Inland Empire Regional Training Consortium (IERTC) Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program

Final Evaluation Report

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ICF

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Acknowledgments

Contents

Executive Summary

Through the Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program, the U.S. Department of Labor (DOL) aimed to increase the ability of community colleges to address the challenges of today's workforce. TAACCCT funding has allowed community colleges to develop or design more than 2,000 programs of study to help adults learn skills that lead to family-supporting jobs. Through this effort, DOL helped strengthen our Nation's institutions of higher education as engines of economic opportunity where adults can succeed in acquiring the skills, degrees, and credentials needed for high-wage, high-skill employment while also meeting the needs of employers in hiring skilled workers. The results presented in this final report reflect the investment that DOL made for TAACCCT programming in the Inland Empire region of Southern California.

IERTC TAACCCT Program Description

The Inland Empire Regional Training Consortium (IERTC) implemented an initiative across 12 colleges in the Inland Empire region of Southern California to expand job training and education, along with access to employment for unemployed and underemployed regional workers.

The IERTC approach used a multi-level partnership model that included manufacturing employers, community colleges, and workforce development entities to supply the advanced manufacturing sector in the Inland Empire with skilled workers. This project also aimed to strengthen and improve the Inland Empire's economy by providing students and unemployed or underemployed workers with pathways to pursue rewarding careers in advanced manufacturing.

Evaluation Design Summary

The primary purpose of the evaluation was to understand the implementation and outcomes achieved from IERTC's TAACCCT grant. The main research questions were as follows:

Implementation

- How was the program implemented?
- To what extent was the program implemented with fidelity?
- What were the successes and challenges of program implementation?
- How was capacity developed in the participating institutions?

Outcomes

- Do the IERTC training programs result in increased industry-recognized certifications and associate degrees?
- Do the IERTC training programs result in increased rates of employment? To what extent do IERTC training programs result in increased rates of employment in an industry or occupation that is related to the program of study?

- Do unemployed participants find employment after receiving the training?

- Do employed participants receive an earnings increase after receiving the training? How much more do students earn, on average, after completing the training?

The evaluation used a mixed-methods approach to understand the IERTC program. The evaluation team gathered multiple sources of data, including interviews with staff, faculty, and partners; student focus groups; and student surveys, at the time of program enrollment and following program completion.

Implementation Findings

Implementation and Fidelity

- Colleges used a market-driven approach when developing curricula that was responsive to industry and student needs. For example, colleges responded to student and industry feedback about the need for more hands-on learning opportunities by revising curricula and adding more on-the-job training opportunities.

- Most colleges used a common set of strategies, including hands-on training, alignment with industry credentials, and training and career supports. Some colleges also offered hybrid online courses and stacked credentials.

- Of the 12 colleges in the consortium, 10 of the colleges offered courses related to advanced manufacturing. One of the colleges offered entrepreneurship courses to teach students how to start their own business. The remaining college engaged in advocacy and outreach work to raise awareness about IERTC.

Successes and Challenges

- In developing training, colleges reported common challenges that delayed program implementation, such as the length of the curriculum approval process, the time required to obtain necessary equipment, and difficulties in hiring staff and faculty.

- Industry partnerships provided valuable contributions across many aspects of program implementation, such as curriculum development, training delivery, and job placement.

Institutional Capacity Building

- Colleges developed curriculum and lab facilities that allowed them to offer advanced manufacturing training or expand training they already offered.

- College outreach and collaboration allowed IERTC to develop partnerships with each other and with the industry that they expected would continue after the TAACCCT grant had ended.

- Colleges reported that they had the capacity to sustain many aspects of their program after the TAACCCT grant ended. For example, all of the colleges serving students reported that they would continue to offer training and had identified alternative funding sources to continue their activities.

Participant Impacts and Outcomes

Education

▪ At pre-test, the majority of the students (77%) reported having either a high school diploma/GED or some college credit. At the 12-month post-test, 95 percent reported having a certificate or associate degree. While the groups surveyed were not identical from baseline to follow-up, this trend demonstrates that students went through the program with the intention of furthering their education, with the majority receiving a certificate (e.g., Occupational Safety and Health Administration, U.S. Environmental Protection Agency) or an associate degree.

Employment

▪ Prior to program enrollment, 40 percent of students reported being employed full-time in their current field of study, and students had an average hourly salary of $18.17. Slightly higher proportions of students reported being employed full-time for wages in their field of study following program completion (54% at the 6-month and 52% at the 12-month follow-ups). Average salaries after program completion were $20.05 at the 6-month follow-up ($1.88 difference from baseline, representing a 10% salary increase) and $19.74 at the 12-month follow-up ($1.57 difference from baseline, representing an almost 9% salary increase).

▪ Prior to program enrollment, almost half of the students (47%) were unemployed, while approximately one-fifth of the respondents were unemployed at the 6-month (18%) and 12-month (21%) follow-ups, demonstrating a large decrease in unemployment from pre- to post-test among this sample of students (62% decrease from baseline to the 6-month follow-up and 55% decrease from baseline to the 12-month follow-up).

Barriers to Employment

▪ Students experienced barriers to employment, and these persisted even after program participation. The most common barriers to employment at baseline—lack of technical skills and lack of relevant work experience—were also the most commonly reported barriers after employment. Future research should examine how to address these barriers to improve outcomes in employment among this population.

Benefits and Public Assistance

▪ At pre-test, about one-third (31%) of the students reported they had health insurance through a current or former employer or union, whereas at the 6-month and 12-month follow-ups, about one-half (48%) and more than half (58%), respectively, reported having health insurance through a current or former employer or union. There also were changes in the proportion of participants using public assistance from pre- to post-test, with 31 percent of respondents at pre-test using Supplemental Nutrition Assistance Program (SNAP) benefits, whereas half or less of that proportion used SNAP at the 6-month (8%) and 12-month (6%) follow-ups. These findings indicate that students were more likely to have health insurance through an employer and less likely to rely on public assistance at post-test, when compared to the baseline.

