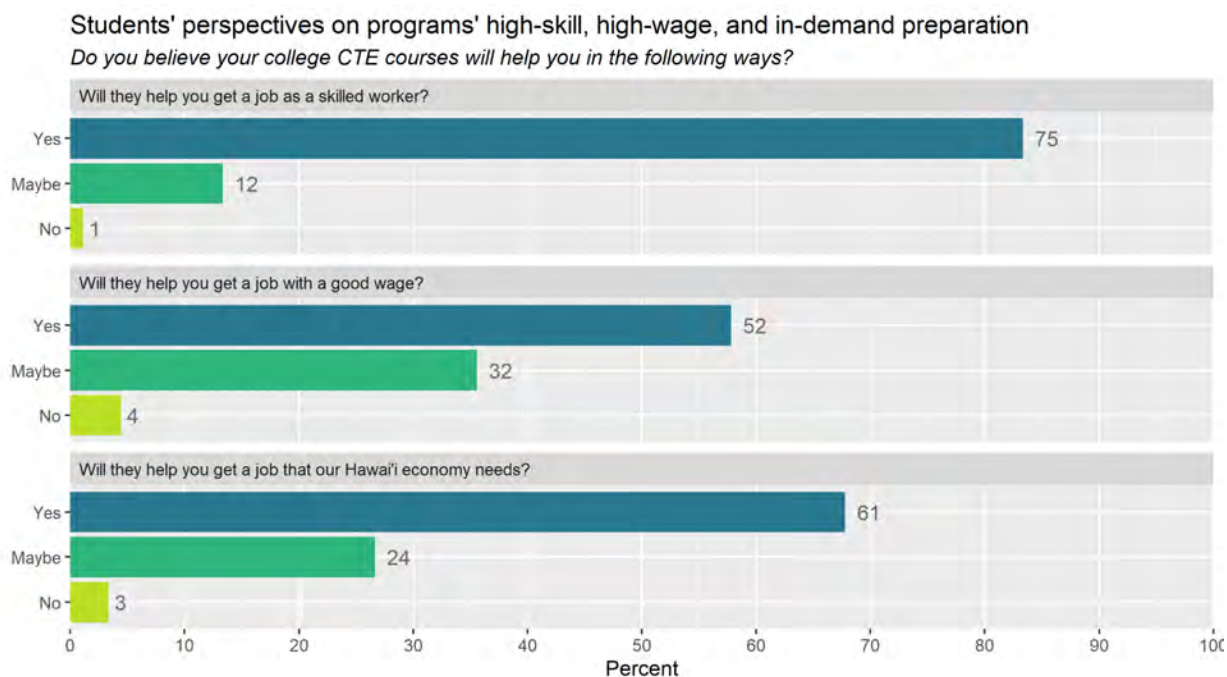
Figure 4.23 *IET and Health-services College Students' Reports about Alignment to Industry*

Students from IET and health services programs
Do you believe your college CTE courses will help you in the following ways?
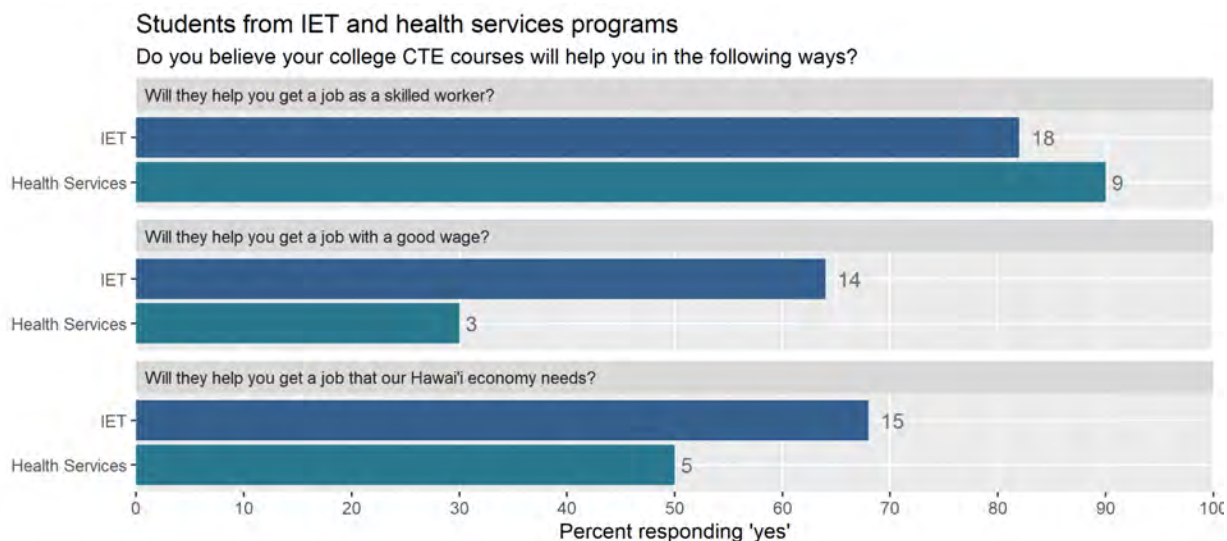
With subsets of students enrolled in IET (22 students) or health-services programs (10 students), there are some differences between the two pathways, though, the number of

73

students in these two subsets is too low to be used to make decisions about programs. Both view their programs as being helpful in getting a high-skilled job, but the wage question differed. Of the 10 health-services students, only 3 said that their program would lead to jobs that are perceived as high wage. Although this result is from a subset of only 10 students, health programs in particular might consider reminding students that their community college education can serve as a step toward higher degrees that lead to higher wage occupations.

Review of Programs

In the self-reports on the system-improvement forms, the UHCCS CTE deans emphasized the value of the advisory committees and of the ARPDs. Advisory committee engagement is documented in the ARPDs, and the UHCCS programs purportedly use this information to improve their programs. Because of the format of the ARPDs, the project team did not summarize these findings across programs. In the CTE dean focus group, one thing that emerged was that some programs, such as in the health services pathway, have better functioning program review than others. In other words, in the UHCCS, there is room for growth in some programs' review process.

With the HIDOE, program review is slated to be conducted in the pathway advisory committees, with those pathways that are being rolled out this year, such as the education pathway, now having pathway advisory committees. In the system-improvement forms, there were two questions about advisory committee meetings—one having to do with stakeholders and the other having to do with advisory meetings in the respondent's county (Figure 4.24). Based on

Figure 4.24 *Reports of Advisory Meetings*
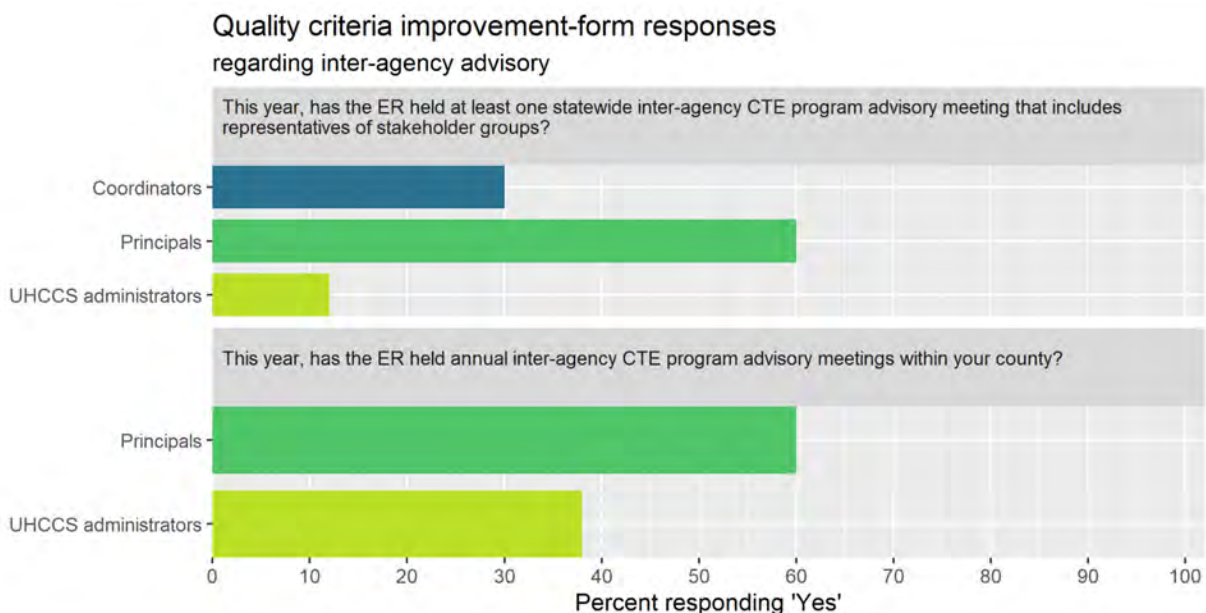
these results, it appears that if both the statewide and county-level pathway advisory council meetings have been held, their existence is unknown to at least 40% of the participants in our sample. This makes sense because these new pathways have yet to be rolled out, meaning that their respective committees have yet to be formed.

However, the review of programs in the HIDOE seems to need some work. The reviews, if they are being conducted in the new pathway advisory committees, are not being shared yet. In a conversation with a school administrator who actively works on several rolled-out pathways at their school, there has been no information from the pathway advisory committees that have been purportedly active this year, at least not as of June, 2021. Two members of one of the HIDOE's pathway advisory committees also expressed a concern that in the two meetings they have had this year, it was unclear what the industry stakeholders' roles were to be. These pathway advisory committees are good places to formalize the program review process, similar to how this is done with some of the more active UHCCS advisory committees.

Employer Feedback

This program-quality criterion concerns the solicitation of employer feedback about their satisfaction with employee recruitment, hiring, and work performance. Presumably, programs are to obtain this feedback to inform their curriculum development and program improvement. It seems as though feedback is to be shared with program developers either from data that are provided to them such as from the subcommittees of the OSDCTE or directly from employers.

The amount of employer feedback noticeably varies by career cluster. Participants were asked in the focus groups "Have you ever been invited to participate in statewide CTE program advisory meetings, been involved with program review, or used feedback from employers?" At the HIDOE level, the principals emphasized the value of advisory committees, though the question was seldom answered by teachers and coordinators (often met with silence), suggesting that outside of advisory committees, employer feedback is seldom used. Though one of the coordinators asked whether feedback from employers was being used in the HIDOE's development of the new CTE standards, few teachers have employer feedback at the forefront of their thinking when discussing CTE programs. At the UHCCS level, advisory boards are functioning well in the health pathways but can use some improvements in the information and technology types of programs.

The OSDCTE's Sectors & Pathways—Program Quality Committee has partnered with organizations, including the Chamber of Commerce Hawaii, the Workforce Development Council, and healthcare employers to align CTE education in both eligible recipients with industry needs. This work seems to be more active for the health-services pathway than for other pathways.

To get other data from the industry side, we asked, in a meeting with a local industry representative, whether there were surveys of local employers to find out about the needs in aligning industry and education. No recent surveys across industries have been conducted.

The OSDCTE's Monitoring, Evaluation and Feedback working group (within the Quality Assurance & Continuous Improvement Committee) is charged with designing and administering tools to collect employer feedback. In this effort, the OSDCTE staff have reported that they are revamping their monitoring and evaluation procedures, indicating that implementation of this criterion is still inchoate.

The HIDOE has been moving forward in developing pathway advisory committees that include industry. However, one concern raised by a pathway committee member is whether the appropriate industry representatives are present on the committee. For instance, on the HIDOE education pathway committee, there are representatives from business that, from some members' perspectives, have only a weak connection to the education industry, which raises questions about the capacity of these members to offer effective feedback in the development of the curriculum intended to prepare students for occupations in the field of education. Another committee member confirmed that—in these early stages of the pathway advisory committee meetings—it is unclear what the industry stakeholders' roles are; this person suggested there be an on-boarding process to clarify what type of feedback they can prepare for the committee.

On the system-improvement forms, there were two questions about employer feedback, but they were worded to ask about the eligible recipients (HIDOE and UHCCS), to be consistent with the phrasing of the criteria presented in the state plan. The second question was a follow-

Figure 4.25 *Reports of Industry Feedback*
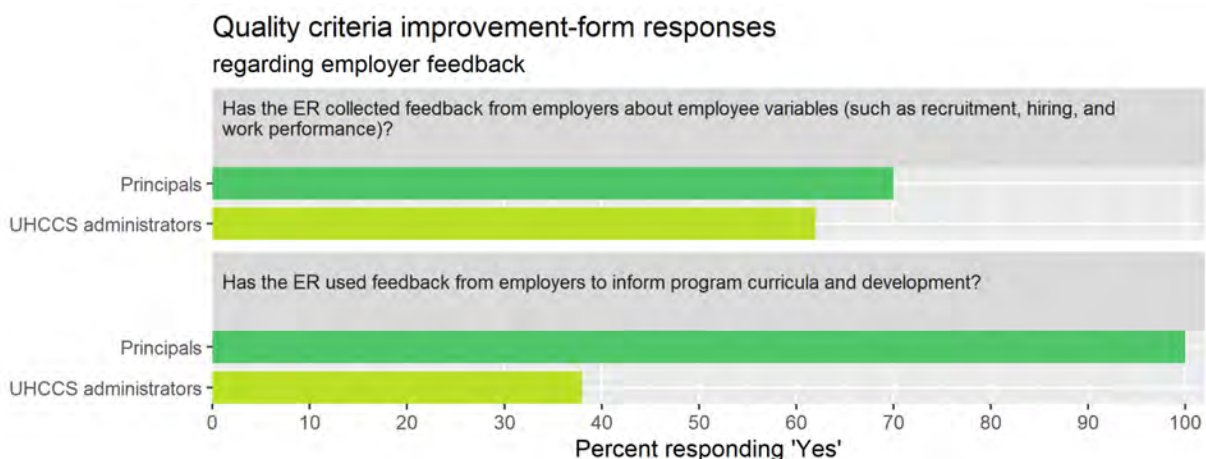
up, presented only to respondents who answered "yes" to the first question. Based on these data, there does seem to be room for improvement in employer feedback. However, the improvement-form results do not reveal the details. In the UHCCS, many of the programs do have program advisory committees, as was previously mentioned in descriptions of the focus groups with deans and as is apparent on the ARPDs.

Findings of the System Improvement Process

There is significant evidence of systematic evaluation at the UHCCS level, but not much evidence at the HIDOE level. At the UHCCS level, departments use the ARPD system to examine some evidence, but it is not explicitly linked to Perkins criteria and categories. At the HIDOE level, CTE improvement seems to fall within the purview of schools' academic plans, but some schools do not have CTE specifically called out in those academic plans, while others do. There is a need for the HIDOE to develop strategies to specifically address systematic improvement processes for CTE.

The system-improvement forms revealed that about 70% of the principals and UHCCS administrators believe their respective eligible recipient organizations have engaged in the process of improvement that is informed by needs. Still, 70% of the principals who responded do not believe the HIDOE has an improvement plan for Perkins, though 80% reported having been contacted to participate in this process.

Figure 4.26 *Reports of Improvement Processes*
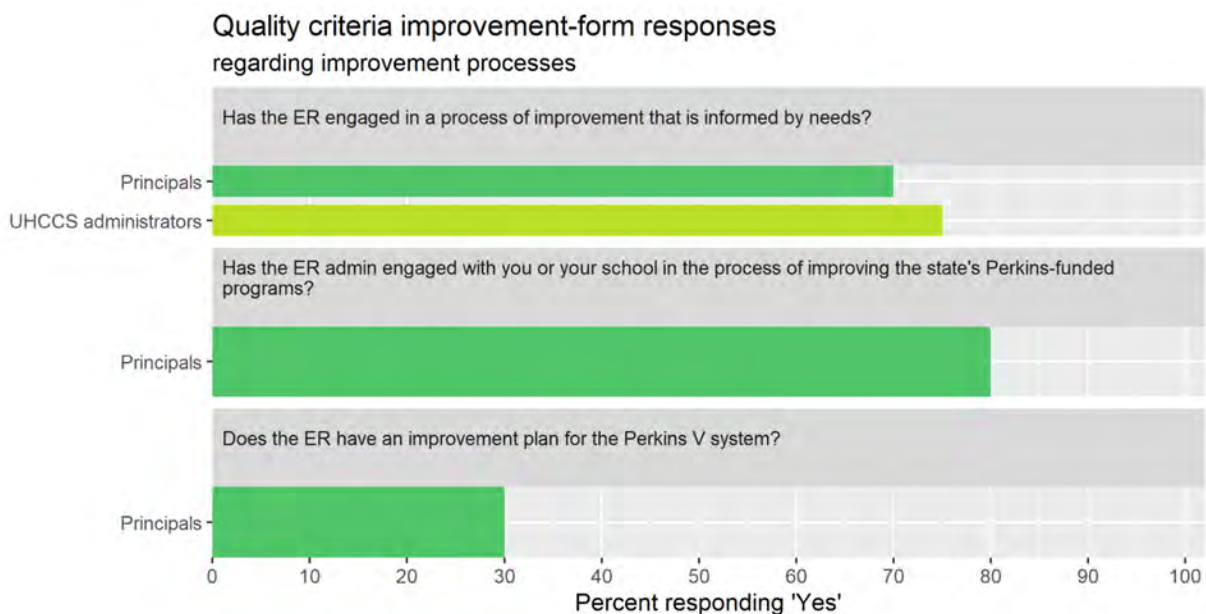
Regarding the needs of the HIDOE system improvement process itself, there were many responses from focus-group participants and on the open-ended questions in the system-improvement forms. One theme that emerged was that the data need to be more current. According to one of the district resource teachers, "the data that is being used to determine Perkins funding for schools is from 2 years prior. I am not sure how reliable that is."

How to use the data is also a question. For improving equity in the system, for example, there is room for growth; as one district-resource teacher put it "I am not sure if data is being used to make decisions about equity. We are given some demographic data, but not given strategies or ways to address the equity issues." Another respondent contributed by saying

> It is hard to reconcile the equity issue when certain pathways attract a particular type of student for no particular reason. I know all schools have open door policies in enrollment and it doesn't necessarily show up in the data. I think we should formalize a process to make sure that all schools have an equity tool box.

The good news is that there is progress and there are structures in place to strengthen this process. One district resource teacher stated that "there are a few sources of data in HIDOE that provide trustable and somewhat reliable data such as the Longitudinal Data System (LDS) and Infinite Campus. They can be challenging to use but the HIDOE does have specialists to help in this area." This person added "I think what we have is good. The problem is it can be hard to navigate if you are not using it all the time. It would be nice to get something people can

use on an intermittent basis without needing tons of training that is forgotten by the next time you need to access the system." Another district resource teacher provided written feedback, suggesting two priorities:

> 1) HIDOE needs to find a way to encourage the use of more data when creating Perkins plans that are meaningful to learning for all students and 2) There are a few reliable and trusted places to get data, some of it just needs to be simplified for more use.

Providing ideas for a strategy, another district resource teacher suggested that there be

> a strategic planning group that can determine the fast repairs vs long term repairs and how to leverage public and private funds to accomplish them. A timeline of no more than 1 year for what the group identifies as priority and no more than 3 years on non-priority.

These participants' contributions reaffirm that there is a need for the HIDOE to develop strategies to specifically address systematic improvement processes for CTE, similar to the processes that are already in place for academic programs. As of June 2021, the HIDOE and OSDCTE informed us that the Longitudinal Education Information (LEI) system is being developed to include data for program improvement, which presumably will inform system improvement.

Size and Scope Across the System

This section addresses the size, scope, and quality needs having to do with the implementation of programs (including programs and programs of study) across the system. This is intended to reveal needs having to do with inter-agency and inter-stakeholder alignment and engagement, as well as needs having to do with size, scope, and quality criteria across programs, subrecipients, and geographical regions of the state.

Size and Scope Components

This section addresses the extent to which the size criteria and scope components are *delivered* as integrated, interdependent parts of a system of CTE learning experiences. Integration and interdependence was addressed
- across the CTE system,
- across CTE programs and programs of study, and
- across geographic regions.

Across the CTE System

Stakeholders have specific roles in the HI-OSDCTE and learning hubs (subcommittees). There is some evidence of alignment and engagement in delivery across the system, such as sites using a common set of pathways and programs of study with common learning objectives. However, the alignment and interdependence are not as clear at the course delivery level because even within common programs of study, instructors create their own instructional materials. Some sites have unique offerings, outside of Perkins V funding, that go beyond the existing pathways and programs of study.

One of the HIDOE teachers proposed that "having more conversations with community colleges, 4-year universities, and trade schools about what they are looking for as a model student would help." Some teachers are skeptical of the new standards because they do not know what informed their development. In the words of one of the teachers, there is a desire to "have more input from teachers in the designing of curriculum, pathways, and standards." Another teacher said "balancing what the needs of industry are for our students' planning ahead. [The] recently to-be-released standards for this field are out of line with these ideals. The organizers (consultants) have not disclosed why they chose those standards."

With the HIDOE pathway advisory committees, which are being re-established to align with the new pathways' standards as they are being rolled out, there appears to be a need for better communication within the committees about their goals and about how their work shall inform the pathways that are on the ground in the schools, as was revealed by two committee members in separate meetings with CLNA staff. Both people proposed that their committee could be improved by having a clear specification of the committee's objectives and of the tasks that the different stakeholder members are assumed to take on. Subcommittees could be formed based on members' stakeholder roles (such as one subcommittee with industry representatives and another with post-secondary members) to work on specific tasks. It was expressed that there is great potential for these committees to contribute to the CTE system but that members are still unsure how this is supposed to operate. One of the committee members also mentioned that even though this person is involved with several already-rolled-out pathways at their school, no information from those other pathway advisory committees has been shared with their school's on-the-ground pathways. In sum, it is safe to conclude that there is a need for better communication across the system, both within the eligible recipients and between them, to increase understanding of how the CTE pathways are supposed to function and to increase the buy-in of the new HIDOE standards.

Across CTE Programs and Programs of Study

The extent of clear integration and interdependence varies considerably. There does not appear to be integration and interdependence across the HIDOE and UHCCS programs, which would improve the ways in which students progress from high school to community college programs. Some participants stated that the high school program of study objectives seemed more appropriate for college than high school and that they did not have teachers with the appropriate skills or expertise to teach advanced courses. This creates questions about how much redundancy or overlap exists among the high school and community college programs and how much is desirable or practical.

Across Geographic Regions

It does not appear that design considerations have yet been made to adjust funding formulas that are based on numbers of concentrators and completers; however, as was mentioned in the previous chapter, the HIDOE CTE administrator indicated that their funding formula committee has been established and will be working on a new formula to be implemented the 2022–2023 academic year. For obvious reasons, funding affects the capacity of sites to deliver programs

that meet size and scope requirements. For example, participants from smaller schools, most of which were far from economic centers, indicated insufficient funding to purchase equipment needed to implement programs as they are intended. For example, in the culinary program, participants mentioned relying on outdated equipment from prior home economics programs to teach commercial culinary programs.

Summary

The needs having to do with the implementation of programs, as identified by the size, scope, and quality criteria, include the following:

A. There appears to be a disparity-based need in small and rural HIDOE schools for technology and materials.

B. There appears to be a need to help HIDOE school personnel and faculty understand the new CTE standards and to help them identify strategies for using their current resources to adapt to the new program descriptions and objectives.

C. There appears to be a need to communicate to internal and external stakeholders how career exploration is being addressed in high schools in which concentration is prioritized.

D. Employability skill development in the HIDOE may need to be emphasized with some special populations, such as homeless youth and those who are economically disadvantaged.

E. In the HIDOE and UHCCS, programs' entrepreneurial-skills instruction may need to be reviewed.

F. An identifiable need in the HIDOE is to improve its program reviews for how well they align with workforce skills.

G. A salient need is for industry connections and work-based learning to be available across all HIDOE schools. This is an equity issue in that access to industry connections are not available to all students.

H. There is a need to better coordinate the work of HIDOE counselors with CTE teachers in programs.

I. At the secondary level, there is a need for policy changes in the salary step system to recognize the value of CTE teachers with extensive industry experience.

J. A need at the post-secondary level appears to be for greater efficiency in recruiting faculty and lecturers in programs that prepare students for professions that do not require a bachelor's degree.

K. With regard to equity, there is a need for the HIDOE and UHCCS to collect special population membership data that allows disaggregation, particularly with categories that were not present in Perkins IV.

L. There appears to be a need to better align programs' descriptions and objectives to local values and to ensure that there is emphasis on helping students learn to adapt to changing labor needs or to develop skills that enable them to become self-employed.

M. There is a need for the HIDOE to develop strategies to specifically address systematic improvement processes for CTE.

N. There is a need for better communication across the system, both within the eligible recipients and between them, to increase understanding of how the CTE pathways are supposed to function and to increase the buy-in of the new HIDOE standards.

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Chapter 5
Recruitment, Retention, and Training (Human Capital)

This chapter discusses the recruitment and retention needs across the HIDOE and the UHCCS and the extent that system strategies are being pursued and having impact. Focus-group participants across the state were very passionate about CTE and not only offered their perceptions of needs, but also some solutions.

The Identified Needs for CTE Professionals

All recipients and subrecipients across the state identified recruiting and retaining industry professionals to teach CTE programs as the primary need that is difficult to meet because of the higher wages industry professionals receive in industry compared to in education. While the UHCCS has more to leverage (e.g., attractive benefits for individuals interested in retiring from industry), the HIDOE internal stakeholders reported more systemic obstacles and less flexibility in recruitment and retention of experienced industry experts. However, both see (a) the minimum qualifications (MQs; e.g., post-secondary degree) as a problem, (b) higher-education MQs as unrealistic in CTE programs that are in high-wage industries that do not, in their workforce, require higher education for recruitment or promotion, and (c) systemic obstacles to offering high enough wages to attract industry professionals. This section elaborates on this tension across the CTE system.

By Profession Across the CTE System, the UHCCS, and the HIDOE System

There is some discrepancy between the interpretations drawn from data that are formally reported and the interpretations drawn from ground-level reports of what programs need in terms of recruitment. According to participants in a focus group with UHCCS CTE deans (from Honolulu, Maui, and Hawai'i counties), the recruitment needs tend to be underreported. As an example, one dean noted that the way the ARPD rubric determines program health based on lecture hours versus contact hours causes their high intensive programs (e.g., Culinary and Automotive) to appear healthy, while falling short of providing an adequate number of sections. The ARPD system includes a program-analysis section for the programs to further explain their program needs. For instance, in one 2020 ARPD for a nursing program, their program-analysis document says

> As the clinical cohort size at clinical sites is reduced, more faculty TE's are needed to fulfill facilities' requirements while also maintaining and increasing the nursing cohort size. Faculty with special area knowledge are retiring, and there is a freeze on filling open positions. The saying "One size does not fit all" describes cohort size issues, hiring

appropriate specialty area nursing faculty for replacing retiring faculty, and retraining faculty in online education and nursing skills in our nursing program.

This indicates that there is a need for the numeric data reported in the ARPD system to better capture the recruiting needs that the programs face.

UHCCS Faculty Recruitment Hindered by MQs

One theme is that the current MQ requirements posed by human resources hinder recruitment. According to one of UHCCS deans, "the positions, when they are available [are] not attracting the right individuals for the program." Another dean noted that hiring committees have reported that the postsecondary degree MQs attract recent graduates with only entry level experience and those who lack the "robust work experience" for programs that are "so heavy into the technical knowledge side". A result of this, for example, is that past hires have been unable to respond to student questions (about the industry). Several points emerged in the focus groups:

- Regarding the MQs for certificate-program faculty, experience and certification are more realistic than advanced degrees, as these are valued in program accreditation and industry requirements.

- Not all careers require post-secondary qualifications; for example, for business administration, such a degree is required, whereas for dental assistance, it is not.

- MQs might be more appropriately specified at the course level than at the program level: For example, a person holding a physics degree might be more qualified (than a radiology expert) to teach the physics courses that are required in a radiology sciences program. "Those MQs don't necessarily fit and that's a limiting factor for getting the best people in the classroom."

Higher salaries appear to be needed for attracting experienced talent: In juggling "high demand" and "critical fills" (to use the words of the focus-group deans), deans could navigate the salary placement schedule and negotiate a higher salary for new industry hires, for certain approved programs. However, this also requires efforts to avoid creating "a lot of inequities" when new hires would then be earning comparable wages to program directors or longer tenured faculty.

UHCCS Lecturer Recruitment Limited by MQs

There is a sense that the MQs limit colleges' capacities to fulfill their missions: The deans noted that the MQ uniformity across the UHCCS by position type limits their capacity to fulfill the mission of their campus in recruiting high quality faculty because they have little flexibility in offering lecturers who meet the post-secondary MQs a higher salary because they do not hold the teaching experience required to move above Step A in the salary schedule. Even at the highest pay scale (Step C), lectureships are not competitive. As one dean said, "they're getting paid a lot more [in their industry] than they might even get paid as a lecturer step C." Replacing MQ degree requirements with industry experience and attempting to offer higher salaries is a "painful bureaucratic process".

HIDOE Qualified CTE Professional Recruitment Limited by MQs

At the secondary level, recruitment needs resemble those at the post-secondary level, particularly in the hiring structure and pay scales. With salary scales, the HIDOE does not yet have a work-around for the cap in pay when a teacher does not have a bachelor's degree, which in turn exacerbates recruitment challenges. While HIDOE CTE recruitment and retention needs are parallel to the statewide K–12 teacher shortage, especially in rural areas throughout the state, the CTE teachers have additional costs, depending on whether they are hired in as a temporary hire with industry experience or have transitioned to CTE from a core academic program: For those with industry experience, they pay for their teacher licensure; for those transitioning, they pay for their industry recognized certification (though this is seldom required). A CTE coordinator summarized this institutional barrier with hiring industry people as teachers, "because we need to get people who are great in industry and want to work with kids...we're not setting up the pay scales and training for that." This tension is reflected in Table 5.1 from the system improvement form.

Table 5.1 *Principal's Perceptions of Recruitment and Retention Options Available for CTE Teachers*

Question from System Improvement Form	Number answering "Yes"
Is it possible to hire teachers into this program who have industry experience and expertise but do not have a bachelor's degree?	4
Are teachers' teaching credentialing fees paid for, in part or whole?	3
Are teachers' industry-recognized certification fees paid for, in part or whole?	1
Are there incentives provided to CTE teachers in this program to alleviate teacher shortages?	0

Note. Only 10 principals completed this form, though 43 high school principals were invited.

Recruitment of the HIDOE CTE Teachers

While many HIDOE CTE teachers have been recruited from content or core programs—such as when a science or mathematics teacher teaches engineering—many are not fully aware of what CTE entails. As a result, a CTE coordinator has suggested to her principal that she be included on the hiring team: "because a lot of teachers are hired, or they come into our department, and they go, 'Oh, I didn't know that's what CTE does.' ...that's always frustrating."

One theme is that the bachelor's degree qualification hinders recruitment: Although Leeward Community College (LCC) offers a teacher licensure program, many focus-group participants agreed that few industry experts want to take the time and their own resources to earn a bachelor's degree or teaching licensure.

- As one participant said, "quality CTE teachers are hard to come by", such as those with industry expertise and teaching pedagogy with licensure, "...that's GOLD".

- Industry professionals who want to teach in high school do not want to go back for a college degree when they can earn more in industry: In one participant's words, "... he was in his 50s. And he was like, 'I'm not going back to college, ... to do all this. Like, I'm just gonna go,' and he's like, 'I can leave and just go back and do construction and I'll be fine.'"

- There is a lack of qualified CTE teachers to draw from: CTE teacher shortage was highlighted by a principal's remark that when a teacher retires, they may have to close the program because of their inability to find a replacement. Moreover, some schools rely on long term substitute teachers or core teachers becoming CTE teachers although they tend to lack industry expertise or experience.

  - There is a lack of teachers for higher level or second-year courses: When the core teachers become default CTE teachers, there usually then is a lack of expertise to teach the higher level CTE courses and attract students to authentic work contexts.

- There are limits in salary and benefits: "It's really insulting...we don't honor their expertise," said one principal. An entry-level instructor earns $35,0000 to $40,000 and then has to pay to take teacher certification. The opinion in the principal focus groups was that we should honor their industry expertise. "Industry should count for something."

  - A common pathway of an industry expert becoming a teacher is they start as an emergency hire with full teacher salary, but once the emergency hire period ends, industry expert is demoted to substitute teacher and loses benefits and the higher salary.

  - There is no mechanism to increase the salary above "poverty level," as one focus-group participant characterized it.

There are systemic obstacles to qualifying industry professionals: One focus group with teachers and coordinators noted that the issues surrounding the bachelor's degree qualification restrict recruitment and retention of industry professionals. They added that this was discussed years ago in the teachers' union (Hawaii State Teachers Association; HSTA) without any resolution:

> It was presented to our HSTA district level, and we haven't heard anything about it yet. And they said they were gonna bring it up in the next meeting and negotiations. ...And it was brought up a number of times. But nothing, you know, ...So we did bring it up this year again, you know, with the negotiations that are happening right now, so we didn't hear [any] word yet.

A coordinator said that there needs to be a way to compensate CTE teachers who have become certified so they can be rewarded for their years of teaching by moving them up the pay scale.

According to a HIDOE administrator, the MOA with the teachers' union for the limited license for CTE teachers from industry to teach only within their expertise, may be amended to give industry experts a way to advance as a teacher and earn more than when they enter as an instructor. However, it remains unclear how long these negotiations will take and how well this amendment will work. The administrator emphasized, "Not an easy fix—I don't see that changing right away. It might take a few years, but we've got to get it started."

Retention of Industry Professionals

The theme of low salary vs. industry high salary persists:

- One of the principals spoke of the challenges in retaining CTE teachers when a person "makes way more money outside in his industry field".

- One coordinating teacher said, "I think something needs to be done with those that become certified either through Leeward or so that they stay in the position and they have the ability ... to get compensated for the longer they teach and move up on a pay scale. I don't think it's feasible for industry guys to take a pay cut ...so I think this is a— it's an issue that needs to be worked out with the state as far as providing that opportunity for industry people coming in."

For teachers without a bachelor's degree, there is no clear way to progress in the salary and benefit schedule:

- A participant in the teacher focus groups described a successful building and construction (B&C) instructor who had key community contacts and engaged the students with hands-on work-based learning by fixing the nearby faculty housing. However, when his emergency hire status changed to substitute teacher, he lost his benefits and then returned to running his construction business.

- A teacher added, "So yeah, they have an associate's degree but and and you know, a lot of them you know, like mechanics, they come with ASE certification but because they don't have the bachelor's degree they aren't allowed to ...move up."

- There is no incentive while completing their bachelor's. In the teacher focus-group, a participant said, "it should be like a factor somebody's going to trade switching over so give me kind of incentive to say okay, if you are to keep applying and keep moving up, you can move up quicker as the wait until you get your bachelor's—fully get your bachelor's first—and get bumped up."

- In talking about the Leeward-Community-College program to get industry people certified, one CTE coordinator added that "one of the biggest problems with that is just they can get conditionally certified...like our advanced automotive teacher, ..., he went to that program, and he is certified to teach automotive only. But he cannot earn credits to get a raise, he cannot move past until he gets his bachelor's degree, which is ridiculous. *So that's another stumbling block, as far as retention—who's going to want to come in to work for a job that you can't get a raise at*" (italics added to reflect emphasis).

Challenges when core teachers become industry certified on their own:

- From a neighbor island district resource teacher (DRT), "One of the big problems, as with other schools in the state, is getting enough teachers. They 'PD themselves' to get certified".

- A CTE coordinator, added (in agreeing with needing more skills outside teaching skills), "...if teachers want to get more training, other than your initial training, beginning to move into the profession, I mean, it's all on their own. So maybe it's just a simple question or concept of is there funding to provide that kind of support, which will encourage teachers to get that training so that it helps build capacity within a school or schools."

- A teacher reflected on the lack of industry certification and passion: "Most of us are not highly-qualified or CTE certified but desperately wish to be because we are passionate about the field of study and the pathway but need to secure accreditation to continue growing the programs". The commitment is there but not the support for teachers to get CTE credentials.

- A neighbor island teacher described how an auto mechanics instructor is getting ASE training, while teaching, from an education assistant who is a qualified mechanic.

Retaining teachers from the continent is risky:
- To alleviate the long-standing teacher shortages, The HIDOE recruits teachers from the continent who then find after teaching, that "it's not for them".

Coordinator Positions

A common theme in focus groups was the reality that there is a lack of funding to have a dedicated coordinator in schools where most coordinators also teach courses. One neighbor island school decided to share the coordinator duties among different teachers. For smaller schools, the decision is the principal's. One coordinator described the choice between having a full-time coordinator or having a CTE course and explained, "if I were to say to my principal, I just want to be the CTE coordinator, then we would not have a media program. So we sacrifice the planning stages sometimes and do that outside of school on our own time, so we can offer those classes to the students."

The Intermediaries for Work-Based Learning partnerships

A new position mentioned in two different focus groups was that of an intermediary between industry and the programs of study. Teachers taking on this role are tasked with building relationships with industry and creating work-based learning opportunities.

- A neighbor island DRT described how three schools share an intermediary who "helps with building workplace learning sites".

- In the same way, a principal discussed building processes and personnel to support CTE academies: "I have an academy director now, all she does is go out and network

and rub elbows with industry partners. I think that's a super cool job... I have a teacher that is now tasked with doing this so we can grow the work based learning continuum". Even with this resource, this principal foresees needing to build a team to meet all the WBL internship needs for the academies.

Across the CTE Programs/POS (variation in needs across subrecipients)

As expressed earlier, recruiting and retaining CTE program educators meeting MQs and necessary industry experience is challenging. This is due primarily to industry paying higher wages for the industry skills and the presence of what are perceived by many to be insurmountable systemic obstacles within the state system. This challenge is not uniform across programs. As revealed in internal-stakeholder focus groups, there are a number of programs that are especially difficult for recruitment and retention. HIDOE focus-group participants also recounted challenges—in their efforts to increase non-traditional student enrollment—in recruiting educators from genders that are non-traditional to a field.

The Post-secondary Level

The UHCCC deans discussed the lack of faculty in their programs for two reasons: low pay and retirement. One dean described his need for faculty for many programs because of the number of course offerings, but specifically highlighted the need in high-contact courses such as culinary and health. These are distinct from lecture-based courses in the sense that their success depends more on the student-to-faculty ratio. Two deans of health sciences mentioned retirement in nursing and the one dean specified 8 retirements in the last 9 months and a "mass exodus" of allied health instructors. Another dean explained how two in-demand courses like Aeronautics and the Maintenance Technology Program are difficult to fill because industry pays more than teaching at the community colleges with the additional academic duties, such as being on committees. "... it's been very challenging and difficult because we have a waitlist of over 100 students, and we just don't know how we're going to attack that without getting additional support as far as instructional needs…."

The Secondary Level

According to HIDOE focus-group participants, the pathways that are most difficult for teacher recruitment and retention tend to be where industry pays more, such as engineering, construction, and electrical electronics. It is similarly difficult to recruit and retain instructors in pathways with safety concerns, such as building and construction or graphics design. Educators are harder to find because other professions, like graphics, do not have safety concerns to the extent that they are required when working with children in schools.

A strategy for attracting non-traditional students into certain pathways is to recruit non-traditional instructors, which is equally challenging. One participant described a scenario in which the "...whole class was girls, but now more males join academies; we tried(sic) to find an EMT/EMS teacher to attract more boys; but can't find a teacher to teach that course." Other non-traditional

teacher shortages include female business instructors and female building-and-construction educators.

Retention is not isolated to these occupations, however. One participant said that their "agriculture program has gone through three teachers in four years at his school. There are needs to support incoming CTE teachers." To aid in retention, programs like this can use help in finding ways to retain their incoming teachers. We did not have the resources to identify if this is a consistent trend across schools that offer programs in the natural resources pathway or if this is a need specific to rural schools offering this type of program, but this is the type of inquiry that should be considered in future needs assessments. That is, there is a need to document which schools are perceived as facing the most extreme teacher shortages, particularly in programs that are most relevant to the students in that school.

Overall, coordinators generally reported that they needed more support in recruiting and retaining their teachers, as reflected in Figure 5.1 below. From their responses on the system improvement form (n = 20), 65% of coordinators reported not having been provided with recruiting and retention support; 60% reported having adequate professional development for program staff. This suggests that there is a need to support HIDOE coordinators in their efforts to recruit and retain qualified teachers.