Conclusions

Program Implementation

- **Program Implementation and Fidelity.** During the TAACCCT grant, the IERTC colleges developed programs that trained students to become part of the workforce that would address high-need areas of advanced manufacturing. While most colleges used many of the core strategies initially planned, such as industry partnerships, industry-relevant credentials, and academic and career support services for students, certain strategies, such as stacked credentials, online learning, and workforce agency partnerships, were used at a smaller number of colleges.

- **Program Successes and Challenges.** There were various reasons why programs differed from their original implementation plans. Common challenges included delays in hiring staff, equipment purchasing, course approvals, and feedback about job market trends and the types of skills needed to address those trends. Components that improved a college's success included having industry partnerships, support from the lead college and fellow consortium members to navigate grant activities and share best practices for program implementation, and the ability to leverage additional resources provided by their college and other grants to implement program activities and meet student needs.

- **Institutional Capacity Building.** During the grant, colleges developed the capacity to provide workforce training. By the end of the grant, most colleges felt that they had the necessary curriculum, equipment, and facilities to operate their existing programs. However, some explained that to further adapt and expand their curricula, it would require additional resources and time. Most colleges felt that they had buy-in from their home institutions and had institutionalized some elements of their program into their college, such as getting funding for each enrolled student and utilizing campus support services. Colleges had built up their capacity to expand awareness of their programs to the industry and local workforce through community outreach. They also established strong partnerships with other IERTC colleges and local industries that they expected to continue and grow into other opportunities in the future.

Student Outcomes

- Given the low response rate to the survey, and program staff's challenges in monitoring employment outcomes, it is difficult to quantify the program impact with the data available. Despite these challenges, the evaluation demonstrated how the program improved employment outcomes for students in the region. The proportion of students who reported being unemployed decreased from the beginning of program participation to the 6 and 12 months following program completion, and some students received promotions or changed jobs during the follow-up time period. After program participation, a smaller proportion of students received public assistance, while a higher proportion reported receiving health insurance through their employer. However, employment barriers remained for many participants surveyed from baseline to follow-up, particularly around lack of relevant work experience and lack of technical skills.

Implications for Workforce Training Programs

The findings from the evaluation had multiple implications for workforce training initiatives.

- **To prepare students for jobs, advanced manufacturing training should include hands-on instruction and opportunities for on-the-job training.** Throughout the evaluation, stakeholders spoke about the value of hands-on training, which involves project-based instruction and assessment, and opportunities to use state-of-the-art industry tools and equipment. These types of experiences help students learn and prepare for what they will do on the job.

- **Providing academic and career supports is necessary for student success, especially when targeting a population with high employment barriers.** While students felt that the programs helped them with work-related skills, some reported continued barriers to employment. Like IERTC, many workforce programs target diverse populations with various barriers to employment. Providing continued supports during and following program enrollment (e.g., soft skills coaching; career guidance and job placement; financial aid to pursue an associate degree, certificate, or 4-year degree), whether through the training program or a partner, helps support students after they complete the training.

- **Responsiveness to industry is important but can be challenging given the time and financial investment to develop new programs.** A key strategy of the consortium was to adapt their curriculum based on feedback from the industry and students. However, colleges also acknowledged the significant time and cost investments necessary to create new programs, which in some cases delayed program initiation and student enrollment. It is important for program administrators and funders to plan for enough time for curriculum approvals (especially with for-credit programs), equipment purchases, hiring and training faculty, and student recruitment.

- **Partnerships are critical for workforce training programs and benefit from effective communication and aligned interests.** IERTC showed that partners can play different roles in a program, such as teacher, advisor, employer, or funder. Partnerships also can vary in intensity or change over time, but still bring value to the program and help boost progress. To maintain partnerships, it is important to have continued communication and identify where interests and opportunities align. In consortiums, such as IERTC, early communication to make sure that everyone is on the same page and understands expectations is critical.

Introduction

Recent reports on the regional economy of the Inland Empire demonstrate how business activity (e.g., employment, income, economic output) has continued to grow steadily over the past 3 years, and every industry has experienced job gains.[1, 2] For the advanced manufacturing sector, such as electronics and electric technology, drafting technology, and manufacturing and industrial technology, it is projected that a range of job openings (from 7 to 661) will be available on an annual basis.[3] Attempting to fulfill the high demand, community colleges in the Inland Empire have enrolled hundreds of students and awarded hundreds of degrees and certificates between 2013 and 2016, doing their part to contribute to the continued economic growth.

Using the resources from the U.S. Department of Labor's (DOL) Round 4 Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant, the Inland Empire Regional Training Consortium (IERTC) approach used a multi-level partnership model (see Appendix 1), with manufacturing employers, community colleges, and workforce development entities, to address the advanced manufacturing sector's needs for skilled workers in the Inland Empire and to be a sustainable resource for the manufacturing industry in the future. As its long-term goal, IERTC charged itself with strengthening and improving the Inland Empire's economy by providing students and unemployed and underemployed workers with pathways to pursue rewarding careers in advanced manufacturing. Leading the charge of IERTC, Chaffey College responded by coordinating across a consortium of colleges in the Inland Empire that developed innovative programming and curricula, and by creating the Industrial Technical Learning Center (InTech Center), which focuses on advanced manufacturing applications.

The following report represents ICF's partnership with IERTC to evaluate and document the implementation and impacts achieved from this multi-year TAACCCT program.

IERTC TAACCCT Program

The Consortium Structure

IERTC was made up of 10 community colleges: Barstow Community College, Chaffey College, College of the Desert, Crafton Hills College, MiraCosta College, Mt. San Jacinto College, Norco College, Riverside City College, San Bernardino Valley College, and Victor Valley College, and two 4-year universities: University of California, Riverside, and California State University, San Bernardino.

Eleven of the colleges[4] in the consortium were engaged in providing direct education to students. These colleges provided a combination of for-credit, not-for-credit (e.g., incumbent

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[1] Inland Empire Business Activity Index. Prepared by the UCR School of Business. Center for Economic Forecasting and Development. Quarter 1, 2018. Retrieved from https://ucreconomicforecast.org/wp-content/uploads/2018/05/Business_Activity-Index_Q1_2018_5_10_2018.pdf

[2] Inland Empire Business Activity Index. Prepared by the UCR School of Business. Center for Economic Forecasting and Development. Quarter 2, 2018. Retrieved from https://ucreconomicforecast.org/wp-content/uploads/2018/08/Business_Activity_Index_Q2_2018.pdf

[3] Inland Empire/Desert Region: Sector Profile Reports. Prepared by the Center of Excellence, 2017. Retrieved from http://coeccc.net/Search.aspx?id=1491

[4] This includes all colleges except University of California, Riverside, which focused on program advocacy and outreach.

worker training through direct partnerships with employers), and non-credit courses. Overall, the colleges focused on developing short-term (certificate) intensive trainings in addition to a few long-term trainings (associate degrees), which were open to the public, targeting TAACCCT participants primarily, as well as other unique participants.

Three institutions in the consortium focused on specific capacity-building activities. The University of California, Riverside, played an advocacy and public relations role in raising the profile of IERTC regionally; Crafton Hills College was able to review and revise existing pre-engineering coursework (e.g., course on 3-D printing) to align to industry standards; and MiraCosta College worked with California State University, San Marcos, to explore the creation of a new Engineering degree, with an emphasis on working with the Maritime Technology sector. Appendix A provides an overview of the IERTC colleges and universities, as well as a description of their program and target population.

The IERTC Administrative Structure

Throughout the grant's lifespan, Chaffey College served as the lead for IERTC, with three grant-funded staff (TAACCCT Project Director, TAACCCT Project Coordinator, and TAACCCT Data Manager) at the helm of this collaborative effort. As the lead agency, Chaffey College provided guidance, coordinated all grant-funded activities, monitored the implementation of TAACCCT across all 12 colleges, and served as the liaison between the colleges and DOL and other external entities (e.g., third party and national evaluation teams).

Chaffey College provided a forum through IERTC quarterly meetings for the colleges to discuss matters of shared interest, including best practices and implementation challenges. The quarterly meetings also were used to share updates from DOL with the colleges.

Each college in the consortium was administratively independent and led by a grant-funded Project Manager, and in some cases, a Data Manager. Some colleges also had a Project Coordinator who provided support to the Project Manager and/or Data Manager.

These program staff played a vital role in the operation of IERTC and the implementation of their TAACCCT programs. With their years of experience implementing advanced manufacturing programs and working with incumbent workers, these program staff were able to make connections to the industry to help with developing and revising curricula and providing career guidance and placements for students.

Grant Activities

Because a key strategy of IERTC was to develop a regionally coordinated approach for the vast geographical area of the Inland Empire, colleges employed different combinations of strategies to align to the workforce needs in their immediate area that contributed overall to the broader regional strategy. Each college's implementation strategy included the deployment of some or all of the following:

- Innovative program offerings that addressed the local industry's needs
- Targeted recruitment and enrollment
- Student support services (e.g., tutoring, transportation, child care)

- Career guidance support (e.g., soft skills training, resume preparation, comprehensive employment plans)

- Career placement

- Baseline and competency-based assessment

- College and regional capacity building (e.g., staff, faculty, and/or instructor training)

- Hands-on instruction and use of online and mobile technology for training delivery

- Collaboration with industry and workforce organizations

- Trainings that offered industry-relevant credentials, and possibly stacked credentials

Evaluation Framework

Over the course of the grant, ICF examined the implementation and impact of the consortium's planned interventions on participants' outcomes through a mixed-methods approach. This approach combined evidence from an implementation evaluation, examining the rich experiences of faculty, students, partners, and employers involved in IERTC, with data collected from an outcomes evaluation.

Implementation Study Methods

The purpose of the implementation study of IERTC was threefold: (1) to assess the fidelity of the project to the originally proposed model; (2) to examine the different aspects of IERTC's program delivery and highlight best practices, as well as challenges; and (3) to measure the capacity that was built within the consortium as they executed their work plan in their Inland Empire communities.

The implementation study focused on the following broad themes that correspond to the implementation research questions (Exhibit 1):

- *Describing the current program's implementation process.* Overview of grant implementation and changes to the program structure.

- *Assessing implementation fidelity.* The extent that each of the colleges deployed and implemented their programs according to their original work plan and the overall IERTC project model.

- *Identifying successes and challenges.* Factors that contributed to the successes and challenges of IERTC implementation, both at each college and across the consortium.

- *Evaluating institutional capacity building.* Enhancements to each campus's institutional capacity, including completion of professional development for faculty and staff, and use of continuous feedback loops to make critical decisions.

Exhibit 1: Implementation Analysis Research Questions

Category	Research Questions
Describing the program's implementation process	- How is the particular curriculum selected, used, modified, or created? - How has the program improved or expanded using grant funds? What delivery methods are offered? What is the program's administrative structure? What support or other services are offered? - Is an in-depth assessment of participants' abilities, skills, and interests conducted to select participants for the grant program? Is an assessment of participants' logic and reasoning knowledge and abilities a partial condition to program admission? What assessment tools and processes are used to screen the participants? Are the assessment results useful in determining the appropriate program and course sequence for participants? - Did partnering with the Workforce Investment Board (WIB) help to facilitate and create a centralized intake process? What role did the WIB play in the intake process? - What contributions does each partner make in terms of program design, curriculum development, recruitment, training, placement, program management, leveraging resources, and commitment to program sustainability?