Figure 5.1 *Coordinator Needs in Recruitment and Retention*

Coordinating teachers' responses to questions about recruitment and retention with their program
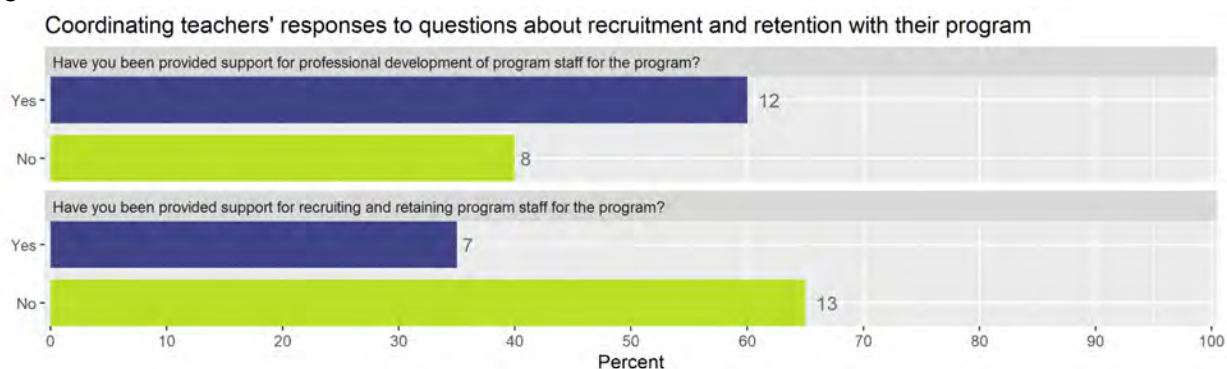
Within Programs of IET and Health Across Subrecipients

The following system improvement form results further highlight the recruitment and retention needs across the system (Figures 5.2 & 5.3). The results of two pathways, health services and industrial and engineering technology (IET), were examined because they encompass the most prevalent programs of study in the HIDOE (and because teachers are still thinking about their schools' needs in the old six-pathway structure). Out of the 100 teachers who had completed the system-improvement form, 15 were health-services teachers and 12 were IET teachers. Most of these respondents identified recruitment and retention as a need. More of the IET teachers perceived that there is a need for improving recruitment and retention than their counterparts in health services. For instance, 25% of health-services teachers perceived that there is a definite need for improving recruitment and retention strategies and an equal amount

expressed a possible need; about 92% of the IET teachers perceived there is a definite need for system improvement, with 8.3% indicating a possible need. These results are consistent with the focus-group discussions of greater needs for teachers in IET than in health pathways. Possible reasons may include a stronger industry relationship in developing dual credit with community colleges in health services than in IET.

Figure 5.2 *Health-services Teacher Responses to Recruitment and Retention in Their Program*

Health services teachers' responses to questions about recruitment and retention with their program

Is there a need to improve the current strategies for teacher/staff recruitment and retention into this program?

Yes	7
Maybe	7
No	1

Are there enough qualified teachers or support staff in this program to help provide the best education for students?

Yes	5
Maybe	7
No	3
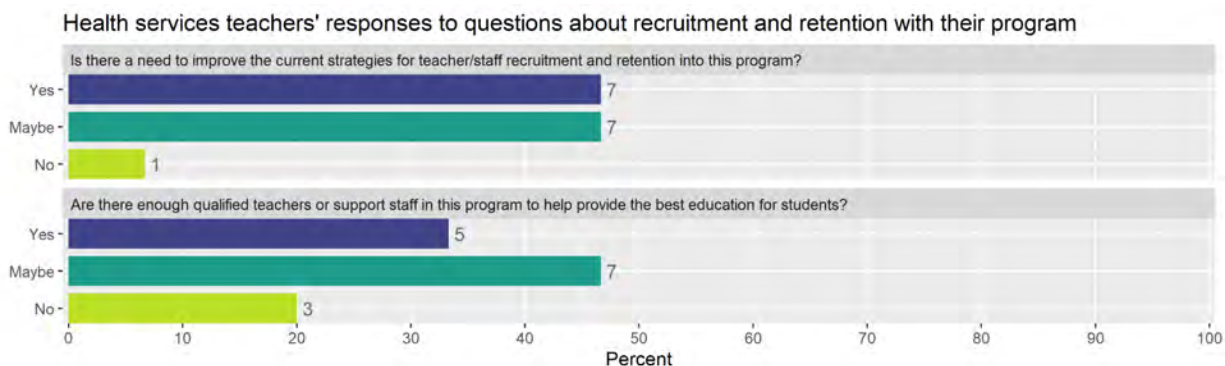
Figure 5.3 *IET Teacher Responses to Recruitment and Retention in Their Program*

IET teachers' responses to questions about recruitment and retention with their program

Is there a need to improve the current strategies for teacher/staff recruitment and retention into this program?

Yes	11
Maybe	1
No	0

Are there enough qualified teachers or support staff in this program to help provide the best education for students?

Yes	2
Maybe	5
No	5
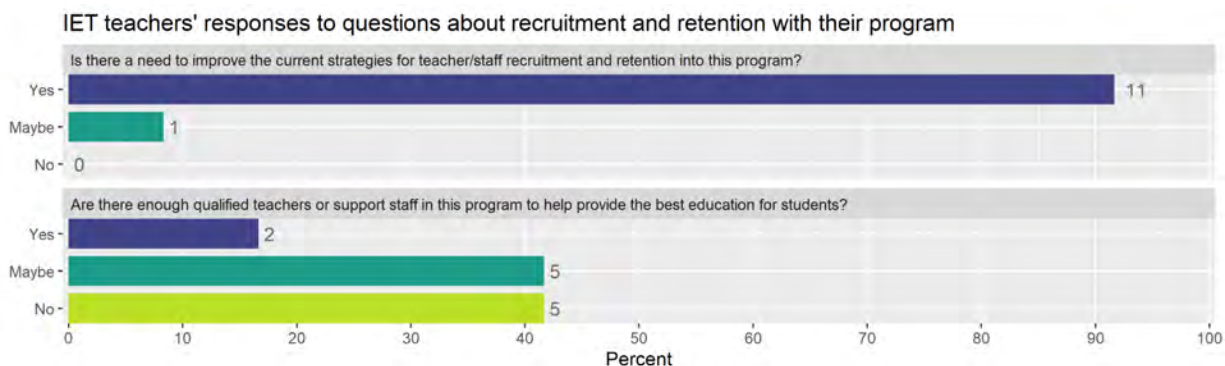
Across Geographical Regions of the State

Various stakeholder focus groups throughout the state, rural and non-rural, expressed similar recruitment and retention concerns, with some variation by geographical regions. In general, however, these variations still reflected overall teacher recruitment and retention problems in schools across the state. For example, newly recruited teachers in non-rural or neighbor-island schools may not stay long term if they are not from that close-knit community or are faced with a higher number of classes due to the school's lack of teachers. As a neighbor island DRT elaborated: "The smaller schools—the rural schools—are having a hard time just keeping teachers, not just CTE teachers. If you've never lived in some of these places, it is challenging to live there if you're an outsider".

Neighbor Islands and Rural Areas

One principal from a neighbor island contrasted his limitation on a less densely populated island: "There's not a pool of people that you can just choose from, you know, next door. So

that's what makes it difficult." Participants from the neighbor islands and from rural locations tended to express a need for qualified teachers in general, whereas their counterparts in urban locations tended to express a need for educators in their higher-level CTE courses. Other positions, such as that of an intermediary, seem to be more necessary in rural areas. Some coordinators in the Maui geographic district explained that they will include reaching out to the community to hire a staff member to coordinate work-based learning.

Focus group participants identifying as teaching in a rural setting discussed similar recruitment and retention needs as neighbor island participants. Schools in rural areas need to recruit from their community and also support teachers who do not have the technical content knowledge to teach.

One observation among HIDOE focus-group participants was that there is a need for more CTE teachers to be from the community: As one teacher responded in a focus group, "We are located in a rural area. Teacher retention is difficult when the teacher is not from our community." Many teachers in these geographic areas who are retained are alumni: "Another quick thing I might add is that [our small island's] high school has a lot of alumni, on the staff and on the faculty. And that's actually been really good. And I think that's one of the things that makes it hard is—unless you want to be here, it's hard to keep people."

Another participant from a neighbor island in rural district expressed similar concerns in needing (a) more teachers with expertise or (b) some means to use the resources from other schools:
> We could share a teacher from another school that might be able to be included, like remotely and do distance learning and then give our students that next class in the series or in the pathway? Because I can't do it. I'm trying to teach all these other things, too... I have to take some PDs because I don't know how to teach those courses. I don't know that material. So that's the other thing is training (and) keeping me in a sustainable position where I don't burn myself out."

This suggests that CTE teachers in rural areas are often being asked to teach courses they do not know how to teach.

This CTE instructor recruitment need often reflects the community need for more industry representation. A participant teaching auto-mechanics said,
> in the most recent years, our community has also voiced many times that they want an auto shop, we want the auto shop back, you know, where we live on Moloka'i...our kids need to have these ...kinds of skills. And, you know, they always want the auto shop; it never fails. Somebody always tells us whenever we do community events…[I]t's hard, we don't have a teacher, I don't know what else to say to them.

Another teacher, from welding, on a smaller island in Maui county indicated a similar community need:
> [In] our community—there's one person that welds. And so this would be good for our community because there's hardly anybody around here that knows how to weld. So if these kids can learn how to do some welding, maybe one of these kids will graduate and be like, 'Hey, I could also offer my welding services on the island.'

These accounts suggest that rural schools are in communities that have specific local industry needs. These communities depend on the schools' potential to recruit and retain teachers of those industries.

The Extent to which Structural Activities having to do with Recruitment and Retention are Occurring and Having an Impact

According to the CLNA template, these activities have to do with the following:
> making the need for CTE teachers and counselors a part of the Teacher Education Coordinating Council's agenda, review of Hawaiʻi Teachers Standards Board requirements and pursue revisions or alternative pathways, and the pursuit of creating or expanding preparation programs are taking place and having an impact. (*State of Hawaiʻi Perkins V State Plan,* 2020, p. 134)

The Teacher Education Coordinating Council has yet to establish an agenda, at least at the time of this writing. Regarding the review of the HTSB requirements, these are underway by the OSDCTE and P–20. The CLNA team is not familiar with preparation programs and the role they play in Perkins V.

The Extent to which There are Recruitment and Retention Strategies Being Pursued and Having an Impact

Even though the UHCCS and HIDOE programs are able to negotiate what the MQs are in hiring people into teaching positions as a strategy for recruiting and retaining industry talent (e.g., to substitute the MQ of having an advanced degree with a minimum number of years' experience in the industry), there still is a shortage of faculty and staff. At the post-secondary level, UHCCS, the approval process for MQ substitution is time consuming and retirements can occur more quickly than replacements. At the secondary level, people with industry experience but without the bachelor's degree MQ can get hired into temporary positions, which helps recruitment but not retention.

The primary strategy employed by the HIDOE, which is to fill positions with core teachers who are not industry experts, seems to have some positive effects but also some costs. Unlike trying to license industry professionals, this strategy fills the positions with licensed teachers and it sidesteps the pay and benefit problems when schools recruit from industry. However, the lack of industry experience remains a concern as reflected in teachers' concerns about (a) accreditation, (b) burn out, (c) lack of expertise for higher level courses, (d) lack of materials and curricula to meet the new standards.

A more promising strategy may be for schools to share resources among schools, such as intermediaries to build work-based learning sites, or to have pathways that do not overlap with pathways of other schools. Another solution that focus-group participants have identified is

focusing on community needs in terms of what pathways are offered. A DRT described how a smaller school is redesigning their pathways to include business across all pathways to reflect community needs and not only student popularity. A principal from a neighbor island summarized his strategy of sharing resources by not having overlapping CTE programs of study:

> I think, like I learned sooner, for example, ...we try to do something different from the other schools so that ... the other school can send their kids to us, we can say like, [H-name] has a great performing arts program there. So we send our kids there to their learning center. So you know, we try and share resources between the schools nearby. Because you know, you really don't want to take from somebody else. And teachers are the same, especially CTE teachers.

As described in previous sections of this chapter, both the UHCCS and the HIDOE have recruitment and retention challenges from their own systems, such as (a) low pay in comparison to industry, (b) a minimum qualification of a bachelor's degree that is not required in industry, and (c) challenges with the MQs. In addition, the HIDOE faces the challenge of filling teaching positions in rural schools where an outsider has difficulty remaining. While focus-group participants described different informal strategies they use for recruitment and retention, there seems to be no state recommendation or strategy that has been applied to either of the educational systems.

Given that the UHCCS reports having some success with overcoming unrealistic MQs to fill positions, perhaps, the HIDOE system may consider prioritizing either an alternative industry-to-educator pathway to support industry professionals or provide better professional development to the core teachers who are not CTE teachers. As mentioned in a previous section of this chapter, the HIDOE CTE state specialist did state in a meeting (in June, 2021) that efforts are underway to get the teachers' union to accept these alternative requirements. With regard to this second strategy—bringing more professional development to the core teachers, the following section provides more discussion.

The Professional Development Needs of CTE Professionals

CTE professionals are offered professional development in a variety of ways. On a more local level, HIDOE participants have described how they go to the HIDOE's PD website to choose PD or are sent emails with PD opportunities from their DRTs. However, this process can be overwhelming as teachers and coordinators expressed not having time to either sift through the opportunities or attend the PD. According to the HIDOE CTE administrators, statewide or any PD across the system is coordinated through on the state level, such as the monthly DRT meetings and the two meetings per year for coordinators. For teachers, "district surveys [given to] the teachers ahead of time to determine the type of professional development is needed." Part of this work has begun, with the aid of an external consulting agency.

Each geographic district also offers multiple professional development opportunities. The district surveys the teachers to determine the type of professional development that is needed.

Even though PD that is focused on skills and strategies for a pathway, where a new pathway is rolled out with four PD sessions, has been offered, some focus-group participants reported that the offering is not uniform across pathways. A HIDOE CTE administrator explained the differences in offerings across the pathways may be due to the number of POSs offered within the pathway. For example, education has two POSs while health has several more. For new teachers, coordinators, and DRTs, it seems that initial training or workshop sessions are needed to introduce CTE professionals to the foundational knowledge and skills: (a) understanding Perkins V pathway changes, (b) where and how to find PD, and (c) administration skills as needed (e.g., budgeting).

Throughout the HIDOE, teachers and new coordinators are concerned most about the rollout of the new pathways and are unsure what having more programs will mean for their schools, many of which are already lacking in equipment, space, or qualified teachers. Two focus-group quotes represent this. As summarized by a coordinating teacher,

> I have concerns about Perkins V and the rollout of new programs of study—new pathways. I'm just trying to see how, whether or not, new programs that are offered at the school—because we all share from the same pot—How are we going to support our classes, those new classes, and sustain our already running classes that we have at the school?

A new coordinating teacher expressed some confusion for the new Perkins V standards, as it was presented as a renovation of Perkins IV, but "it's more like demolition. I feel like there were a lot of things that were demolished." She then was unsure how she would present the changes to her teachers.

Both new teachers and seasoned teachers expressed satisfaction with the support they receive from their DRTs but explained that they have a lack of specific and consistent PD for meeting their particular industry-specific needs. Some teachers said they were unsure how they were going to find the time for the PD and training that they needed. Another point discussed in this section is that new teachers have found it useful to meet with their more experienced colleagues, particularly those from the same industry.

Across the CTE System

In rolling out new pathways and course sequencing, the HIDOE hired an external consultant to develop the course descriptions and objectives, as well as professional development courses. The consultant has provided PD sessions on deconstructing the standards, which teachers and DRTs found useful for understanding the intent behind the, as one participant characterized them, "quite long" standards. However, several participants added that the usefulness of the PD would be much greater if it provided new curricula for them to actually enact the new standards.

In support of the deconstruction of the standards, one DRT said, "I think, it was valuable in the sense where they were able to deconstruct the standard and understand the intent, you know, behind that standard and what was supposed to be taught." She also mentioned that she hopes the PD will be a regular offering, given the turnover of teachers and the need for new teachers to understand the intent behind the standard.

However, other participants, such as some coordinators, believed that they could deconstruct the standards on their own and really needed the accompanying materials and curricula with these new standards to support their teachers:

> ...we can *deconstruct those standards on our own*...*give us the curriculum*, because... as the new pathways are rolling out a lot of the teachers are thinking, 'Okay, well, I know how to do this because I've done this this way, so I'm not going to look at [revising] this [part] right now—I'm just gonna keep doing things the old way, even though we have these new standards.' So, rolling it into the new one, and learning how to use a new one, if they, if what we had was point-blank curriculum, versus, you know 'you could do this or you could, you know [do it this other way],' then I think that would help a lot.

It makes sense that teachers would adapt their existing materials and curriculum to fit the new standards. What some faculty want are examples of how parts of the standards translate into activities. Ideally, a source of existing curricula and an explanation of how they align with the standards would be present. A less ideal, but perhaps still useful, type of PD might offer opportunities for these experienced CTE educators to share their ideas about which of their existing activities they believe will meet these new standards and how they would adapt them. This would provide an opportunity to get feedback on how well their activities indeed align with the standards and it would provide a means for less experienced teachers to learn from their experienced colleagues. Given this information, there appears to be a need to develop high-quality curricular materials to support CTE courses and provide equitable course access across subrecipients. Given the ever-present shortage of qualified CTE teachers, providing curricular materials can help inexperienced CTE teachers deliver better instruction and improve the student experience.

Across CTE Programs/POS, by Profession

While teachers and coordinators have said that the most effective PD has included opportunities to meet with and learn with other teachers in the same pathway, there appear to be few regular opportunities for this, at least to the knowledge of our participants. Moreover, PD opportunities vary across CTE programs. For example, one coordinator commented that there were a lot of PD opportunities for the health services pathway but seemingly none for business.

Teachers Seek Collaborative Learning Opportunities Outside of PD

There may be a need for PD to tap into teachers' desires to collaborate with others in their industry. A new teacher on a neighbor island had this to say about learning from colleagues in their profession:

> But, one of the things that really has helped me is actually meeting up with the CTE natural resources, teachers across Maui, and Maui County and even across the state, and they have been very welcoming to me. And they have taught me things that—or told me things—their knowledge base, 'Yeah, we went through that. Oh, yeah, you should get certified to handle food, you should, you know, where's that program—Okay, this is where you go.'

This is an example of how teachers are eager to learn from their more experienced colleagues about how to handle situations that are specific to their programs. However, this teacher's quote

was not in reference to any existing PD opportunities; instead, it was about simply meeting with other teachers. It demonstrates what teachers value and that PD can capitalize on this.

CTE professionals can get professional advice from their more experienced counterparts within their district. Another teacher, coming from the automotive technology profession, discussed their experience independently training with colleagues,

> It helps to have a long-standing awesome program like [high-school name]. Now I just feel like [I'm] near the roots of the epicenter down there. I've trained with those guys just independently, you know, and then sometimes some of the other schools are floundering a little bit with losing staff over the years, but yeah, [high-school name] has held it really good.

The longevity of this person's CTE program is due in part to the network of teachers in this profession. Again, this was *not* a characteristic of the PD offerings, but it demonstrates the context in which PD can operate and perhaps develop.

Teachers need and very much want targeted training so they can gain technical industry skills. Earlier in the chapter, the focus-group participants' accounts described the high turnover of industry professionals teaching in the HIDOE due to (a) the much lower pay scale offered compared to that of industry, (b) the absence of a mechanism for industry professionals to move up in the pay scale other than earning a bachelor's degree in their field, and (c) the lack of support while earning their bachelor's for the very few who elect to use their own time and resources to do so. An unofficial strategy adopted to fill positions was to hire teachers who had an interest in teaching CTE courses. Overall, this leaves a vast majority of teachers without industry content knowledge and experience. A coordinating teacher described how she sought an engineering background on her own and invited engineers to supplement her curriculum.

> I teach engineering classes [but] I don't have an engineering background. So in order for me to even feel comfortable teaching I had to seek out Project Lead the Way and other opportunities on my own,... then I also bring in engineers and other kinds of people to mentor my students so when I'm not comfortable with the content and they have somebody else who was in the field. From a state standpoint I don't see that happening in terms of that kind of *rich curriculum that would help non-subject teachers to teach the course properly.* (italics added for emphasis)

Again, some teachers did not see the state's PD system as providing the kinds of mentoring and curriculum materials that they wanted for the programs and their students.

Industry Skill Needs

One coordinating teacher described how, unlike our public-schools' PD, private schools and industry tailor PD to the teachers' industry knowledge. As an example, he describes how he needed to train his teachers to use a water jet, yet the system's PD may not have provision for this level of specificity. As one focus-group participant shared,

> Teachers may not teach something because they don't know how to use what they have, you know like, you might have a particular equipment that's also, like I have a water jet. But I can tell you right now most teachers don't know how to use it. *We* got trained. I mean we've paid for *our own* training but, ... what if you leave the program,

[the] system—can it sustain itself. Well you got it—you need that particular training to run that machine before you can even teach the kids. We never ever talk about that kind of PD, but that's the kind of stuff that happens in real life in the industry and in private schools. Why aren't [these types of PD] being done in the DOE.

In other words, the industry-specific knowledge that some CTE educators hold appears to be too specific for PD to include in its offerings. This means that when these teachers leave their position, the program will lack teacher knowledge.

We cannot assume that teachers in a CTE program have the requisite industry knowledge to teach their content. A teacher in the building and construction pathway explained that the industry knowledge a teacher is able to teach really depends on what that teacher's knowledge is:

I guess for me or for my school. If you think about the new construction academy pathway. There is residential construction, mechanical, electrical, and plumbing and most Building and Construction teachers are construction-focused, and knowing the mechanical, electrical, and plumbing may not be worth what they know and they may have to teach something like that without knowing how to do mechanical, electrical, and plumbing. And so that's the kind of, I guess, other than just deconstructing the standard, where you're looking at the standard and say okay I this is what I need to teach but I, as a teacher you can't really do it if you don't even know how to do yourself. So it's more about the skill set of the teacher.

The teacher's industry skills determine what activities they are able to do in their enactment of the strategies.

One participant explained that the current PD opportunities are not specific enough to be helpful for them to improve their CTE program teaching practice. In the words of one of the CTE coordinators,

I [used to] work before in the private school setting. Those teachers have the choice to sign off on the submitted proposal where they can take individual, differentiated, professional development that helps them with whatever programs they're offering. I think ... we do a one size fits all—it doesn't really help the teacher do what it is that they're doing that is successful in their school or their particular program. So maybe if there was some avenue for funding to support teachers that can submit, ... a sound proposal that allows them to get the training they need in any specific area or equipment that they have.

One question that needs to be addressed by the HIDOE's PD system, if the PD is to include industry skills, is how specific those skills should be. Teachers are assuming that they are expected to learn the industry skills on their own. It would be helpful if teachers knew what skills they should be expected to learn on their own and which can be offered through PD or some other HIDOE-sponsored teacher network. A HIDOE administrator explained that CTE teachers need to go through the certification program to know what the students will need to know, yet the knowledge base may be much wider in order to develop curriculum and materials.

Types of PD Teachers Want

These needs raised so far are further supported by the results of teachers' responses on the system improvement forms (Figure 5.4; *n* = 100). Several questions asked them about their likelihood of attending professional development that would help them develop in different areas, the results of which are displayed in Figure 5.4. The top three PD opportunities that CTE teachers reported wanting were in the development of their industry-specific skills, helping students to earn industry recognized credentials, and helping students learn skills they need to obtain employment in high-skill, high-demand, high-wage jobs. Lower on the list of priorities (though still desired) were PDs that helped them learn strategies for (a) collaborating with core academic teachers and (b) differentiating instruction to special populations or students who were non-traditional in the field.

Fig 5.4 *PD Opportunities Teachers Reported They Would Likely Attend*

Teachers' responses to the question
How likely are you to attend a professional development opportunity in each of these topics?
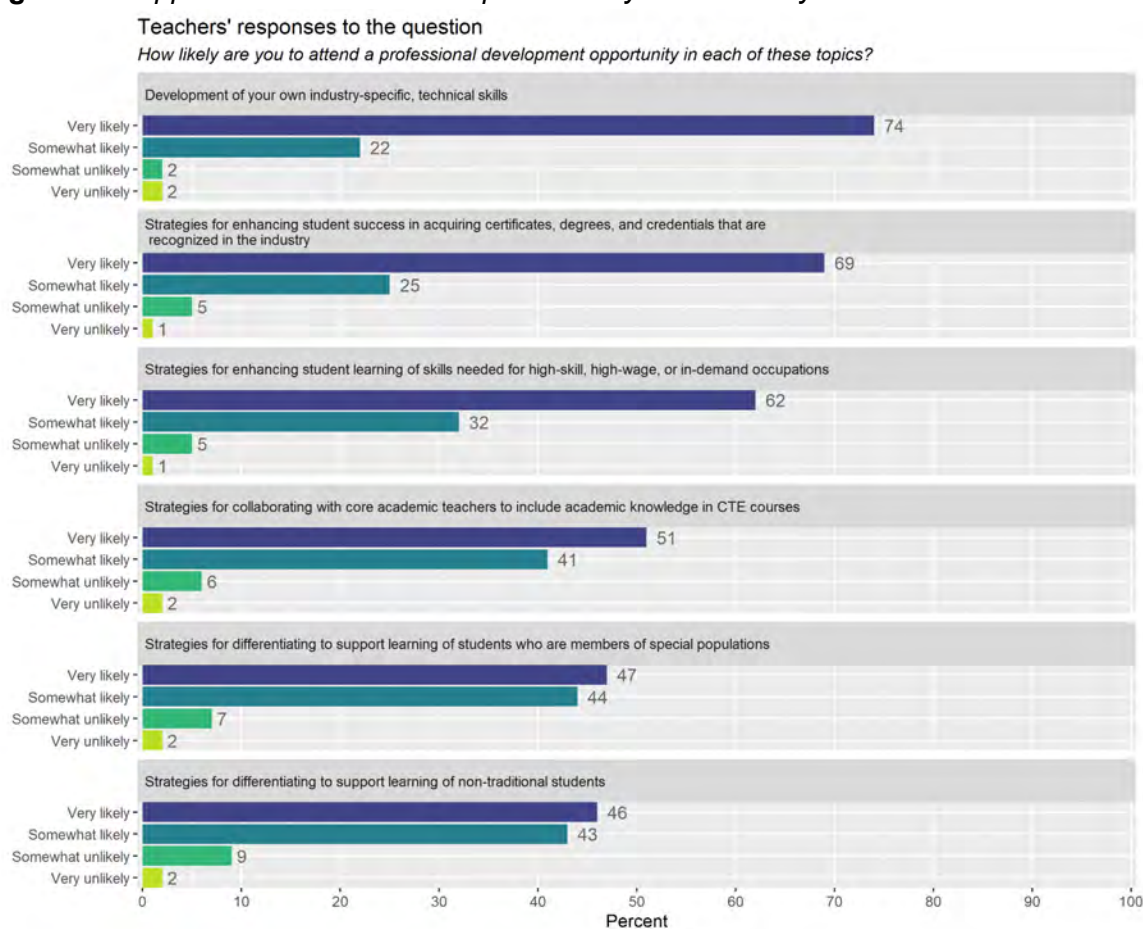
The PD opportunities desired by the coordinators on the system-improvement forms (Figure 5.5; *n* = 20) were similar to those of teachers. Whereas teachers were more likely to attend PD for their own industry-specific skill, coordinators elected for more strategies for supporting student achievement. The last three topics were the same as those for the teachers.

Fig 5.5 *PD Opportunities that CTE Coordinators Reported They Would Likely Attend*

Coordinating teachers' responses to the question
How likely are you to attend a professional development opportunity in each of these topics?

Strategies for enhancing student success in acquiring certificates, degrees, and credentials that are recognized in the industry

Very likely	15
Somewhat likely	4
Somewhat unlikely	1
Very unlikely	0

Strategies for enhancing student learning of skills needed for high-skill, high-wage, or in-demand occupations

Very likely	15
Somewhat likely	4
Somewhat unlikely	1
Very unlikely	0

Development of your own industry-specific, technical skills

Very likely	12
Somewhat likely	8
Somewhat unlikely	0
Very unlikely	0

Strategies for collaborating with core academic teachers to include academic knowledge in CTE courses

Very likely	8
Somewhat likely	11
Somewhat unlikely	0
Very unlikely	1

Strategies for differentiating to support learning of non-traditional students

Very likely	6
Somewhat likely	12
Somewhat unlikely	2
Very unlikely	0

Strategies for differentiating to support learning of students who are members of special populations

Very likely	6
Somewhat likely	12
Somewhat unlikely	1
Very unlikely	1

Percent

PD in Skills that are Important Across Programs

Because of costs, it may not be feasible for the HIDOE to provide PD in specific industry skills across all of the pathways. What may be needed is a prioritization of industry skills for PD offerings based on the larger set of needs. This prioritization could be based on the industries that are deemed as higher-wage, higher-skill, or being in greater demand. However, there is a need to see if teachers are adequately addressing transferable skills in their courses—when that is a component of their pathway's content standards—and to help teachers bring these skills into their instruction when it is needed. As described in more detail in Chapter 4, a salient point brought up by representatives of industry (including from the Workforce Development Council) is that students need to know how to adapt to future economic conditions. Representatives of industry themselves argued that specific skills are sometimes not as important as problem-solving skills (as explained in Chapter 4). Entrepreneurial and problem-solving are good candidates for PD skills, and worth further investigating for needs (the current CLNA did not have the foresight to investigate if these skills should be in PD).

Also, what may be further investigated is whether there is a need for PD that helps teachers locate and use resources that their respective program advisory committee members or other community members know about. This was suggested by one of the pathway advisory committees that we met with. These resources can include the industry people teachers can contact, the tools that they can access, and the possible community projects that may be available for them so they can enact the standards.

Allocating Time to PD

Across CTE programs and programs of study, another identified need is that teachers need time set aside for their professional development. One of the new neighbor island teachers commented on needing time to be trained to teach during their second year as a CTE teacher: ...but I can't do that second year. And then if I got the training, then how am I going to fit that in?" a coordinator expressed some conflict with CTE teacher syllabus and scheduled speakers:

> And even the PD, like I know, for our CTE teachers in particular, you're so torn between 'Well, you know, there's this PD coming up, but I have a lab scheduled on that day, it's to humbug to miss that lab, I can't just give them a writing assignment, because that works timing-wise in this or I have a guest speaker coming.' You know, CTE classes tend to be way more interactive. So it's just harder to get CTE teachers out of the classroom for PD, even when it's really good.

What this says is that the CTE teachers who are dedicated, who truly want PD, are finding it difficult to fit into their schedules during their regular teaching hours because their CTE courses have a schedule of activities that would be interrupted by their absence.

As for the PD needs of CTE coordinators, time for PD is also a challenge. The roles of coordinators depend on the school and the geographic district, with many addressing both their own instruction and their administrative duties.

Counselors

Faculty outside of CTE seem to vary in their perceptions of CTE. As reported earlier, subrecipients have a range from using CTE to contextualize academic core courses to seeing CTE as an add-on to fill a space. CTE coordinators reported that counselors have been influential in their role but may not align with the vision of CTE in the schools. A possible PD need includes how to align counselors' activities with the goals of career and technical education. One neighbor island instructor shared how counselors are misaligned with CTE objectives. "The only 'stop-gate' is our counseling staff who sometimes (per the students) try to steer students into what they feel are more academic type subjects." However, when the school community supports CTE's vision, there is an alignment of counselors' work with the CTE pathways. An instructor from a rural neighbor island school described how both the registrar and the counselor were key in guiding students to CTE pathways. "I've had the counselor be like, 'this kid might really do well, when he's in ninth grade coming into your classes,' I'll be like, 'Yeah, tell him to tell him to sign up.' So, I think probably most of it comes from the registrar and the guidance counselor". This is one example of how the counselors and advisors can direct students in which CTE courses they elect to take. In other words, they play a key role in the

CTE system. Based on some reports, it appears that there is a need for counselors to receive PD in how to align their activities with the goals of the Perkins V programs.

Within CTE Programs/POS (variations in needs across subrecipients)

In this iteration of the CLNA, the PD needs with each of the 60 programs in the HIDOE was not addressed, as that would result in a report of much greater length. There is a need for pathway advisory committees or of the subrecipients to identify the PD needs within programs. The project team did examine the needs within two pathways, the health system and industrial and engineering technology (IET) pathways throughout the state (Figures 5.6 & 5.7). The health-services and IET teachers revealed a similar trend to that of the larger set of CTE teachers (which their data is a part of), primarily in their wanting more PD on industry-specific knowledge and skills.

Across Geographical Regions of the State

Some neighbor island teachers have reported more difficulty attending PD sessions off island. In smaller, rural, schools—such as those with a very small number of CTE teachers per school—teachers are often required to stack their classes. That is, they are tasked with teaching multiple levels of the same content in a single period. There is a need to investigate if this is functioning adequately and whether teachers need assistance in enacting the CTE standards with different levels of students. Teachers in smaller schools also might be tasked with teaching multiple CTE courses and therefore may need to be provided with more opportunities to PD that helps them locate or create materials and activities that help them to teach the industry skills in the standards.

The Extent to which Professional Development Activities are Designed Appropriately

The appropriateness of PD activities can address aspects of the PD, including whether they are (a) sustained (i.e., with PD that teach skills and content and that therefore require application to practice, they involve follow-up sessions), (b) intensive (i.e., requiring active participation), (c) collaborative, (d) job-embedded, (e) data-driven, and (f) classroom-focused. PD can include the induction and mentorship of new professionals to improve their effectiveness in improving students' CTE educational and workforce outcomes.

According to focus-group participants, there are several sustained PD opportunities for CTE professionals within the HIDOE system while the UHCCS, having more industry professionals, may rely on job-embedded PD. In the UHCSS, certain professions, such as nursing, have required professional development or continued medical education (CME) for relicensure.

Fig 5.6 *PD Opportunities Health-sciences Teachers Reported They Would Likely Attend*

Health teachers' responses to the question

How likely are you to attend a professional development opportunity in each of these topics?
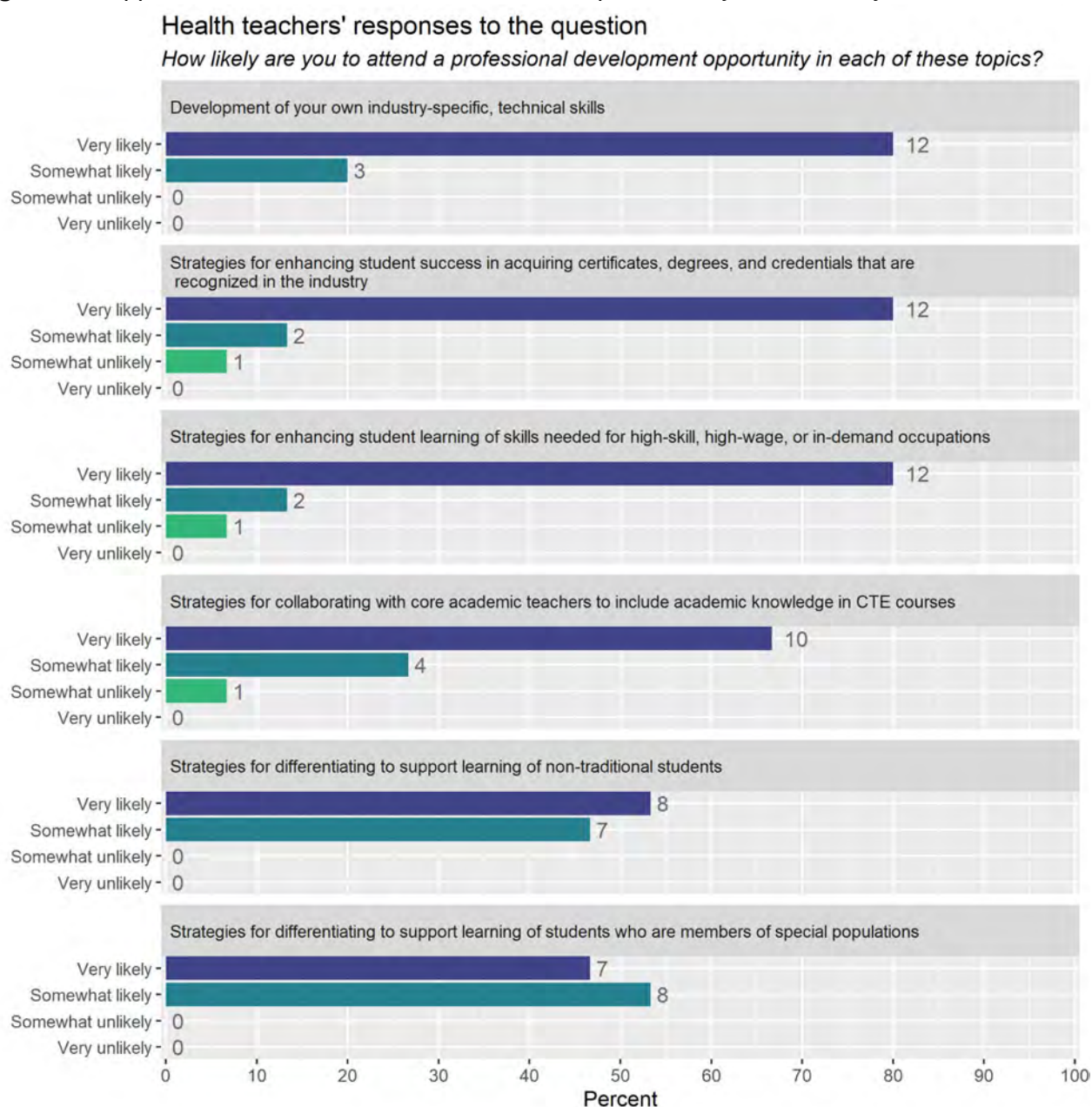
Fig 5.7 *PD Opportunities IET Teachers Reported They Would Likely Attend*

IET teachers' responses to the question
How likely are you to attend a professional development opportunity in each of these topics?
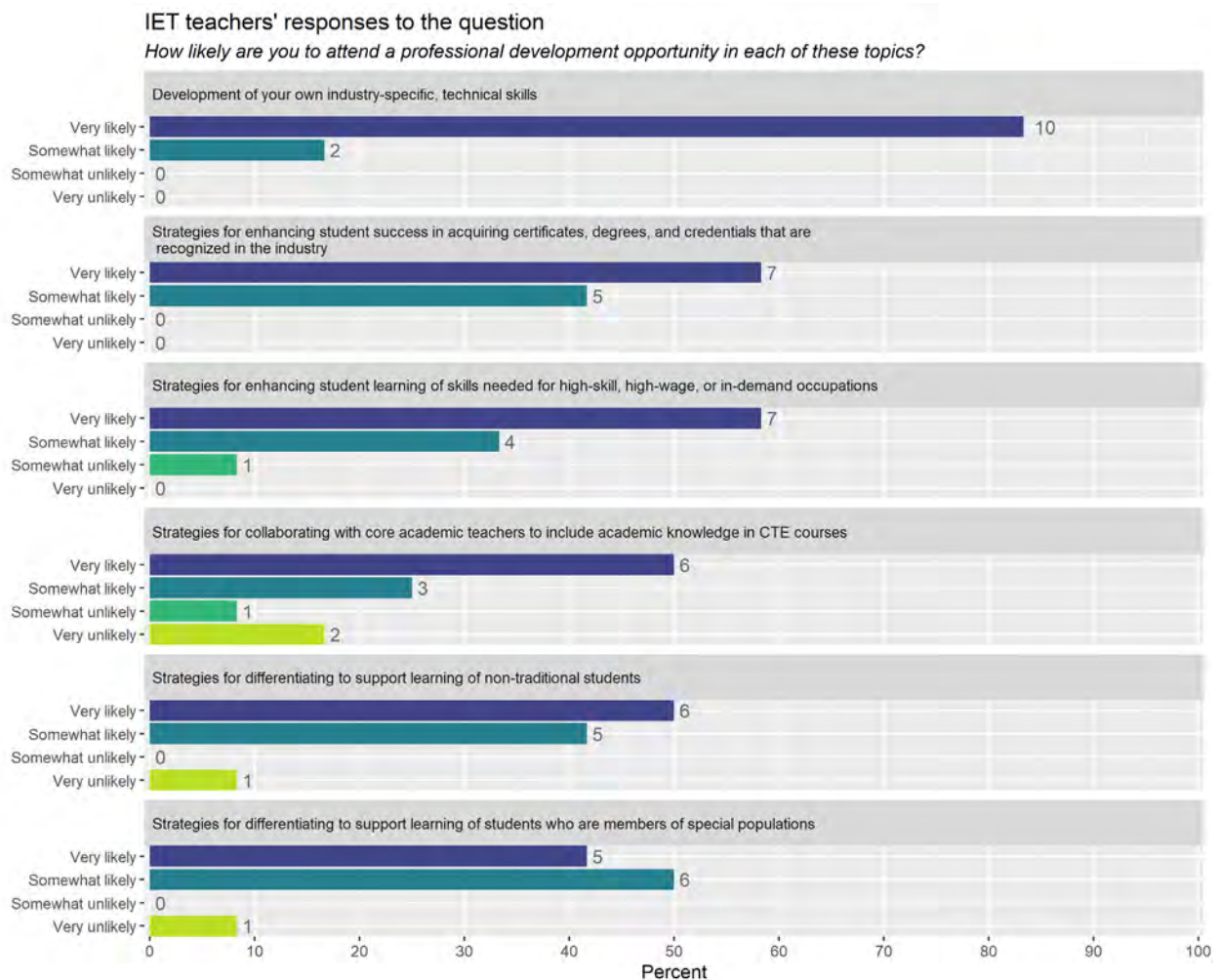
In the HIDOE, most of the teacher PD reported by teachers has been in deconstructing standards. This is not a skill that requires sustained PD. PD in how to teach industry-specific content by its nature requires repeated sessions with opportunities for educators to apply what they have learned and reflect on it (Desimone & Garet, 2015). There appears to be a need for identifying which PD offerings should be sustained. After that is known, the evaluation of this criterion will be easy to fulfill.