Category	Research Questions
Assessing implementation fidelity	▪ How closely do the programs replicate the major and ancillary components of the IERTC model? ▪ What changes were made to the implementation strategy? Why? ▪ What are the variations in implementation across the various colleges?
Identifying successes and challenges	▪ What program outputs are generated throughout the life of the grant? What barriers hinder output achievement? What factors unexpectedly improve output achievement? ▪ What are the successes and obstacles to program performance? ▪ How should program processes, tools, or systems be modified to improve performance? ▪ What factors contribute to partners' involvement or lack of involvement in the program? Which contributions from partners are most critical to the success of the grant program? Which contributions from partners have less of an impact? ▪ How satisfied are program partners, staff, and participants with the program? Why?
Evaluating institutional capacity building	▪ What are some successful elements that build the institutional capacity of consortium members (e.g., new faculty, professional development for faculty and staff, new equipment)? ▪ How can the program expand or enhance institutional capacity? ▪ Are continuous feedback loops being utilized to share information and make critical decision about IERTC?

Data Collection Methods

In the first year and a half of the program, the evaluation team conducted calls with program staff to learn about how their programs developed, which informed the evaluation plan. This evaluation report focuses on findings from more formal data collection during the last 3 years of the grant, which consisted of phone interviews and site visits. In each round, site visits were conducted with programs that were already enrolling students and were ready to participate in a 1- or 2-day visit. During these visits, the evaluation team held individual and group interviews with program staff, faculty, workforce agency partners, and employer partners. "Faculty" refers to the trainers or instructors who taught the TAACCCT courses. The evaluation team also held focus groups with students in the program. Interviews were conducted over the phone for those not available to attend the site visit. For colleges that were either not enrolling students or were of a small scale, the evaluation team conducted a single phone or in-person interview with one or two college staff. Exhibit 2 shows the type of data collection used with each site for the final 3 years. One college, the University of California, Riverside, was not included in data collection because it was not involved in directly serving students.

ICF used the research questions in the original evaluation plan to guide the development of the data collection protocols. Each year, ICF refined the data collection protocols based on lessons learned from prior years. The focus of the protocols also changed based on the program stage. The second year's protocols focused more heavily on program development, the third year's protocols focused more on program improvement and implementation, and the final year's protocols focused more on sustainability.

Exhibit 2: Colleges Included in the Implementation Data Collection

College	Data Collected		
	Year 2	**Year 3**	**Year 4**
Barstow Community College	Site Visit	Site Visit	Site Visit
Chaffey College	Site Visit	Site Visit	Site Visit
College of the Desert	Site Visit	Site Visit	Site Visit
Norco College	Site Visit	Site Visit	Site Visit
San Bernardino Valley College	Site Visit	Site Visit	Site Visit
MiraCosta College	Interview	Site Visit	Site Visit
Mt. San Jacinto College	Interview	Site Visit	Site Visit
Riverside City College	Interview	Site Visit*	Site Visit*
Victor Valley College	Interview	Site Visit	Site Visit
Crafton Hills College	–	Interview	Interview
California State University, San Bernardino	Interview	Interview	Interview

* Student focus groups were not conducted.

Analysis

Upon completion of the site visits, data were cleaned using the recordings from the interviews and focus groups. ICF also developed a book of implementation codes and used them to review the transcripts and identify excerpts associated with key topics (e.g., student supports). After coding the notes, the evaluation team reviewed text associated with the codes and identified themes related to the implementation research questions. The data in this final report used data coded from years 2, 3, and 4 of the evaluation.

Outcome Study Methods

The outcome study used a pre-test/post-test design to assess the impact that the IERTC colleges had on individual participants by measuring their employment outcomes before and after their involvement in the training.[5] There were three phases of data collection: baseline (administered in the first semester of student enrollment), and 6- and 12-month follow-ups after program completion. The follow-up surveys assessed participants' certifications and higher education degrees, employment outcomes, wages and earnings, work responsibilities, and job quality achieved 6 months and 12 months post-training. To measure outcomes, the evaluation team tracked key indicators, such as student employment and earnings, before and after students completed a training course. We initially planned to match students from pre- to post-test, but due to the low response rate and small sample size, we were unable to use a matched comparison.

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[5] See Appendix D for a sample IERTC Baseline Survey, and Appendix E for a sample follow-up survey.

The outcome study focused on the following set of research questions:

- Do the IERTC training programs result in increased industry-recognized certifications and associate degrees?

- Do the IERTC training programs result in increased rates of employment?

- Do unemployed participants find employment after receiving the training?

- Do employed participants receive an earnings increase after receiving the training?

To address the key research questions, the evaluation team worked with 11 IERTC colleges[6] to survey students at baseline and follow-up. These colleges were selected for the outcome study because they provided direct services to students (e.g., trainings, classes). Baseline survey data collection began in Fall 2016 and ended in Spring 2018. Follow-up data collection for both the 6- and 12-month follow-up surveys began in Fall 2017 and was completed in Summer 2018.

Outcome Study Sample

Staff at each college administered the baseline survey to five cohorts of students (Fall 2016, Spring 2017, Summer 2017, Fall 2017, and Spring 2018). Among the colleges that participated in the baseline study, students were asked to complete the baseline survey in their first semester of taking courses. Multiple methods were used to collect baseline data, including hardcopy forms in the classrooms and computer labs, and online through emailing a survey link. The majority of the baseline data were collected during class time. For each participating college, ICF mailed physical copies of the baseline survey to the TAACCCT point of contact, along with directions for administering the survey and a return envelope in which staff could mail back the completed surveys. The directions read to students by the staff member administering the survey explained why they were asked to complete the baseline survey and how their participation was voluntary and their information would be kept confidential. Once collected, data were entered into SPSS for analysis. A total of 623 students submitted a response to the baseline survey. Of these, 66 reported that they either did not want to participate in the survey, were not a minimum of 18 years of age, or previously completed the survey, resulting in a baseline sample size of 557.

To administer the follow-up surveys, each college sent a "completers list" to ICF, which included email addresses for students and when they completed their program of study. The follow-up surveys were sent to students' email addresses beginning in Fall 2017 through Summer 2018. There were two follow-up survey time points: 6 months and 12 months post program completion. It should be noted that the completers list did not necessarily only include the same participants from the baseline. While there was some overlap, due to the small sample sizes, we were unable to make comparisons among this group of students. Both follow-up surveys included a series of questions about whether students had completed their programs of study, and if so, how long ago. Those who had completed their programs 0–5 months ago were not eligible to complete the survey. They were redirected to the end of the survey and, if they consented, were re-contacted at a later date. Students who had completed their program 6 months ago were asked to indicate the month and year of program completion. Once all data

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[6] Participants in the outcome study were enrolled in one of the 11 colleges that provided directed services to students: Barstow, Cal State San Bernardino, Chaffey, College of the Desert, Crafton Hills, MiraCosta, Mt. San Jacinto, Norco, Riverside City, San Bernardino Valley, and Victor Valley.

were collected, data were entered into SPSS for analysis. A total of 400 students submitted a response to either the 6- or 12-month survey. Of these, 44 percent (n=176) finished the program within 0–5 months or were not at least 18 years of age, leaving a sample size for the follow-up of 224 (n=94 for the 6-month follow-up; n=130 for the 12-month follow-up).

Limitations

Despite positive outcomes in employment and wages, the evaluation team was unable to establish causality due to the limited sample size and the amount of missing information, particularly in the follow-up study. Other limitations included:

- With a pre-test/post-test design, there is concern about a low response rate for the baseline/follow-up surveys among the students. While several colleges assisted ICF in collecting baseline information, which improved the number of completed baseline surveys, it was a challenge to gather follow-up study information because students were no longer on campus and emails were no longer working. The incentive for the follow-up surveys did help, although we were still left with significant missing data.

- As previously mentioned, there was a lack of available college entry data to make comparisons between the participants and similar populations, so we were unable to do a matched group evaluation design. The students at baseline were not matched to students who were on the completers list. While there was some overlap, the sample size was small.

- While Unemployment Insurance (UI) data were intended to be used to create a matched comparison group, we were unable to access UI data for use in this study.

Student Background

Student background information included demographics (e.g., race, marital status) for the study sample at baseline, 6-month follow-up, and 12-month follow-up. Due to large numbers of missing data, missing responses are not included in any of the calculations for the outcome study sample.

Demographics

Exhibit 3 shows the demographics of students prior to TAACCCT enrollment and at both follow-up periods. At baseline, the majority of the students were male (n=470, 89%), had never served in the military (n=454, 88%), and reported not having a disability (n=448, 85%). More than half (n=289, 55%) of the respondents identified as Hispanic or Latino, while nearly half (n=189, 47%) identified as white. Furthermore, nearly half of the participants reported having never been married (n=242, 47%), while about one-third were married (n=157, 30%).

The demographics of the students following completion of the TAACCCT program demonstrated that participants were similar regarding demographics from baseline to follow-up. For both 6- and 12-month follow-up respondents, the majority of the students were male (n=62, 83%; n=93, 85%, respectively), had never served in the military (n=66, 88%; n=96, 87%, respectively), and reported not having a disability (n=65, 87%; n=97, 88%, respectively). One difference from baseline to follow-up is that while more than half of the students at baseline identified as Hispanic or Latino, about one-third did so at the 6-month follow-up (n=42, 36%) and 12-month follow-up (n=40, 36%). Less than half of the respondents (n=30, 40%; n=49, 45%, respectively) identified as white. Furthermore, more than half of the 6-month survey respondents reported having never been married (n=39, 52%), while only about one-fourth of the 12-month respondents reported the same (n=32, 29%).

Exhibit 3: Participant Demographics

	Baseline Percentage*	6-Month Follow-up Percentage (N=75)[†]	12-Month Follow-up Percentage (N=110)[‡]
Gender			
Male	89%	83%	85%
Female	10%	12%	15%
Do Not Wish to Disclose	1%	5%	1%
Other	< 1%	0%	0%
Hispanic or Latino			
No, Not Hispanic or Latino	37%	56%	54%
Yes, Hispanic or Latino	55%	36%	36%
Do Not Wish to Disclose	8%	8%	10%
Race			
American Indian or Alaska Native	4%	1%	4%
Asian	3%	3%	8%
Black, African American	10%	8%	5%

	Baseline Percentage*	6-Month Follow-up Percentage (N=75)[†]	12-Month Follow-up Percentage (N=110)[‡]
Native Hawaiian or Other Pacific Islander	1%	3%	0%
White	47%	40%	45%
More Than One Race	17%	23%	17%
Do Not Wish to Disclose	18%	23%	22%
Disability			
Yes	7%	5%	7%
No	85%	87%	88%
Do Not Wish to Disclose	7%	8%	5%
Marital Status			
Married	30%	27%	44%
Domestic Partnership	4%	0%	2%
Widowed	< 1%	0%	0%
Divorced	6%	8%	11%
Separated	2%	3%	3%
Never Married	47%	52%	29%
Do Not Wish to Disclose	6%	9%	7%
Other	4%	1%	5%
Veteran Status			
Never Served in the Military	88%	88%	87%
Only on Active Duty for Training in the Reserves or National Guard	1%	3%	1%
Now on Active Duty	1%	1%	1%
On Active Duty in the Past but Not Now	10%	8%	11%

Source: IERTC Baseline data, Fall 2016–Spring 2018; IERTC Follow-up data, Fall 2017–Summer 2018.

* There were 24 missing responses from the baseline Gender data (N=531), 32 from the Hispanic or Latino data (N=523), 149 from the Race data (N=406), 31 from the Disability data (N=524), and 39 from the Marital Status and Veteran Status data (N=516).