Although it is not the same as sustained PD, repeated PD does occur. An example of repeated PD in the HIDOE is that for CTE coordinators. They have two PD sessions per year, one in the Spring and one in the Fall. CTE teachers on the other hand, "PD themselves" (as one participant phrased it) through (a) opportunities either their coordinators share, (b) through the PDE3 website, and (c) meeting with teachers in the same pathway, although this last opportunity is hit-or-miss because this opportunity becomes available through other events, such as if educators are in a workshop together. In other words, it is up to the teachers whether they attend multiple PDs.

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There are also PD opportunities for new pathways. While the HIDOE provides PD, the generalized nature of the sessions may be helpful to new professionals but may not meet the needs of more experienced CTE professionals. Some new coordinators reported learning from one-on-one sessions with their DRTs but there is no measure for other new coordinators across the state. Moreover, as one coordinator reflected on the usefulness of deconstructing the standards for new teachers, there was uncertainty on whether this PD would continue for future new teachers.

At this time, there is no mechanism that we know of for gathering information about the effectiveness of the HIDOE systems' planned PD. For example, while some coordinating teachers expressed appreciation for the PD on deconstructing the standards, others felt the four sessions would have been more effective if it were on one day as "they lost the teachers" by the fourth day. There is a need for PD providers to gather information on teachers' perceptions on the effectiveness of the sessions for achieving student outcomes in the classroom and beyond (though self-report data of PD effectiveness suffer validity concerns, such as subject-expectancy bias and social-desirability bias).

In sum, the types of PD that are being offered are often about knowledge and not so much about practice. Those having to do with policy, procedures, or knowledge, such as for understanding the standards for example, do not require sustained, intensive, job-embedded, classroom-focused PD. However, when the PD offerings are expanded to include a practice component, which many teachers very obviously need, these features of PD appropriateness should be evaluated.

Summary

The needs having to do with recruitment, retention, and professional development include the following:

A. There is a need to recruit and retain industry professionals to teach CTE programs across the CTE system.
B. In the UHCCS, there is a need to
    a. report numeric data in the ARPD system that better captures the recruiting needs that the programs face;
    b. find strategies for attracting experienced talent, such as providing higher salaries or competitive benefits, while also avoiding the inequalities that could result from providing incentives to new hires and not offering them to current faculty or instructors; and
    c. streamline the process of approving minimum-qualification substitutions in job ads for faculty and lecturers.
C. In the HIDOE, there is a need to
    a. facilitate subrecipients' funding or other support for current teachers' licensure or industry-recognized certifications;

b. consider alternate routes for teacher licensure that do not require a bachelor's degree;
c. consider salary-step advancement strategies for teachers who do not hold bachelor's degrees and who are in industries that do not require bachelor's degrees;
d. consistently provide coordinator positions across subrecipients;
e. fill gaps in smaller or more rural schools, such as through leveraging technology to share teachers across subrecipients;
f. better align program offerings with community needs by finding ways to overcome teacher shortages that can prevent subrecipients from offering certain programs of study that the communities value;
g. support high-quality programs of study with curriculum resources and minimize reliance on teachers to develop curricula, particularly when teachers lack experience or are teaching outside of their specialty;
h. communicate PD offerings in a way that is more easily accessible to teachers;
i. provide training to introduce CTE professionals to foundational knowledge and skills, such as (a) understanding Perkins V pathway changes, (b) where and how to find PD, and (c) administration skills as needed (e.g., budgeting);
j. provide specific and consistent PD for meeting particular industry-specific needs, which may require eligible recipients and subrecipients to establish priorities and allocate resources accordingly;
k. provide regular opportunities for teachers in the same pathways or programs of study (across subrecipients) to collaborate as part of their professional development;
l. provide teachers with sufficient time to engage in ongoing, in depth professional development;
m. provide professional development for counselors on how to align their activities with the goals of career and technical education;
n. identify specific professional development needs within programs;
o. investigate if the practice of stacking is functioning adequately and if teachers can enact a curriculum with different levels of students simultaneously;
p. provide assistance to teachers of multiple CTE courses by providing access to materials that enable them to teach the industry skills in the standards; and
q. gather accurate evidence on the effectiveness of the professional development sessions for achieving student outcomes in the classroom and beyond.

References

Desimone, L. M., & Garet, M. S. (2015). Best practices in teachers' professional development in the United States. *Psychology, Society and Education, 7*, 252–263.

State of Hawaiʻi Perkins V state plan. (2020). https://www.hawaii.edu/cte/perkins/HI%20Perkins%20V%20State%20Plan%20FINAL.pdf

Chapter 6
Ensuring Equitable Access and Participation for Members of Special Populations to High-Quality CTE

As noted in several other chapters in this report, the UHCCS and the HIDOE data systems have been in transition from the Perkins IV to Perkins V, and with this more categories of special populations. The special populations defined by Perkins V are

1. individuals with disabilities;
2. individuals from economically disadvantaged families, including low-income youth and adults;
3. individuals preparing for non-traditional fields;
4. single parents, including single pregnant women;
5. out-of-workforce individuals;
6. English learners;
7. homeless individuals described in section 725 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11434a);
8. youth who are in, or have aged out of, the foster care system; and
9. youth with a parent who -
   (i) is a member of the armed forces (as such term is defined in section 101 (a)(4) of title 10, United States Code); and
   (ii) is on active duty (as such term is defined in section 101(d)(1) of such title).
10. migrant students (secondary only)

Per Appendix G of the *State of Hawai'i Perkins V State Plan* (2020), the CLNA includes students who identify as Native Hawaiian as an additional special population group.

During this transition from Perkins IV to V, the tracking and reporting of access and participation of all special populations are not yet available. Current national and state accountability systems track four categories: students who have disabilities, economically disadvantaged students, English learners, and gender, which represent four of the ten Perkins V categories. To gather data on the access and participation of Perkins V special populations that are currently not tracked, we conducted interviews and focus groups with representatives of these special populations. These interviews and focus groups provided some insight into the needs associated with special populations and strategy exemplars. In this chapter, we provide examples from these sources that illustrate strategies that have been implemented or strategies that representatives of special populations thought should be implemented. A limitation of this report is that these anecdotal reports may not be representative of the system as a whole or of systemwide needs.

To recognize the context in which Perkins V is operating in our state, we note that in Hawaiʻi, Native Hawaiians and Pacific Islanders are important populations. Although Native Hawaiians, the Indigenous people of Hawaiʻi, are 21% of the general population, they are disproportionately affected by poverty, health disparities, domestic violence, and incarceration, which can be attributed to systemic inequity issues and historical trauma (Baker et al., 2021). The development of vocational curricula to address the needs of Native Hawaiian children and adults, including curriculum materials in the Hawaiian language and mathematics and science curricula that incorporate Native Hawaiian tradition and culture is a goal of the Native Hawaiian Education Act that overlaps with Perkins V. Pacific Islanders include persons who, for example, have migrated from the Federated States of Micronesia (FSM), the Republic of Marshall Islands (RMI), and the Republic of Palau. Challenges faced by Pacific Islanders are similar to those of Native Hawaiians. At the present time, our state Perkins plan (and this CLNA) does not include Pacific Islanders as a formal special population, though we did include this population in our improvement-form questions and sought consultation from representatives of this stakeholder group.

This report reflects the CLNA project team's analyses of internal and external stakeholders' descriptions of perceptions of equity and access in regard to special populations. One broad finding is that recipients are developing and engaging in innovative strategies to tailor CTE programs and programs of study to meet the needs of special populations that are particularly relevant in their communities. Another broad finding is that while is it evident that UHCCS and HIDOE students are not prevented from choosing among CTE programs that are available at a school, there do not seem to be explicit systemic strategies in place across the CTE system to recruit students who are members of certain Perkins V special populations, such as students who have at least one parent in the military, single parents, or students entering non-traditional fields for their gender to participate in specific CTE programs of study.

Per Appendix G of the state plan, this chapter has three sections:

1. **Systemic strategies across the CTE system**. This section addresses the extent to which there are systematic strategies across the CTE system to improve the equitable access and increase the equitable participation of students who are members of special populations, including activities to prepare them for high-skill, high-wage, or in-demand industry sectors or occupations in competitive, integrated settings that will lead to self-sufficiency. In this section, we focus on the **policies that are in place** in the HIDOE and the UHCCS.

2. **Program/Program of study and subrecipient strategies.** This section addresses the extent to which CTE programs and programs of study and subrecipients have design and delivery strategies to improve the equitable access and increase the equitable participation of students who are members of special populations, including activities to prepare them for high-skill, high-wage, or in-demand industry sectors or occupations in competitive, integrated settings that will lead to self-sufficiency. In this section we focus on how the policies that were described in the previous section are **being enacted**.

3. **Extent to which strategies are improving access and increasing participation.** This section addresses using data from HI-OSDCTE dashboards to determine the extent to which the data show that strategies are improving access and increasing participation. Strategies at the system, program/POS, and subrecipient levels are examined. In this section we focus on how the enactment results are being **monitored** and the inferences we can make from that data.

What are the Systemic Strategy Needs Across CTE Programs to Improve Equitable Access and Increase Participation in CTE Programs?

Strategies Target Factors that Affect Equitable Access and Increasing Participation

Policies and strategies are engineered to address specific factors that are thought to impact equitable access and participation. Access and participation of students in CTE programs and programs of study are affected by many factors, similar to other courses of study. Two factors are addressed in this section: culturally relevant, responsive, and sustaining programs; and ensuring students' basic needs are met. Descriptions of policies addressing each factor are discussed below under the heading for the respective recipient.

Culturally Sustaining Programs

One important factor is the extent to which the programs or programs of study are perceived by students and families as compatible with their identities (Gay, 2015). Programs or programs of study that consider students' identities in design and delivery are often called culturally relevant, culturally responsive, or culturally sustaining (Paris, 2012). There is substantial evidence in the literature on the positive impacts of such programs on culturally and linguistically diverse students (e.g., Gay, 2015). There is policy evidence that both the UHCCS and the HIDOE have created policies for systemic strategies that can improve equitable access and increase participation in all their programs, which includes CTE.

Ensuring Students' Basic Needs Are Met

Before students can be ready to learn in school, their basic needs must be met. The state has a variety of programs that help to ensure that the basic needs of homeless students are met, which supports their access to and participation in CTE programs at the UHCCS and the HIDOE. For example, the Department of Health has taken action to prevent the spread of coronavirus among behavioral health and homeless populations, while ensuring continuity of coverage of essential services.

The Post-secondary Level

Culturally Sustaining Programs

To be culturally responsive to Native Hawaiian students in the design of programs, UHCCS has adopted a framework aligned with Native Hawaiian values. The UH system adopted Hawaiʻi Papa O Ke Ao (University of Hawaiʻi, 2021), which is evidence that UHCCS has systemic strategies. The UHCCS also has a unique organization, the CC Council Native Hawaiian chairs, who give input to program development and interpretation in regard to Native Hawaiian programs, initiatives, and issues. It is unclear whether CC Council regularly examines CTE programs.

The Secondary Level

Culturally Sustaining Programs

To promote culturally sustaining programs for Native Hawaiian students, the HIDOE has adopted a framework aligned with Native Hawaiian values. The Nā Hopena Aʻo (HĀ) Framework (HIDOE, 2015) is evidence of HIDOE systemic strategies to address equitable access and increased participation of Native Hawaiian students. The HĀ Framework specifically prioritizes Native Hawaiian value-related outcomes for students, staff, and schools within school design. Other examples of culturally sustaining programs within HIDOE include the Hawaiian Immersion Language Schools or Ka Papahana Kaiapuni (KPK) that are subrecipients and have oversight from the Office of Hawaiian Education (OHE). Although some Hawaiian Immersion Language Schools are charter schools and do not receive Perkins V funding because of size and scope criteria (as with all charter schools in the state), an OHE representative clarified that students at these non-Perkins-V funded schools attend CTE classes in neighboring schools. For example, there are two KPK schools that receive Perkins V funding. Secondary KPK students learn content in both Hawaiian and English and the intent is for all interested Native Hawaiian students to have access to KPK. These schools provide an example of how CTE programs or programs of study can be more culturally sustaining.

A Culture-based Education (CBE) approach that encompasses the HĀ Framework emphasizes linguistically and culturally relevant context with authentic experiences and has been used across the state with a positive impact on student outcomes (Kanaʻiaupuni et al., 2010). This emphasis on linguistic and cultural relevance is found in the HIDOE Multilingualism and Equitable Education Policy, which views all cultures and languages as resources rather than deficits.

Perkins V Special Populations

For the Perkins V-defined special populations, such as military, homeless, and English language learners (ELLs), the HIDOE has policies and representatives in place to facilitate

learning throughout K–12, which also benefits CTE programs. The HIDOE has school liaison officers throughout the state to transition military families. For students experiencing housing instability, the HIDOE has community liaisons as resources. Finally, for ELLs, the HIDOE English language program has a system to ensure equitable access. The HIDOE system relies on student self-report for homelessness or having another language other than English spoken at home for ELLs and the actual number of students in these categories may be underreported.

Design Elements Across the CTE System

The overall design elements in place in both the UHCCS and the HIDOE are evidence of overarching strategies that address equitable access and increased participation of special populations across many programs, including CTE. However, it is unclear how these strategies are specifically applied to CTE programs. There may be a need to develop explicit strategies that address equitable access and participation in CTE programs through application of system-wide, overarching policies and strategies. The next section highlights promising strategies and needs that were reported by some subrecipients in the UHCCS and the HIDOE as ways that they address equitable access and increased participation of special populations.

What Are the Needs of Design and Delivery Strategies to Improve Equitable Access and Increase Equitable Participation of Members of Special Populations?

In this section we focus on how the policies that were described in the previous section are **being enacted**. Focus groups and system improvement forms provided rich descriptions of successful strategies that address the needs of Perkins-V defined special populations across the state. These strategies are examples of evidence-based practices for Indigenous, multilingual, and multicultural student populations. While not uniform across the CTE programs of study, these examples of best practice lead to the identification of needs and models to emulate that can increase equity for special populations and create meaningful career pathways that can sustain our islands.

The Post-secondary Level

Multilingual and Multicultural Strategies

There is considerable evidence of efforts to provide equitable access for and increase participation of multilingual and multicultural students. A UHCCS CTE dean of health programs described the balance of encouraging students while also maintaining academic rigor and meeting equitable access requirements.

> Our process must be fair and equitable for all students. And so it is a challenge to encourage those students who are perhaps a little bit more challenged with meeting those high level requirements to get into our selective enrollment programs. And balancing that with the important part of not being biased in our selection process and those types of things.

This statement is evidence that at least some UHCCS programs enact strategies to increase equity and participation of special populations.

In addressing health disparities in multicultural communities, the UHCCS also created a community health worker program that recruited members from communities to be trained in health services and to use their community membership, including its language and culture, to serve public health needs. However, in trying to recruit community multilinguals, this health-services-pathway program found individuals were shy about entering programs where English was the language of instruction. They used two interventions to recruit and support multilinguals in this program. First, with a grant from the Department of Health, wraparound services and ESL support from the Community School for Adults and Secondary ESL programs provided enough scaffolding that students learned "the language and the lingo that's used in health care, so that they were supported in bridging that gap." Next, they supported multilingual learning by celebrating the fact that the students were bilingual, and helping them to understand this as a positive thing. UHCCS added in the opportunity for the students to earn the global seal of biliteracy. This demonstrates how one program recognized a need to ensure equitable access and participation of English language learners, but needed external funding and expertise to provide access for English language learners success for the first intervention. This example, through its valuing of other languages and cultures, may provide guidance to other programs in how to increase equitable access and participation.

Native Hawaiian Access and Participation

A CTE dean from the UHCCS described how he attended a meeting of the Native Hawaiian Councils (Puko`a Council) that is committed to increasing Native Hawaiian participation on each of the UHCCS campuses and examining Native Hawaiian student participation throughout the CTE programs. As a result of sharing ARPD data that identified Health Information Technology as a program with low Native Hawaiian participation, the council encouraged more Native Hawaiians to take a look at that field. Their collaborative efforts increased participation of Native Hawaiian students, who are now in health information technology at the same rate as in the college as a whole. This example is both evidence that working with community representatives is an effective strategy for increasing participation and that there may be a need for other programs at UHCCS to work with community representatives to increase Native Hawaiian participation. This same strategy may also be effective for multilinguals who may be intimidated by classes that provide instruction in English at the community college level.

In addition to working with community representatives, there may be a need to include the community in systems-improvement work and to identify what the community wants and needs in terms of CTE programs to improve equitable access for Native Hawaiians. In a meeting with Native Hawaiian representatives from business, secondary CTE teachers, and post-secondary

CTE faculty, the participants described what a CTE program might look like that integrates Native Hawaiian culture and values. From the UHCCS perspective, the pandemic has made their perspective about CTE programs more community-based. "The pandemic has allowed us to have conversations about what we are doing to get kids into careers that provide a living wage so that our community can flourish. And also jobs that are meaningful." She contrasted this focus on meaningful jobs to their approach with cyber security that did not emphasize meaningfulness for the community. This sentiment is similar to a HIDOE coordinating teacher's observation that institutional alignment may conflict with community needs. "We have lots of questions around actual local needs as opposed to institutional alignment."

More broadly, a Native Hawaiian industry representative described what a connection between post-secondary eligible recipients and industry might look like through the lens of Native Hawaiian culture and values. This shift towards a Native Hawaiian perspective, such as connecting the Hā Framework from K–12 through post-secondary to CTE's career pathway industries, could then be a more meaningful way to navigate careers to impact Native Hawaiian communities. The industry representative used her experience in the HIDOE system as well as working in a non-profit organization to describe career pathways as embedded within Native Hawaiian collective knowledge and community-centered values.

> When you bring up Kanehunamoku, Bonnie is there and that is her community. Hiʻilei Cavelho is there at Paipaioheia. In community, you've got folks that their kuleana is going to be there and they're not going to transition. And so the nice thing is when you extend the pathway, and you really implant that within places where folks come from and where they want to contribute to that.

She contrasted the lack of meaning in the more Western view of choosing a career pathway that lacks the lens of examining the impact in Native Hawaiian communities. "Pathways disappear the moment there's no reason and there's no purpose". To continue improving equitable access to CTE programs in the UHCCS, there may be a need to collaborate with Native Hawaiian communities to gain greater understanding of what meaningful career pathways look like and to partner with these communities to continue to encourage participation in CTE pathways.

Access for Single Parents

A UHCCS vice chancellor described an ECMC funded project (presumably from the Education Corporation Management Corporation), where Hawaiʻi is one of eight states to receive funding to examine the needs of community college students who are single mothers. As the grant ends in September, childcare as a wraparound service to support student parents, will also end. Moreover, the state legislature's funding to provide a position to oversee the childcare service has been frozen post-COVID hiring. Furthermore, the closing of the childcare center impacted single mothers' performance at the community college.

> We got data last spring when COVID hit. We had to close our center. Infant parents did okay, but our toddler parents had over a 30% decrease in core success. They went from outperforming our average student by about 15% to underperforming by about 20% ...that's a rough estimate, but it was striking and awful and I still can't get anyone.

Clearly, supporting student parents, especially single mothers, with subsidized childcare for improving access and equity to CTE programs benefits this special population.

Special Populations' Reports of Scheduling and Fitting in as Obstacles to Accessing CTE Programs

We used the system-improvement form results from students (*n* = 90) to analyze whether there were needs specific to members of special populations in their access to programs. Across all students, though there were relatively few reports about obstacles to students' taking CTE courses, scheduling (15.5%) and fitting in with the program (8.9%) were more frequently reported than other reasons (Figure 6.1).

Figure 6.1 *UHCC Students' Responses to Questions about What Stopped Them from Taking CTE Courses*

Percentage of students answering *Yes* to the question
Did any of these things stop you from taking CTE classes in the UH college system?

The scheduling and availability of the courses — 14

I felt like I would not fit in with the program. — 8

The programs offered in the UH system are not interesting. — 5

Transportation to course activities — 5

My family or friends told me not to enter a CTE program. — 1

Percent

To explore this finding further, we examined differences in frequency for special populations. Among the 61 students who identified with at least one special population, 6 (about 10%) had answered affirmatively that they felt like they would not fit in with the CTE class. As displayed in Figure 6.2, of the 22 economically disadvantaged students, 3 people (14%) and of the 20 Native Hawaiian students, 1 (5%) reported the same thing. Of the 14 students with disabilities, 2 (14%) answered affirmatively suggesting this may be an issue. With these small numbers, these percentages do not indicate any conclusive pattern of inequity with regard to specific special populations.

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Figure 6.2 *College Students, per each Special Population Status, Who Felt Not Fitting in with the CTE Class Stopped Them from Attending*

College students, per each special pop status, who felt that not fitting in with the CTE class stopped them from attending
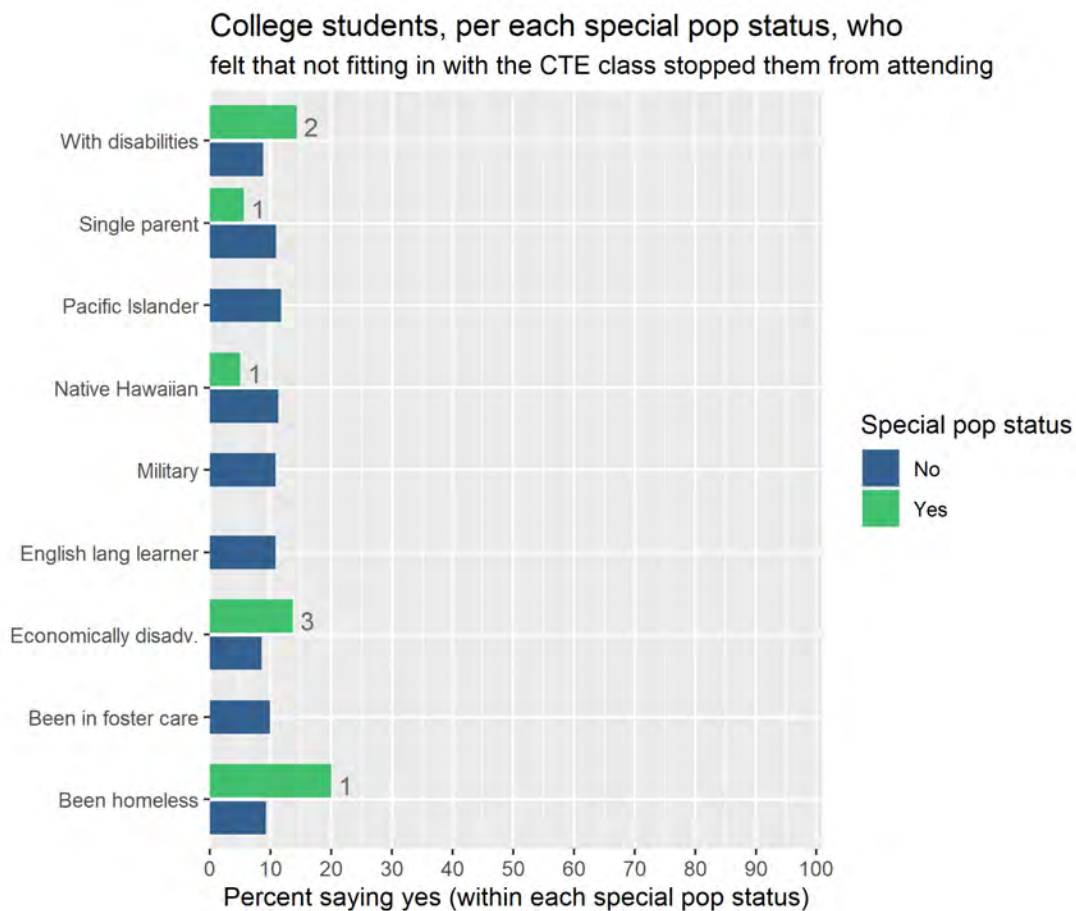
Figure 6.3 displays differences among students, based on their special-population status, in the frequency of reporting scheduling as an obstacle to attending CTE courses. With regard to scheduling and availability, 4 of the 14 students with disabilities reported this as a cause for not attending CTE courses. Students with unstable housing reported scheduling as an obstacle at a higher rate than the whole sample (40%) however, this has very little meaning statistically because this was only 2 out of the 5 people who self-identified in this special population. Taken alone, these data should be interpreted with extreme caution because of the small sample size once we disaggregate them into special populations. The sample does not represent their respective special populations.

Because the quantitative data are from a very small number of students when they are disaggregated into their respective special populations, there may be interest in further investigating how the CTE system design can be further developed to better accommodate

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Figure 6.3 *UHCCS Students, per Special Population Status, Reporting that Scheduling Stopped Them from Attending*

College students, per each special pop status, who felt that scheduling and availability stopped them from attending
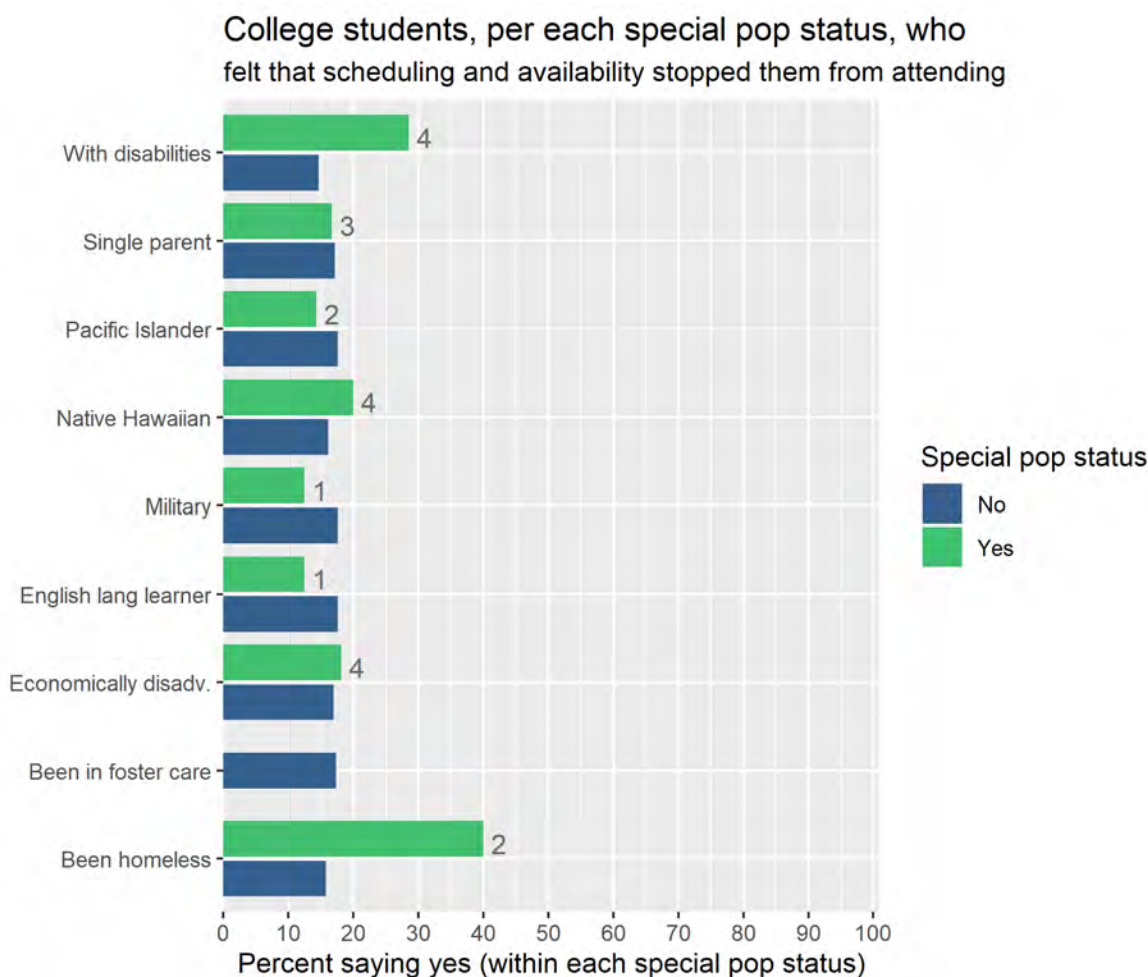
students from special populations via scheduling. Some of our qualitative-data findings support this direction. In a discussion with an executive director for a non-profit youth service organization, the director emphasized findings from Americorps mentors—that youth with unstable housing need explicit instruction of time management and planning. A program coordinator from a different nonprofit youth services program described youth with unstable housing as wanting to graduate, but having life on the street get in the way.

> Their lives are very immediate… they're well intended... they want to do school, and they want to graduate, and they want to get their diplomas but the realities of life on the street are always going to override those good intentions and plans. And so we have a lot of one-step-forward two-step-back kind of thing.

These UHCCS examples provide inconclusive evidence about the effectiveness of the system's enactment of strategies to address equitable access and participation. Ideally, these strategies will be investigated and reported while asking higher numbers of special-population students.

The Secondary Level

Similar to the UHCCS, the HIDOE system has equity policies for access at a broad scope, yet there is no available evidence of how these policies were delivered across the HIDOE system. From the principals' perspective, there appears to be professional development for CTE teachers to learn strategies that create more equitable access to CTE programs (Table 6.1), though this sample (10 principals) was less than 25% of the population of principals. Moreover, schools seem to have a means to disaggregate data on special populations in order to capture system quality improvement data.

Table 6.1 *Principals' (*n = 10) Perspectives on HIDOE Design to Create Equity and Accessibility for Special Populations as Defined by Perkins V*

Question	Percent responding "Yes"
Is there PD offered to help teachers to build their capacity to address equity while teaching this program?	70%
Does the program have a system to disaggregate data to monitor the participation of special pops?	70%
Does the program have a system to disaggregate data to monitor the performance of special pops?	60%

Most of the faculty in our sample (principals, coordinating teachers, and CTE teachers) are also very aware of special populations in their schools and are slightly less familiar with students who are in or who will age out of foster care, single parents, or have one or both parents in the military (Table 6.2). Teachers have more I-don't-know responses related to knowing if students are in foster care (57%), military (33%), homeless or single parents.

Table 6.2 *Participants' Reports of the Presence of Special Population Students in their Schools*

Question	Principals *n* = 10	Coordinating teachers *n* = 20	Teachers *n* = 100
Are economically disadvantaged students enrolled in your school?	100%	100%	96%
Are students with disabilities enrolled in your school?	100%	95%	96%
Are English language learners enrolled in your school?	100%	100%	97%
Are homeless students enrolled in your school?	100%	60%	66%

Are Native Hawaiian students enrolled in your school?	100%	100%	98%
Are Pacific Islander students enrolled in your school?	100%	100%	98%
Are youth who are in or have aged out of the foster care system enrolled in your school?	89%	25%	38%
Are students with a parent in the active military U.S. Armed Services enrolled in your school?	80%	75%	65%
Are single parents or single pregnant students enrolled in your school?	80%	75%	68%

Note. The percentages are of respondents answering "yes" to the question. These percentages are of those respondents who did not skip the question.

A non-rural Oʻahu non-academy school principal described how his school annually reviews all student progress through academic courses and focuses all faculty on considering all students' placement in different career pathways.

> We look at the subgroup breakdowns. And so you know, in our science offerings and engineering pathways, we're noticing that they're less males and less special education, and less Micronesian. And Polynesian students, you know. And so we sit with our counselors ahead of the registration process, and we try to identify cohorts and actual students. So we'll say, hey, look, Keoni doesn't feel like he belongs in this class, but look at his performance, look at his math scores, look at this. So go tap Keoni on the shoulder and say, 'Hey, have you considered X, Y, or Z.'"

The previous example is evidence for how the HIDOE faculty work to improve equitable access and participation for members of special populations by improving access to all students. Even though students in special populations select their elective courses, coordinators and teachers use specific strategies for increasing participation of some members of special populations.

Culturally Sustaining Lens in Secondary CTE

As discussed earlier in this chapter, the Office of Hawaiian Education (OHE) works with community partners to align their programs with language and cultural revitalization goals. These efforts are models for Indigenous language revitalization efforts as they seek to re-prioritize community needs over individualistic needs. The director of OHE explained that a Native Hawaiian view values community readiness pathways that would move to more "authentic" community-based learning modeled after Native Hawaiian families having specific knowledge and roles within the community.

> You can build in industry folks, you can build in teachers, you can build in families, you can build in peers into the learning activities. So the students are surrounded by their community the entire time, and that community then contributes to the students. In the Hawaiian culture families held on to certain knowledge systems because their family was

responsible for that knowledge system within a community. Everybody went to the mahiai. Everybody went to the lawaiʻa for their fishing needs or their farm needs, because that mahiai and that lawaiʻa had his medical needs taken care of by the family that was, you know the lāʻau lapaʻau stuff. And so the whole mindset wasn't about, I'm going to be a doctor and then I'm going to go make a lot of money and move away from my community, but I'm going to be a doctor because it's my ohana's kuleana and that's how I'm going to contribute back to my community.

In a system that aligns with Native Hawaiian values, community readiness pathways are focused on community success rather than individual success as found in typical Euro-Western college and career readiness. Native Hawaiian students already have meaningful connections to the community through their family's traditional community work, such as fishermen, farmers, weavers, and so on. These family connections can then lead students to serve their communities in the same work, but in modern pathways like marine biology, agriculture, or fabric design. As a representative of the community summarized after providing an example, "and so the kids will find the relevance. They'll find their pathway to college. They'll find the pathways". In this needs assessment, we did not have the opportunity to use these findings to then go back to counselors, CTE teachers, or coordinators and ask them what they do to encourage students to find relevance in the Perkins system. There is likely a need to explore culturally relevant ways to help students make choices that align with their communities.

Inclusive Strategies for Non-traditional Students

The HIDOE faculty described many strategies to encourage more participation from non-traditional students based on gender, but some questioned whether they could overcome the obstacles that industry also faces.

I know that's a big focus for federal programs, but it's extremely difficult to ask teachers at a school to increase males in the health career [or] females in engineering and welding and auto, when that's been the trend for decades, if not longer, and that's what's happening in industry. It's just such an overwhelming problem to try to solve. We don't know how we can help or solve that.

The most popular strategy that coordinators and teachers discussed was hiring a teacher from the same non-traditional gender that is underrepresented in the pathway.

We have a female teacher and get female students in auto. So, having a teacher in the non-trad demographic is helpful. But, we are not understanding how to get females into building and construction. You have to be willing to adapt to the students. Building relationships is the key.

For building and construction, another coordinator discussed having both a male instructor to teach with a female instructor. A principal shared an example of a more inclusive strategy for non-traditional members, to have separate girls and boys groups and bring them together for a competition, such as auto body painting. A DRT expressed challenges and concern about the time it takes to integrate more non-traditional students into pathways such as IET or Health. An

IET teacher was credited with including more girls into the pathway over a number of years while trying to overcome similar perceptions found in industry.

> The teacher made a focus to increase his non-traditional females in engineering and it's taken him years, but ... he's still not 50/50 in the actual class. But he's getting much closer and he has many more females. But once again that cultural component for non trad is really hard to break through.

As discussed in chapter 5, recruiting teachers from non-traditional groups for an industry is challenging and perhaps there is a need to acknowledge the challenges in education of overcoming the longstanding perceptions that have existed in industry. Stakeholders can look for other innovative ways to support schools, such as connecting with established societies that represent non-traditional workers in particular industries, such as the Society of Women Engineers.

Other Departments and Professionals Support Students with Disabilities and English Learners

Similar to other special populations, students with disabilities are accepted to any CTE program of study unless there are safety concerns. From an automotive instructor,

> The courses at my HS are open to every student. Those students in the classes come with EAs, support structures, and need to comprehend and function. Unless it's a safety issue, in the shop, all students are welcome to take the classes.

Other instructors noted having support from other school departments for students with disabilities and English learners. Another automotive instructor noted that students receive help from the

> workplace readiness program in the special education department. Learning disability students who come over two days a week, and they're like, our maintenance crew. ...English learners, that's always an issue. Fortunately, our school hired actually a full time staff who assists them.

A coordinating teacher discussed how their CTE materials are translated into other languages. "In our 8th grade orientation, we shared our academy handbook as well as letters to parents about our academies, translated in both Tagalog and Ilocano which are our two highest language groups in our community."

A natural resources teacher noted that all her students are English language learners and special education students and that there is a bigger picture in student persistence as both students and parents need to be educated about the opportunities CTE programs of study provide.

> I've even used the possibility of an internship at a large local farm in IEP meetings, to let students know that that's an option for them. But it's bigger than that, because it's this mindset that our whole community has about not just the students, but the parents, and they just don't know about the internship programs. My program is so new. Students aren't ready to do internships.

The instructor continued that although she explained accommodations to the mother in an IEP meeting,

> the response from the child was 'Mom, I'm 15. I'm not going to work.' And so this is the battle that I have…I have to change that mindset, that this is an opportunity that is, you know, that it's not always available to every high schooler.

This shows that even when an instructor provides accommodations, there is a need for students to understand and value the opportunities CTE provides.

Finally, an instructor and a principal observed students with disabilities having success in CTE programs of study with hands-on learning opportunities. A digital media instructor discussed how CTE programs that offer hands-on learning opportunities are good for students with disabilities.

> Some of the students with disabilities do really well, with the hands-on stuff in an auto shop. They have a full range of stuff to repair, like bicycles, golf carts, quads, and motorcycles and cars. So there's really, you know, a range, even skateboards, I've seen kids working out skateboards in there. So there's something for any student to do there.

The instructor's observation aligns with a principal's comment about a success story from the natural resources pathway in her school. She described how the teacher did a "very good job of differentiating" and the student used the "skills that the student learned within the class with Mr. H., after he graduated" and with the help of DVR services, "he was able to take out a small business loan. He has a small business now where he actually does yard services. He bought a truck, you know, and so during the pandemic, he still is able to work."

As the HIDOE stakeholders noted, the CTE programs of studies are open to all students and the teachers are responsible for differentiating instruction. At the same time, there may be a need to acknowledge that teachers who are differentiating instruction to students with disabilities may need support from other agencies, like the Division for Vocational Rehabilitation (DVR), to prepare them for occupations in competitive, integrated settings that may lead to self-sufficiency. For English learner students in CTE programs, there may be a need to continue scaffolding language use with either direct translation to their home languages or with the support of English as a second language professionals as mandated by Federal legislation, *Lau v. Nichols*. For members of both special populations, there seems to be a need for more education for parents and students about the opportunities that internships provide.

Students' Reports of Fitting in, Scheduling, and Uninteresting Topics as Obstacles to Accessing CTE Programs

Despite specific strategies, a coordinating teacher did feel like they could not evaluate the effects of their strategies without data.

> Okay, I think if the data is provided to us, that could better answer those questions and we could address how we can do things to reduce these disparities, but until that's explicitly in place I think it's difficult to be able to address that without having something in place where we can collect that information on our kids.