[†] There were 17 missing responses from the 6-month follow-up demographic data.

[‡] There were 20 missing responses from the 12-month follow-up demographic data.

Implementation Study Findings

Program Development

As shown in Exhibit 4, each year, more programs started enrolling students, and by the fourth year, all of the 11 sites expected to serve students had done so. The variation in when programs started can be explained by differences across the colleges' programs. In developing their programs, colleges started at different stages of development. Colleges that did not already have a curriculum, equipment, or faculty that they could use in the TAACCCT program may have taken more time to develop the capacity to train students. Another factor appeared to be whether the college offered for-credit programs. These types of programs required longer to start because colleges had to undergo approval in the California State Chancellor's office before offering and advertising for these courses.

Exhibit 4: Total Number of Colleges That Serve Students*
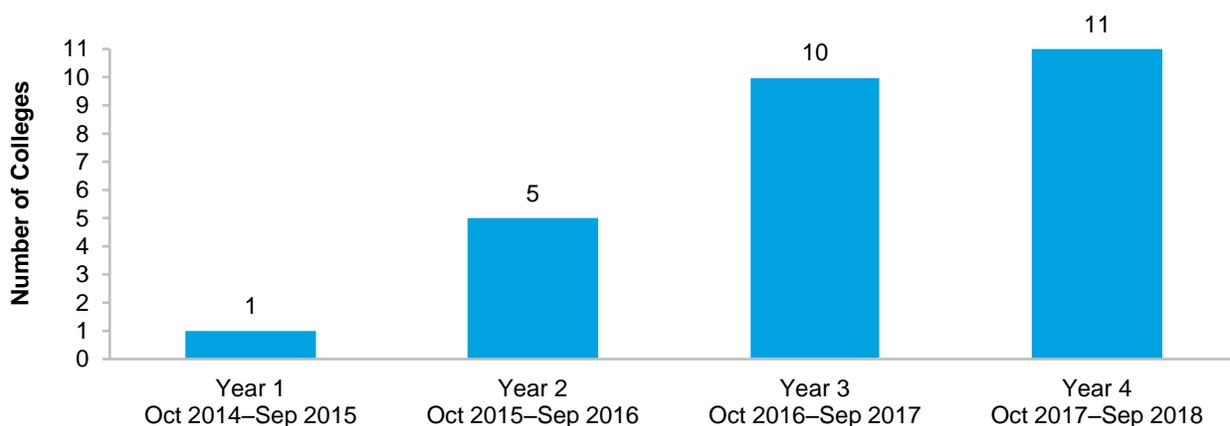
* Total N=11 colleges.

Source: Year 2, 3, and 4 site visit and interview data.

During the grant, there were common challenges that delayed implementation, including time to develop a curriculum, acquire equipment, and get the curriculum approved. The hiring process also was delayed at some colleges, in part due to college regulations for hiring staff and faculty. In the final year, staff shared how these challenges continued, even after the courses were developed, due to technological developments requiring them to purchase new equipment, changing industry needs, and the need to obtain additional space.

In addition to course development, there were other main program development activities that were central to the grant, such as the development of training labs and facilities. For example, the InTech Center was developed and opened in Spring of the second year of the grant. The InTech Center served as a training hub that offered career-focused training for students. It was located on the campus of the InTech Center's employer partner, California Steel Industries. There also were two studies about the engineering curriculum, which were planned for the initial grant activities. At Crafton Hills College, they engaged in planning activities that led to the creation of a 3-D drafting course in the final year of the grant that was offered to students at their college. At MiraCosta College, they conducted a needs assessment for an engineering program in their region through

surveying employers and partnering with local college staff and industry, and used the assessment to develop plans and identify funding for program development.

Over the 4-year grant, the colleges developed curricula in a manner that would meet the needs of the industry and workers in the region. Colleges used a market-driven approach to developing their curriculum that was responsive to industry and student interests. This was important because changes in job markets and technology can quickly change employer hiring needs over time. Colleges highlighted the importance of using different types of data to refine their curricula over time, such as employer and student feedback and participant assessment data (see Participant and Program Assessment).

Even once the curricula were developed, colleges continued to use industry feedback to make changes where they could, to both serve employers and to make their students more competitive for jobs. One college, for example, responded to employer feedback by incorporating an additional certification into a course. Employers, in turn, recognized how the colleges had incorporated their input, which they felt made the training more relevant to their needs. In the third and fourth years of the grant, the sites talked about expanding opportunities for hands-on and work-relevant trainings in response to employer and student feedback. For example, some colleges expanded student opportunities for internships and apprenticeships, and created new in-class project and lab-based opportunities. Colleges also modified their courses in response to student feedback. For example, one college extended the length of the courses so that they were a more reasonable pace for the students. One program staff member described how incorporating student feedback is a regular part of their program: "After each cohort, we'll take a look at the student evaluations and look at the comments and then make adjustments if we need to."

Curriculum and Instruction

The training courses were a core component of program implementation. While the curriculum design depended on the program area, there were a few strategies that colleges were expected to use. Specifically, colleges would offer instruction that was hands-on and provided access to technology-enabled training and laboratories. Furthermore, the program would offer industry-relevant credentials, such as recognized certifications and associate degrees to make students employable. Students could earn stacked and latticed credentials, which allow students to receive multiple credentials over time and to receive training for initial credentials that will prepare them for later training in other credentials.

Stakeholders' descriptions of the developed trainings showed how these principles had been implemented at the colleges. In the courses, faculty consistently used an interactive approach to learning and often courses would include both lecture and hands-on learning formats. Faculty and students spoke of the value of hands-on instruction. This type of instruction was helpful for allowing students to practice the skills that they would use in the workplace, which could include use of industry equipment and tools. While online learning was an original component in the grant, it was more common during the final two years as colleges considered how to increase the accessibility of their classes and allowed the participants the ability to work at their own pace. Specifically, some colleges began developing hybrid online courses, which were offered both in- person and online. This echoed a trend in community colleges in California toward

expanding online learning opportunities, for example, with California's plan at the time to open an online community college in Fall 2019.