With the system improvement forms administered to UHCCS students, we also asked if the respondent had attended public high school in the state in the last two years. The intent of this was to investigate special populations to see if they reported differentially higher rates for reasons that they would not take CTE courses. We were specifically interested in whether they felt they would not fit in or whether they believed the topic would be uninteresting to them. Of the 90 UHCCS students, only 15 of them reported having attended high school. This sample was too small to disaggregate into special populations and analyze. No patterns were detectable.
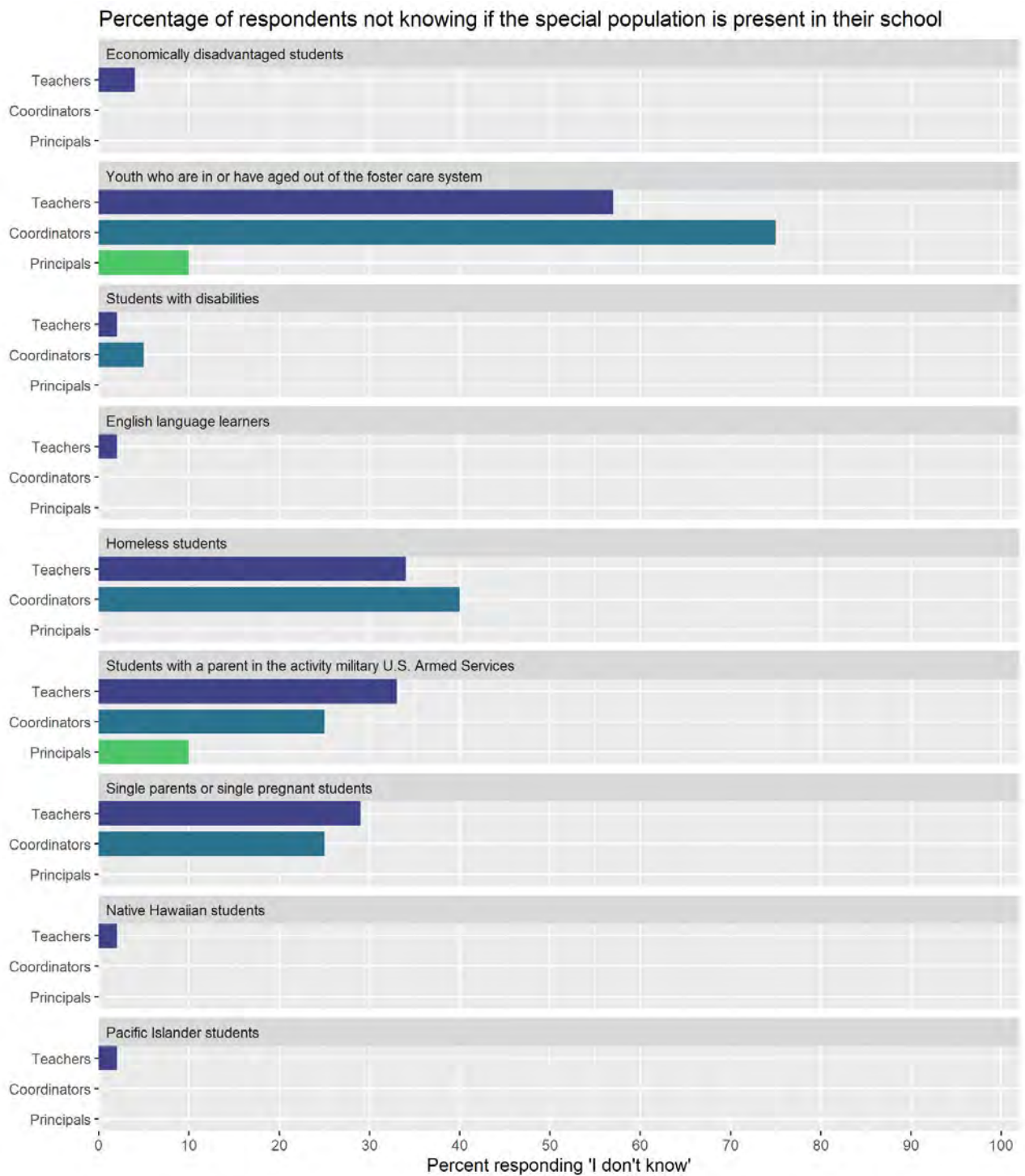
Awareness of Special Populations' Presence

One of the design issues in identifying the needs of special populations is being aware of their presence in the school. This is important because if school personnel do not know if these students are present, they will not be able to enact the policies to serve these students.

Figure 6.4 displays the results of the system-improvement form questions that asks "Are students _____ enrolled in your school?" where the blank is replaced by each special population and the response categories were *Yes*, *No*, and *I don't know*. Among the 100 teachers, 20 coordinators, and 10 principals who completed these forms, the results suggest that many teachers and coordinators are unaware of whether their school includes students who are in or who have aged out of the foster care system, homeless students, students from military families, and students who are single parents or pregnant. If the policies are to be enacted by teachers or coordinators, there appears to be a need for the school to share with their teachers this information.

Homeless Youth

A salient challenge facing homeless youth—as explained by two interviews with a representative of this special population—is that sometimes these students feel ashamed to report that they are homeless. Their housing insecurity may range from being on the street, to living in shelter, and "A lot of them are living in a relative's house and it's not their own house." This lack of self-report results in the schools and teachers being unaware of their presence in their programs. Students who do not report themselves as homeless miss out on services that otherwise would be available to them, as per the McKinney–Vento Homeless Assistance Act. Tutoring services, transportation to and from where they live, in addition to supplemental food and toiletries (the absence of which can prevent some students from attending school). As mentioned in the previous section, the system-improvement forms revealed that over 30% of the teachers are unaware of whether there are any students in their schools who are homeless, which may indicate underreporting. For these reasons, it is unclear what specific strategies to improve equity and access to CTE programs exist for students with unstable housing and how they are being delivered. As a HIDOE stated, "What would we provide them in CTE that we wouldn't provide to other students that are not homeless" expresses a need to identify more awareness of what accommodations students who are homeless need.

Figure 6.4 *Reports of Not Knowing Whether a Special Population is Present in the School*

Percentage of respondents not knowing if the special population is present in their school

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How are subrecipients using data to examine the extent of effectiveness in improvement of access and increasing participation of members of special populations?

Monitoring Access and Participation of Special Populations

As noted in the introduction to this chapter, the tracking and reporting of access and participation of all Perkins V special populations are not yet widely available. Current national and state accountability systems track four categories: students who have disabilities, economically disadvantaged students, English learners, and gender, which only represent four of the Perkins V categories.

As described in Chapter 2, recipients are required to monitor all components of the CTE system to ensure they function as intended. Therefore, it is critically important to have special population data to know if access is equitable and if special populations participate at different rates than other students. Both UHCCS and HIDOE do have regular evaluation of their programs as part of existing continuous improvement strategies. For example, the HIDOE principals create five-year academic plans that describe data-driven decisions about how to improve their school programs. However, CTE is not always addressed in these plans. For UHCCs, the ARPD process within programs serves as a continuous improvement strategy for regular assessment of degree programs and non-credit programs, which includes data on certain special populations. Nonetheless, there are limitations to how well these processes can improve systems because data on many special populations are missing, which makes it very difficult to investigate whether systems are functioning as intended or not with regard to these special populations.

Post-secondary Level

Although there is a current lack of data collection and analysis with many Perkins V special populations, the UHCCS is aware of the need to rectify the problem. Part of the challenge is to modify existing data infrastructure, while there are also concerns about students' privacy. For example, the banner system does not track single pregnant mothers and there are concerns regarding FERPA rules. Nonetheless, the UHCCS are transitioning from Perkins IV to Perkins V special populations categories and tracking. The UHCCS CTE deans also commented about concerns with the ARPD data, such as mismatched codes that may obscure results of program demand. One dean said, "ARPD data seems blurred due to mismatched CIP Codes and SOC codes that vary from campus to campus generating different demand numbers".

Although special populations are identified by self-report, there were some notable strategies to obtain these data. For example, there is consultation with the Native Hawaiian Council with

ARPD data: A UHCC Dean recounted how he used ARPD data on Native Hawaiian student participation in programs across the campus to collaborate with the Native Hawaiian Council of faculty and staff to encourage Native Hawaiian students to consider other programs with lower Native Hawaiian students, like health technology.

> I'd like to think that by showing them that data, they would encourage, ... more Native Hawaiians to just take a look... that field. And consequently, ...we're at the same percentage of Native Hawaiian students in health information technology as the Native Hawaiian students were in the whole college as a whole. So, um, you know, we've kind of reached that level where, you know, all of our CTE programs, have a nice representation of Native Hawaiian students in each of our CTE programs.

Another example is the use of grant monies to provide single mothers with wraparound services.

Beyond ARPD, a UHCCS vice chancellor described how data may be skewed due to families and students not fully comprehending the questions they are asked on surveys.

> The fact that the mismatch of parents' understanding or even for us our students' understanding of programs and CTE and lots of edu-speak and acronyms, and even the data that we're trying to get from them [is] being skewed by that. And I think we really have to take a step back very humbly and think about, rather than trying to educate them on speaking to us, figuring out how we really ask the right questions.

A suggestion that the vice chancellor made was to consider more focus group type data rather than relying on surveys. "Do we get what we're looking for by asking the questions better, by providing examples, by having conversations rather than multiple choice, and really thinking about when we get data is it actually what we were asking for."

The Secondary Level

In the HIDOE, there is an assumption that the schools are aware of the presence of students from special populations in their school. This was addressed in the previous section in regard to the design and is important for these subrecipients to then use that information to identify needs and then examine the effectiveness of their programs in terms of access and participation. Overall, according to an OSDCTE administrator, the HIDOE system collects and examines data on members on special populations because this is required by other federal mandates, such as the Work Innovation and Opportunities Act (WIOA) and Every Student Succeeds Act (ESSA), which have parallel classifications of special populations. In addition, the HIDOE has plans to use their LEI system (a dashboard for displaying student performance indicators by special population) to give CTE professionals accurate data on members of special populations in CTE programs. The presence of these structures indicates that schools presumably have this information about students' special-population status.

Access

For examining access of special populations in programs, we can ask whether—in schools in which a special population is present—if a CTE program of study includes a representative number of students (or higher) from that special population. We asked this question on the

system-improvement forms to teachers if they responded "yes" to the question asking if that special population was present in their school. (For example, if a respondent said that homeless students were present in their school, they were then asked this second question about homeless students being present in the CTE program). The question for each special population was "Is this population represented *more*, *less*, or *about the same* in this program as it is in the rest of the school?" where the program they are being asked about is one that is most well-known to them. The response categories were *There are more in this program*, *There are about the same as in the school*, *There are fewer in this program*, and *I don't know*.

The results in Figure 6.5 (with the first two categories collapsed for easier viewing) indicate that the special population with the highest frequency of responses to the category *There are fewer in this program* (the middle bar in each panel) was students with disabilities (36 of the 96 teachers receiving this question; 38%), followed by English language learners (25 of the 97 teachers receiving this question; 26%). In other words, if there are inequities in access, based on reports from the teachers, it appears to be with these two special populations more so than with the others.

It is also worth noting that the teachers are not aware of students in these special populations being present in their programs. For some, it may be a privacy concern, as was mentioned by some teachers.

These system-improvement-form results suggest that there is a need to improve access for students with disabilities and students classified as English language learners.
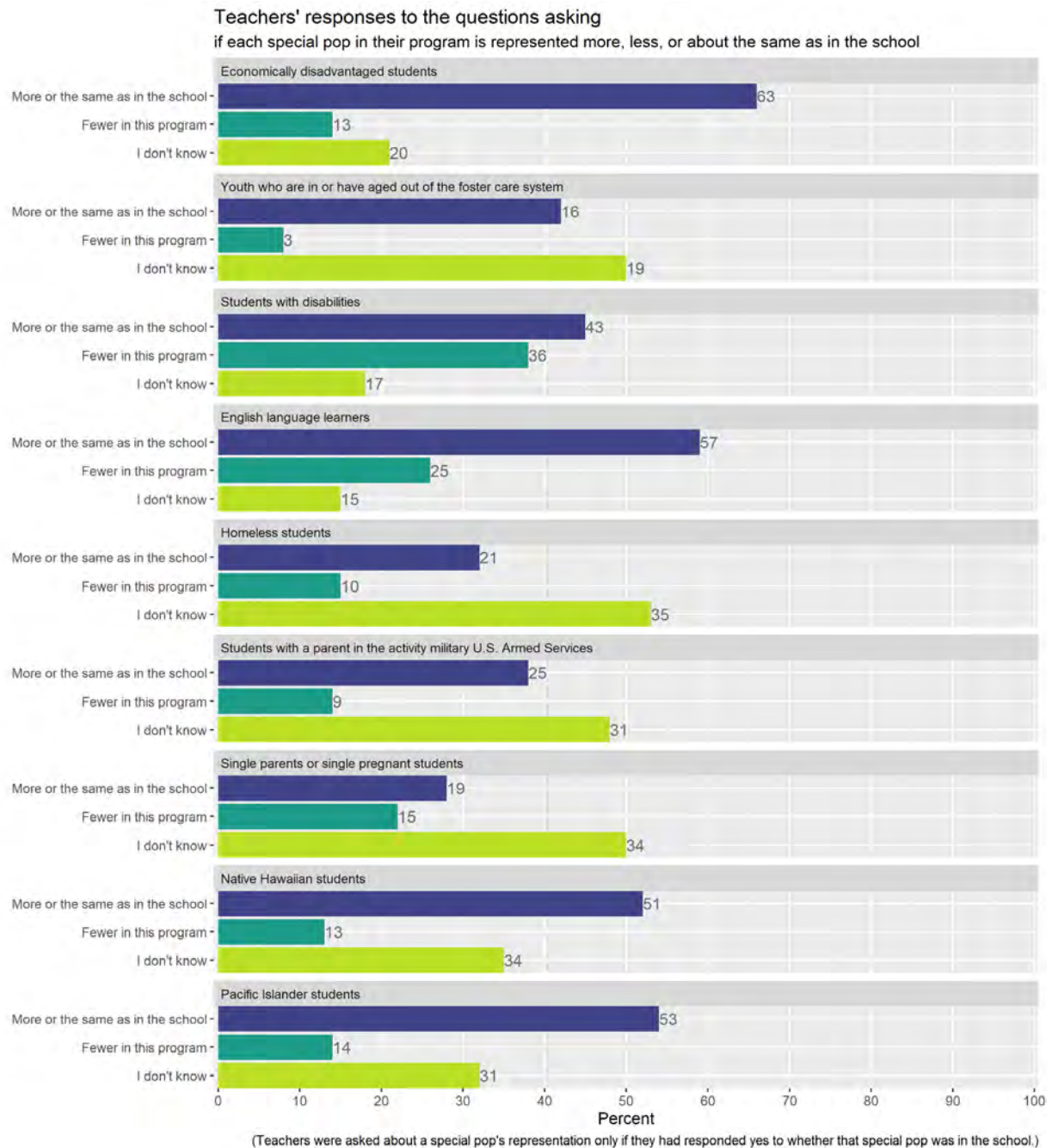
A developing theme in how the HIDOE is using the data is how the HIDOE faculty perceive supporting all students as a means of improving equitable access and participation for members of special populations. For English language learners, *Lau v. Nichols* specifies that there needs to be more accommodations than what is perceived as already being present. The OSDCTE administrator clarified "Our office's civil rights monitoring has focused on improving access for English language learners at both the DOE and CCs. As a result, both agencies have information about CTE programs and services provided in multiple languages." This information was collected in this most recent year, and presumably not yet been used to improve access nor examined for effectiveness in improving access; nonetheless, the data are being collected—at least with this special population—and the process of using those data to make program changes and analyze their effectiveness is presumably upcoming.

A principal discussed how his school uses data to monitor CTE completers and all students in their pathways which then points to areas of need for course offerings, supports, and realignment between schools. For completers, they have identified that students have difficulty achieving high math standards.

> In terms of data, we're looking at completion rate through that program of study. And then within a program of study, one indicator for us (is) students that cannot achieve those higher levels of science and math. So then we have to kind of revamp our planning and our course offerings and additional supports and then aligning ourselves to the feeder schools to kind of work on that situation and then also on the other end,

working with our post-secondary institutions for students that want to advance for that population. So kind of always being aware of that using the data.

Figure 6.5 *Teachers' Reports of Special Populations' Representation in the CTE Program*

Teachers' responses to the questions asking
if each special pop in their program is represented more, less, or about the same as in the school

Economically disadvantaged students

More or the same as in the school	63
Fewer in this program	13
I don't know	20

Youth who are in or have aged out of the foster care system

More or the same as in the school	16
Fewer in this program	3
I don't know	19

Students with disabilities

More or the same as in the school	43
Fewer in this program	36
I don't know	17

English language learners

More or the same as in the school	57
Fewer in this program	25
I don't know	15

Homeless students

More or the same as in the school	21
Fewer in this program	10
I don't know	35

Students with a parent in the activity military U.S. Armed Services

More or the same as in the school	25
Fewer in this program	9
I don't know	31

Single parents or single pregnant students

More or the same as in the school	19
Fewer in this program	15
I don't know	34

Native Hawaiian students

More or the same as in the school	51
Fewer in this program	13
I don't know	34

Pacific Islander students

More or the same as in the school	53
Fewer in this program	14
I don't know	31

Percent

(Teachers were asked about a special pop's representation only if they had responded yes to whether that special pop was in the school.)

He also elaborated on several ways that student progress is being monitored: (a) counselors are helping students develop their transition plans, (b) students' pathway experiences are being surveyed, and (c) growth is measured against the national standards of practice for college and career academies. Measuring students' growth in CTE would indeed be very informative;

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however, the CLNA team remains skeptical of measurement procedures purporting to yield valid inferences about growth against CTE standards (for a brief summary of CTE measurement, see Dougherty et al., 2020).

> Our counselors make sure there's intentional touches with students along the way, every year one-on-one conferences. So, that's another way that we track that. Students upload that as part of their personal transition plan. We'll survey the students at the end of every year just on their academy experience within their pathway. We'll use that with our staff to revamp or make changes. In terms of our action planning, we do follow a framework– the National Standards of Practice for College and Career Academies. And then we'll measure growth against that framework. So there's 10 standards of practice. And then we'll reflect on those at the end of each year with each academy.

An educational specialist commented that timing of program outcome data and the use of that data for funding make it challenging to evaluate programs.

> So one big issue is that our concentrator data comes out so slow. So our funding, everything that we base it on is two years out. So that means if I am a high school, ninth through 12th, and I want to try to start academies, and I want to see [if] this is going to have an impact on my funding, my attendance, my anything, then I start that freshman year, those students graduate in four years. And then it's going to take another two years for me to see the impact on my Perkins funding. It's gonna take six years for me to see, is that an impact?

In sum, both the UHCCS and the HIDOE system are using some data to monitor their efforts in improving equitable access and participation of members of special populations as both are required to report on parallel populations in WIOA and ESSA. While notable strategies and accommodations have been reported in individual programs and programs of study, it is unclear if efforts and effectiveness are being monitored by each subrecipient and in each program or program of study. We were unable to examine systematic, reliable evidence of the implementation or effects of the HIDOE and UHCCS policies that are intended to ensure equitable access and increase participation of members of special populations, such as the extent to which CTE programs or programs of study have implemented frameworks for Native Hawaiian values or worked to make their programs more culturally sustaining.

Summary

The needs having to do with ensuring equitable access and participation of members of special populations in high-quality CTE include the following:

A. There may be a need to develop and document explicit strategies that address equitable access and participation in CTE programs through application of existing system-wide, overarching policies and strategies to address the participation barriers specific to individual special populations.

B. There may be a need for all CTE programs of study at UHCCS to work with community representatives to increase Native Hawaiian participation.

C. There is likely a need to explore culturally relevant ways to help students make choices that align with their communities.

D. There may be a need for support from other agencies, like the Division for Vocational Rehabilitation (DVR), to help teachers prepare students with disabilities for occupations in competitive, integrated settings.

E. For English learner students in CTE programs, there may be a need to continue scaffolding language use with either direct translation to their home languages or with the support of English as a second language professionals.

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Chapter 7
Data Infrastructure and Use

Following the CLNA template provided in the *State of Hawai'i Perkins V State Plan* (2020), this chapter addresses the needs in data infrastructure and use including

- providing **valid**, **reliable**, and **timely data** for use in the HI-OSDCTE NAPE data dashboards, and
- the **professional development needs** across the CTE system, CTE programs and programs of study, and subrecipients and geographic regions to improve the use of **labor market information**, **data dashboards**, or **other data (and research evidence)** related to access, participation, and educational and workforce outcomes as part of their design, delivery, and continual and continuous improvement processes.

Data infrastructure and use are critical components of the CTE system. If improvement processes are to have some degree of legitimacy, they need to be based on valid inferences about what is occurring in the system, which in turn depends on reliable data-collection procedures. In other words, reliable measurement and feedback systems that can describe the processes and outputs of those processes (Jaca et al., 2012) need to be established and these systems must be useful to stakeholders in their decisions about improvement.[2]

At this time, there are processes in place but there are also several challenges in the data-infrastructure and use system. The more fundamental challenges may lie in determining what should be measured, in light of what the data will be used for.

The OSDCTE's Data Infrastructure, Reporting, and Use working group (within the Data Management & Technology Committee) is tasked with (among other duties) identifying data-infrastructure needs in the CTE system and developing strategies to help the system effectively collect, manage, and report data to be used to improve programs and programs of study. This process is to be conducted continually, presumably with iterative use of the data to effect improvements after each cycle of review, and to be part of an ongoing (i.e., continuous, as worded in the state plan) process of improvement. The documentation provided by the OSDCTE indicates that there is a plan to use the data from student performance indicators and the feedback from stakeholders, such as those on the OSDCTE subcommittees in this process.

Providing Valid, Reliable, and Timely Data for Use in the HI-OSDCTE NAPE Data Dashboards

At both the secondary and post-secondary levels, there are challenges stemming from the collection of student-performance-indicator data (SPIs) disaggregated by special populations

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[2] In educational measurement, reliability refers to the stability or consistency of the results of a measurement instrument; validity refers to how defensible the interpretations of those results are (AERA, APA, NCME, 2014).

that are new to Perkins V. These are the primary sources of data being used to populate the dashboards. Unfortunately, because the data have not yet been provided, it is challenging to identify the needs having to do with reliability, validity and timeliness. Still, we provide some observations in this section.