As shown in Exhibit 5, the colleges offered for-credit, not-for-credit, and non-credit programs. The type of credentials earned included college certificates or associate degrees, and certifications (Exhibit 6). Most programs also prepared industry-relevant credentials, whether earned during the program itself or earned through taking an outside exam. Some of the sites also offered stacked credentials, which allowed students to earn an industry credential relatively quickly, but continue to add to their qualifications if they chose to do so.

Exhibit 5: Type of Programs Offered*
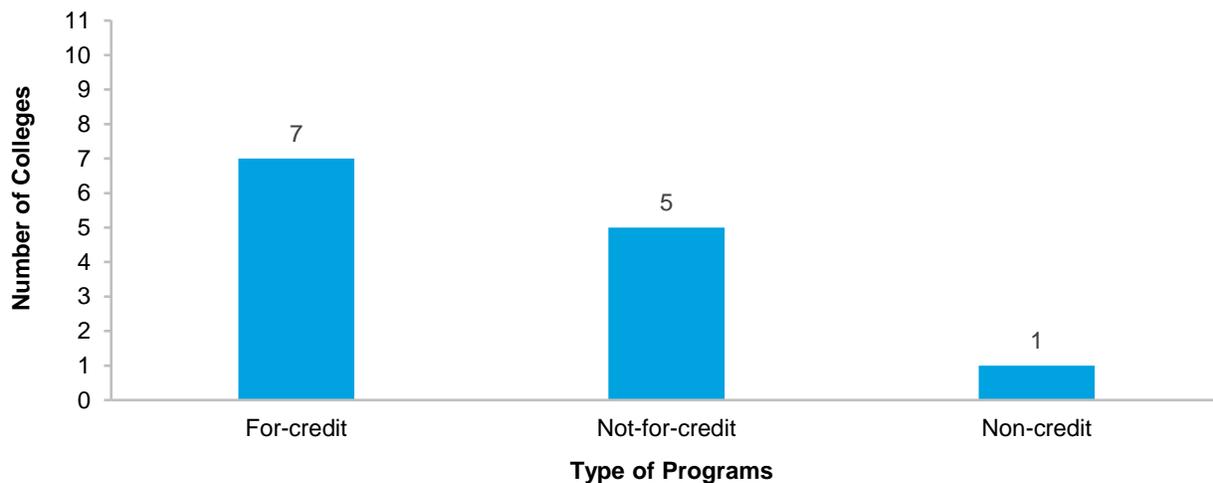
* Total N=11 colleges.
Source: Year 4 site visit and interview data.

Exhibit 6: Type of Credentials Offered*
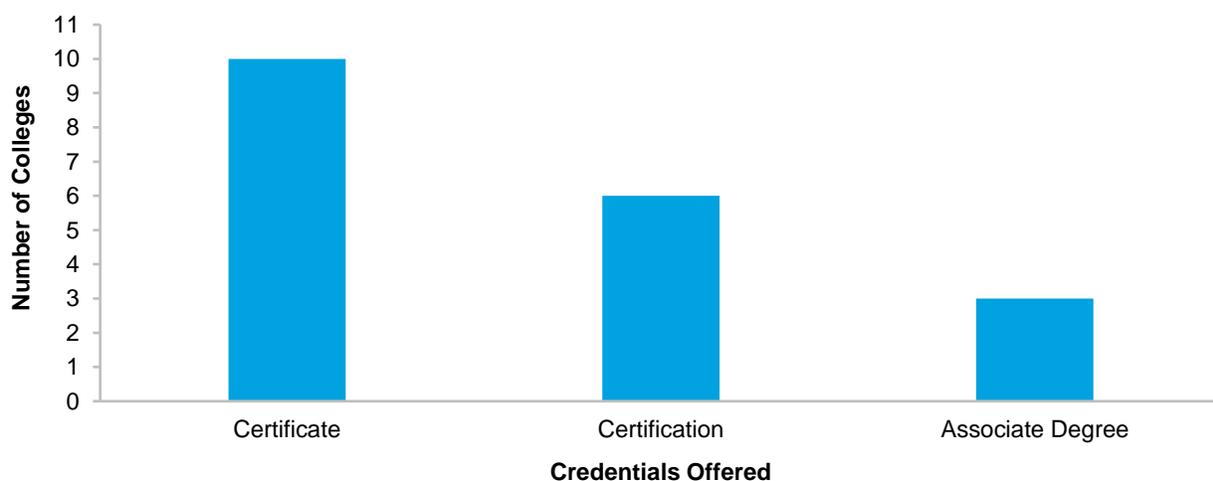
* Total N=11 colleges.
Source: Year 4 site visit and interview data.

Recruitment and Enrollment

Once colleges started enrolling students, they used various outreach methods to attract them. Exhibit 7 provides examples of these strategies, which allowed colleges to engage an increasing number of participants over the course of the grant. Based on staff and student comments, it appeared that the most effective strategies were in-person events, referrals through one's employer, and word-of-mouth from others known by potential students. College staff and students talked about how what often drew students to the program was hearing about the employment

> **Exhibit 7: Participant Recruitment Methods**
> - In-person events
>   - Training sites
>   - Career/Job fairs
>   - Presentations/Outreach in community or educational settings
> - Referrals from employers
> - Word-of-mouth
> - Partnership outreach to industry, workforce agencies, and other colleges
> - Website
> - Flyers
>
> Source: Year 2 and Year 3 data.

opportunities that the program offered. As one staff member shared, "When we talk to people, what gets them excited is that they can get through this program in a year and know that they can walk away and get a job right away."