The UHCCS Perkins administration office and its data-wrangling staff are working with the University of Hawai'i administration to modify the existing infrastructure that is used to collect and report disaggregated SPI data. There is a data-collection system that is already in place, and it addresses student privacy laws in addition to the methods of data collection through students' self-reports and other records, such as FAFSA applications (which not all students complete). However, this infrastructure is within the University of Hawai'i system, and its administration has also been managing its reorganizing (beyond CTE), resulting in a full agenda, which the new CTE-data-collection-process approvals compete with. With this, the infrastructure is still under development but has moved forward.

Regarding validity at the post-secondary level, the data-wrangling staff recognized that there will likely always be some degree of inaccuracy in identifying special populations, such as whether a student reports that they are homeless or are a single mother. These data are often self-reported by students or are collected from data sources, such as from FAFSA applications, that do not cover the student population. Databases for the some SPIs also lack representation of the population of students. For example, the unemployment insurance databases (for measuring employment status after program completion, for SPI 1P1) does not include people who do not have unemployment insurance, such as people who are self-employed or are in the gig economy.

At the secondary level, the HIDOE is working with the Data Exchange Partnership (DXP) arm of P–20. DXP is managing data that are provided to them (by the HIDOE) and ensuring that data-privacy needs are addressed while also preparing the data for the dashboard data system (such as NAPE or the Longitudinal Education Information, LEI, system), for that data processing, which are then to be made available to the OSDCTE and programs of study. At this time, there are challenges in disaggregating the data by special populations and by programs of study, as well as by subrecipient. In part, this is because the HIDOE's data collection infrastructure is not yet up-to-date with the Perkins V requirements.

Part of the problem, as identified from our conversations with HIDOE CTE administrative staff in early 2021 (and which is discussed in Chapter 2), is that the consolidated annual reports (CARs) draw HIDOE staff members' attention toward the level of data reporting that is required for that report, which they are accustomed to preparing because of its significance in Perkins IV. Unfortunately, the CTE program-of-study improvement process requires data reports that are further disaggregated than what is needed for the CAR. Although the type of raw data used for the CAR can be used for the CTE program-of-study improvement process—that is, the SPIs—the CAR reports provide insufficient information about individual programs of study, subrecipients, or special populations within programs of study or within subrecipients.

Nonetheless, there are activities that suggest the HIDOE is working to meet this data requirement, including their collaboration with the OSDCTE's Data Infrastructure, Reporting,

and Use working group. Also, according to the HIDOE CTE administrators, the HIDOE has committed to using the Longitudinal Education Information (LEI) system (instead of NAPE) to maintain and present data to staff and faculty in real time. With this, the requirement for timely data is being considered in the redesign. However, it appears that there is a long way to go. Similar to the UHCCS's challenge, one need is for the HIDOE to establish a set of procedures that enable them to provide DXP with data that are disaggregated to the level required for CTE program-of-study improvement. HIDOE staff are working on this.

Similar to UHCCS, there are also challenges in HIDOE's capacity to track students after they have exited high school. These are being worked through with the help of DXP. This tracking is intended to provide a measurement of the percentage of students who have placed into post-secondary education, employment, a service program such as the Peace Corps, or who have entered military service (SPI 3S1). Although these data are by nature not likely to be timely— because they are measured after students have exited a program—they should, in theory, provide valid inferences about programs' success in achieving their objectives. Unfortunately, the dependability of these data is low because of the challenges lie in the representativeness of the data. This is because (a) the tracking requires multiple databases, which in turn invites error in linking databases, and (b) the databases themselves may also lack complete data.[3] These challenges seem to require solutions beyond the Perkins V recipients' capacity.

Even after the data are collected and reported, the extent to which they can inform continuous improvement of the CTE system is not always clear. This also has to do with validity. In our meetings with both HIDOE and UHCCS internal stakeholders, our prompts about special populations' access to and performance within programs elicited responses that mostly centered on participants' perceptions that the programs accept everyone. A valuable thought experiment would be for internal stakeholders to imagine a case in which the SPI for a particular special population was unexpectedly low and what strategies the program could use to address that gap. If, in that hypothetical scenario, they find out that the SPI data were not helpful at informing them how to improve the program, there may be a need to change how it is measured.

As another example, the academic achievement scores used to measure the HIDOE SPIs 2S1–2S3 SPIs are often collected before students complete (or sometimes even enter) a CTE program, so any causal claim about the program's effect on academic achievement is indefensible. Additionally, the academic content knowledge and skills that those achievement scores capture are a reflection of students' education that was obtained over several years and from many different courses—not only those in CTE programs. Because of this, any program-improvement decisions made based on those academic achievement scores will suffer from weak validity. To strengthen validity, what is needed are statements about how each type of

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[3] For tracking placement in post-secondary education is mostly accurate: It is easy to track students from the HIDOE to the University of Hawai'i system, and for most other US colleges, the National Student Clearinghouse is valuable; however, for students studying internationally, there is no dependable means of tracking, resulting in false negatives in this count. For tracking employment, the state's employment insurance database serves as valuable to both the HIDOE and UHCCS, but does not include people, such as entrepreneurs or gig-economy workers, who do not qualify for that insurance, resulting in false negatives. Furthermore, tax identification numbers are not attached to HIDOE student records for privacy reasons, making database linkages difficult.

evidence is intended to contribute to system improvement. If the academic achievement indicators are intended to determine whether a CTE program is only attracting lower-academic-achieving students, then having this SPI would seem defensible; that information would inform programs that they need to become more attractive to higher-achieving academic students (if that is a desired outcome).

Hawaiʻi's challenges in collecting, reporting, and using data are not unique. The data required to draw valid information about Perkins V programs and programs of study (where valid inferences rely on the reliability of data collection procedures and the timeliness of the data) is not easy to come by, particularly when the objective is to draw causal claims the effectiveness of those programs (e.g., Dougherty, et al. 2020; Warner et al., 2019).

Professional Development Needs Related to Data Infrastructure and Use

The CLNA attempted to determine the extent to which recipients used labor market information (LMI), data dashboards, and other data and research evidence related to access, participation and educational and workforce outcomes to determine professional development needs.

In system improvement forms filled out by HIDOE's DRTs, there was no discussion regarding professional development opportunities that are designed to support CTE professionals in learning about labor market information and data dashboards. This may be a need that has not been identified by the HIDOE and could be considered in the future.

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One potential issue is the timing of the availability of dashboard reports of data; another is the timing in PD in how to use data dashboards. If data through the LEI dashboard is available for use during the fall 2021 school year, it may be prudent to consider developing professional development opportunities during this time. Currently, labor market information such as ONet, the US Bureau of Labor Statistics, etc. are publicly available. It may be helpful for the HIDOE to begin planning professional development for CTE professionals on how to use public labor market information to inform programs. For example, a coordinating teacher shared his CTE student exploratory worksheet which had a link to the U.S. Bureau of Labor Statistics for Occupational and Wage Estimates in Hawaiʻi.

At the UHCCS level, the CLNA team did not gather data on whether there are professional development opportunities related to LMI and data dashboard use, although a UHCCS dean stated, "faculty also use ONET, as one resource for labor market". This may be a need for the UHCCS if there are indeed no such opportunities available.

Labor Market Information

There is clear evidence that the UHCCS uses labor market information. The ARPD includes information about job openings related to programs and that information is used to evaluate

program health and for program planning. During one focus group, it was mentioned that CTE programs at the postsecondary level are using ONet as a tool to align programs with labor market needs. ONet is also used by individual faculty and embedded in programs. Moreover, deans of the community colleges explained that the UHCCS previously had access to the ESMI analysis system which is now available to individual campuses if they wish to use it. It is unclear how many campuses, if any, are using this system. UHCCSs use of LMIs is further discussed in Chapters 3 and 4.

There appears to be limited evidence of a system-level procedure for accessing and using LMI data at the HIDOE level. The Hawaiʻi Career Pathways website was introduced in late 2020, and presumably is being used by HIDOE staff (though not emphasized in any meetings or focus groups). The pathway advisory committees include stakeholders from industry, it is unclear if their role is to address LMI data in the committees' discussions about their committees' pathway standards. Our interpretation of the focus-group data suggests that individual schools and programs take on the responsibility of accessing and using LMI data and that schools in the academy model have greater access and guidance. With this, there appears to be a need for professional development that provides clear methods and strategies to HIDOE staff, perhaps more-so for staff in non-academy schools, in how to locate and use labor market information in CTE system improvement. It might be worthwhile for the HIDOE to take advantage of the labor market information analyses that are conducted at the UHCCS level (described in Chapters 3 and 4) and use this information to better integrate program design across the CTE system. If indeed it is connecting its new pathways' standards to these resources, it would be valuable to communicate how this is being done. During one focus group there was mention of the use of ONet and other labor market indicators, but it is unclear how widespread the knowledge and use of LMIs and data dashboards are among CTE professionals.

Data Dashboards

The UHCCS has clear processes to use data dashboards in systematic improvement processes, whereas with the HIDOE, it was—until recently—unclear which dashboards will be used. This section explains how there appears to be a need for professional development that provides clear methods and strategies for using data dashboards in HIDOE CTE system improvement.

The current use of data dashboards was discussed several times with both the HIDOE state CTE office and the UHCCS CTE office. During these meetings, the complications with the overall data infrastructure in the state were made clear, but plans for new dashboards and processes were also discussed.

At the HIDOE level, it was the initial understanding of the CLNA team that the NAPE dashboard was to be the primary dashboard to display data for a number of reports, including for Perkins V. With NAPE, we had presumed it would be suitable for meeting the Perkins V reporting requirements because that was what its developers had designed it for. However, during later discussions with the OSDCTE director and the HIDOE state CTE specialist, it was explained that the HIDOE will be reporting Perkins V data through its LEI system, which will report all

HIDOE data across the state, not just CTE data. The state director stated that she is confident that the merging of P–20 with the state CTE office to work on data collection for Perkins V will also make it easier to collect and report the appropriate data.

The HIDOE state specialist explained how the LEI will help Perkins. One benefit of the LEI system appears to be how quickly the data will be made available to HIDOE staff and educators. It will also include not only information from student performance indicators, but also attendance, course grades, and standardized-test results. This may be useful with special populations because it may reveal whether students are doing disproportionately worse (or better) in their CTE courses than they are in their core courses. More importantly, it can reveal where some of the students' core-academic skills may need attention within the CTE course. The state specialist provided a hypothetical example of a building-and-construction student needing extra academic support with his mathematics learning, which is a required basic skill in the CTE program of study. This plan is promising because it provides data to responsively integrate academic and CTE skills. One question that emerges is how programs will take this student-specific information and use it to inform program-improvement strategies across many students.

The HIDOE state specialist made the point that they will conduct gap analyses to help schools find the highest-need areas and identify where they can use Perkins to have the biggest impact in their schools, such as in aiding special populations in access and achievement. As the HIDOE puts this LEI system to use in CTE data reporting, professional-development needs may arise among school personnel in how to best use that information. Counselors, CTE teachers, coordinators, and principals will likely need to have a common understanding of how to interpret the LEI data reports and, most importantly, how to use those data to inform decisions that affect individual students as well as the design of the programs of study.

At the UHCCS level, there are two separate dashboards designed for reporting data about CTE programs: the ARPD and the NAPE dashboard. The ARPD is an up-and-running dashboard that has already compiled some data on CTE programs and goals. This data is easily accessible and widely available online. However, the ARPD does not report enough data to meet the reporting requirements of Perkins V. As a result, the UHCCS also plans to use the NAPE dashboard. In our discussions with the UHCCS CTE office, it was outlined that the ideal flow of data would come from the campuses to the CTE office staff who would then collate the data through Tableau to produce more accessible data which would then be uploaded to the NAPE dashboard which would allow for easy access and widely available use of the UHCCS CTE data.

Other Data and Research Evidence Related to Access, Participation, and Educational and Workforce Outcomes

Some of the policies and actions of HIDOE subrecipients suggest that students' career exploration is not as valued as career development in a pathway. Though there are traditions and structures in place, such as that provided by the academy model, there might be some

value in HIDOE staff's review of the research on career exploration throughout high school and the process of career development over the lifespan (e.g., Hartung, 2013). This information can inform subrecipients' decisions about students' CTE course-taking. This was briefly addressed in Chapters 3 and 4.

As part of the requirements of Perkins V, reporting data on special populations is required and is used to provide more equitable programs across the CTE system. While data on some special populations have been collected at the HIDOE level, including students with disabilities, English language learners, economically disadvantaged students, and non-traditional-student participation, data on some special populations are not complete or a not yet available. The attention with regard to access among special populations has been toward non-traditional students, which is to be expected because this type of data has been required in Perkins IV with the consolidated annual reports (CARs), so the process is already established. Data about CTE-program access of all special populations merit attention.

At the implementation level, there are concerns among stakeholders in the HIDOE that the data that are provided are sometimes difficult to use or are not appropriate for informing decisions. One concern is with the use of concentrator data as one of the primary metrics for how well CTE programs are functioning. Concentrators are defined as students who have completed at least two courses in a CTE course sequence. Generally, this is as a way of counting how many students have completed CTE sequences. More specifically, it shows how many students of special populations are completing courses in different CTE programs. One critique of using concentrator data is that the production of that data is too slow to inform decisions about students and programs. Additionally, some stakeholders have expressed some confusion about the difference between concentrators and completers and how those data should be used. Some internal stakeholders expressed concerns that the data available may not be useful for informing implementation decisions.

Summary

The needs having to do with data infrastructure and use include the following:

A. There is a need for both the HIDOE and UHCCS to establish procedures for collecting disaggregated data.
B. To strengthen validity, there is a need to identify what the proposed uses of each type of data are. Without a specified proposed use, it is difficult to identify how well the data can inform that intended use. Thought experiments about how data will be used can serve this purpose.
C. There may be a need for PD targeting HIDOE staffs' skills in locating and using labor market information to inform CTE system improvement. This need might be more pronounced in schools that are not in the academy model.
D. There appears to be a need for the system to reference research or evidence about what is known about the process of career development over the lifespan and to use this knowledge to inform decisions about HIDOE CTE systems and system components.

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Chapter 8
Continued Consultation and Engagement

According to the CLNA template (State of Hawaiʻi Perkins V State Plan, 2020),
the CTE Coordinating Advisory Council (CTECAC) consists of representatives from the University of Hawaiʻi Board of Regents, State Board of Education, and Workforce Development Council with the President of the University of Hawaiʻi and the Superintendent of the HIDOE serving as ex-officio members. The HI-OSDCTE's coordinating and learning hubs (subcommittees) established through the State of Hawaiʻi Perkins V State Plan include representatives of these stakeholders in the ongoing coordinated design, development, and improvement of the state's CTE system. And, the quality criteria require that all Perkins V-funded CTE programs/POS engage at least annually with representatives for these stakeholders at the state and regional levels. (p. 136)

The OSDCTE's subcommittees include the following committees and working groups:

- Policy Committee
  Working group:
    ○ Institutional and Legislative Policies
- Human Capital Committee
  Working groups:
    ○ Leadership & Educator Professional Development & Capacity Building
    ○ Pipeline Development and Enhancement
- Data Management & Technology Committee
  Working group:
    ○ Data infrastructure, Reporting, and Use
- Quality Assurance & Continuous Improvement Committee
  Working groups:
    ○ Monitoring, Evaluation & Feedback
    ○ Accountability
- Sectors & Pathways—Program Quality
  Working groups:
    ○ Counseling and Advising
    ○ Work-Based Learning
    ○ Employability/Transferable Skills

Also according to the CLNA template, there are four activities that the CTECAC and the OSDCTE subcommittees are to be engaged in:

- Authentically engaging with these multiple stakeholders
- Coordinating information flow throughout the CTE system
- Coordinating improvement strategies and activities of the CTE system and CTE program/POS, including the inter-agency and multi-stakeholder design and delivery of improvement activities

- Facilitating learning throughout the CTE system about improvement efforts and use what is being learned to improve the quality of the CTE system, reliably and at scale

The CLNA is intended to address the needs according to these activities, with attention to their efficiency and effectiveness.

Authentically Engaging with the Stakeholders

The stakeholders for this continued consultation are specified as representatives who make up the CTECAC and the OSDCTE's subcommittees' members. We reviewed the OSDCTE's Perkins committee documents and we met with the OSDCTE staff to ask
- if the engagement has occurred,
- if the stakeholders being engaged were appropriate for the goals of the committee, and
- if the engagement was authentic in its solicitation for and use of stakeholders' contributions.

Based on our document analysis and our discussions with the OSDCTE staff, we concluded that stakeholder engagement has occurred as planned with the CTECAC and has begun to occur with the OSDCTE's subcommittees with the exception of the policy subcommittee, which is still being formed. The data also suggest that the CTECAC's stakeholder engagement has been appropriate and authentic. With the other committees (and subcommittees), the membership is as intended, for the most part. Some committees are still identifying points of contact to serve as the lead positions on those committees. The Human Capital Committee has yet to work with the Teacher Education Coordinating Committee (TECC), as the TECC membership is still being arranged—in part because people slated to serve have been addressing covid concerns and reorganizations in their own institutions. In other respects, the stakeholder engagement has been appropriate and authentic.

Coordinating Information Flow Throughout the CTE System

We investigated
- whether the CTECAC and OSDCTE subcommittees were sharing information with each other and with other parts of the CTE system.

These committees have been reporting what has been occurring in their respective units, with the OSDCTE summarizing and reporting out these data back to the committees. This central hub of communication is reported as being efficient and effective. With the exception of the Policy Committee not yet meeting and the TECC not being available to the Human Capital Committee, there appear to be few pressing needs with regard to information flow throughout the CTE system.

Coordinating Improvement Strategies and Activities of the CTE System and CTE Program/POS, Including the Inter-agency and Multi-stakeholder Design and Delivery of Improvement Activities

We consulted the documents and met with the OSDCTE staff to evaluate
- whether the CTECAC and OSDCTE subcommittees were coordinating any improvement strategies or activities, and
- if this coordination was being shared among agencies and stakeholders, whether there was also a process for improving the design and delivery of these strategies and activities.

The CTECAC and OSDCTE subcommittees have been coordinating improvement strategies. In part, this is due to the merging of the OSDCTE with P–20. Staff from both units have engaged in regular meetings to identify how they can better coordinate their work while developing strategies for improving the system to more efficiently implement the Perkins V plan and improve CTE in general. This merging has necessitated securing approval from unions and local and federal boards and providing documentation of the goals and strategies of the two units. With this, the interagency improvement has been attended to and the coordination efforts have helped them to hire new personnel to fill vacant positions.

Regarding the process for improving the design and delivery of these strategies, the coordination has led the HIDOE to identify ways it can better organize its procedures. In part, this is because the HIDOE CTE system is being redesigned. The UHCCS is still coalescing its improvement procedures, which in part is due to its existing faculty and programs, which in many respects are already functioning well. During this past year, the HIDOE has consistently been working on their programs of study, with frequent and regular meetings with the Workforce Development Council. There have been multiple agencies within workforce development (e.g., Dept of Vocational Rehabilitation; American Job Centers) who have worked with HIDOE and UHCC committees in their efforts to enact changes in their programs and be sure their programs are understood by these agencies. At the post-secondary level, the internal stakeholders are working toward getting their non-credit programs approved under Perkins V. While DOE is getting their programs aligned with Perkins V requirements, the UHCCS campuses are making sure their programs are meeting their quality needs and aligning their programs with industry to ensure that people are receiving training for new jobs.

The gap that is in need of attention is the articulation between HIDOE and UHCC programs. Efforts have begun in this process, with committees being charged with different roles in meeting these Perkins V articulation requirements.

Facilitating Learning Throughout the CTE System about Improvement Efforts and Use What Is Being Learned to Improve the Quality of the CTE System, Reliably and at Scale

We asked the OSDCTE staff and consulted documents to identify
- if there was a process for committees to share what they had learned about their improvement efforts, and
- If those committees were using this information to improve the quality of the CTE system.

The response from the OSDCTE was that yes, there is a process and that it has become more codified and structured this past year, with meeting checklists that delineate what has been learned and to prioritize what needs to be further addressed. With regard to improving the quality of the CTE system, the OSDCTE focused on the HIDOE level and stated that with the committees now being linked together, and with the aid of the external consultant agency, the improvement in the design of the CTE system is noticeable. She offered as an example that counselor training is being introduced. This success has led them to rehire the consultant for a third and fourth year to ensure that this process maintains momentum.

Summary

Here is a summary of the needs:

A. Some of the OSDCTE committees are still identifying points of contact to serve as the lead positions on those committees. The Policy Committee has yet to meet. The Human Capital Committee has yet to work with the Teacher Education Coordinating Committee (TECC), as the TECC membership is still being arranged.

B. The articulation between HIDOE and UHCC CTE programs requires attention.

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