Exhibit 8 shows the ways in which students heard about their program or class. Approximately one-third (n=188, 35%) of students heard about the program directly from the college, while a smaller proportion of students (n=151, 28%) heard about it through a friend or acquaintance. An additional 16 percent (n=87) heard about it from another source. These results suggest that even though colleges recruited students from outside of the college, they also are able to recruit many students through the college itself, where students are already enrolled in classes.

**Exhibit 8: How Students Heard About the Program (N=543)***
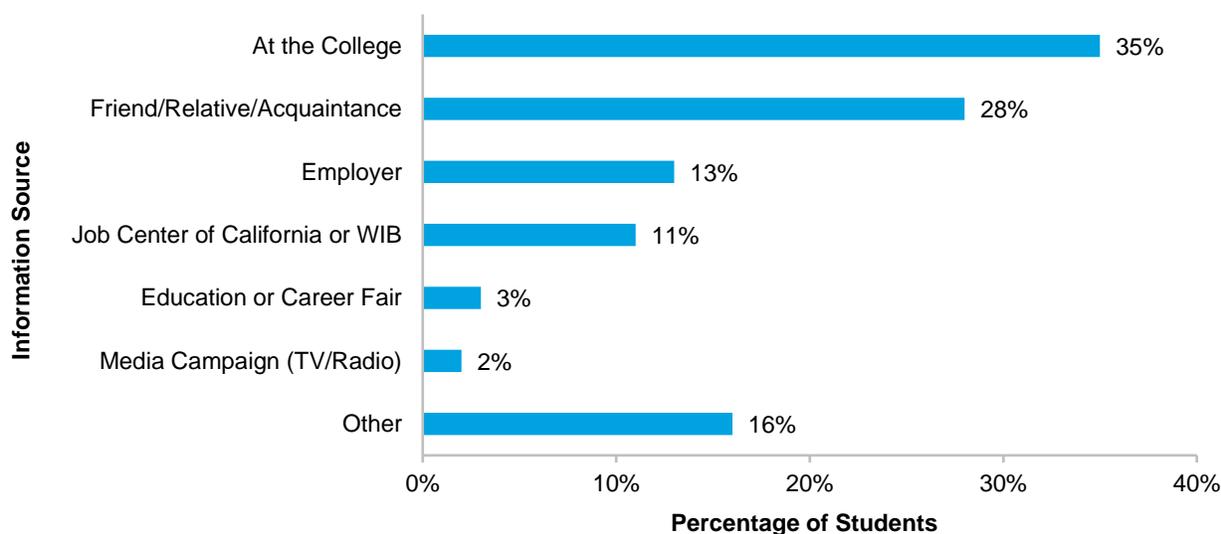
* Note: Total N=543 after removing 14 missing responses.
Source: IERTC Baseline data, Fall 2016–Spring 2018.

Under the grant, colleges were expected to target Trade Adjustment Assistance (TAA)–eligible workers, veterans, and other traditionally underserved populations. However, colleges expanded outreach beyond these groups to broaden participation in their program. In recruiting students, almost all of the colleges (n=10) targeted incumbent workers, and most (n=9) targeted college students (see Exhibit 9). A few colleges also targeted high school students (n=3) and other groups (n=4) (e.g., unemployed individuals and veterans, persons returning from prison). Sites were not systematically asked about the range of different groups they targeted, so it is unclear, for example, how many targeted veterans and TAA-eligible students specifically. The high number serving both incumbent workers and college students highlights how the programs targeted many different types of students, including those new to a career, those who have a job but are looking for a profession, and those who already have jobs but who are looking for further career advancement and training in their current position.

Exhibit 9: Target Population*
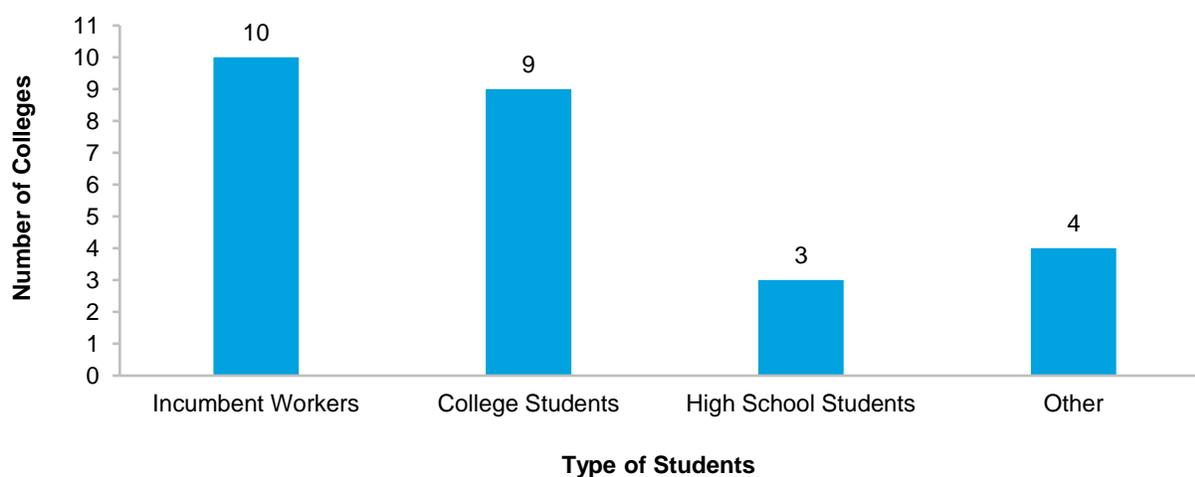
* Note: Total N=11 colleges.
Source: Year 4 site visit and interview data.

In the baseline survey, students were asked about their enrollment status at the time of program entry. More than one-third of the students (n=205, 40%) were enrolled full-time, while a higher proportion were enrolled part-time (n=256, 49%), taking classes 1 or 2 days during the week or on the weekends (see Exhibit 10).

Exhibit 10: Enrollment Status of Students (N=518)*
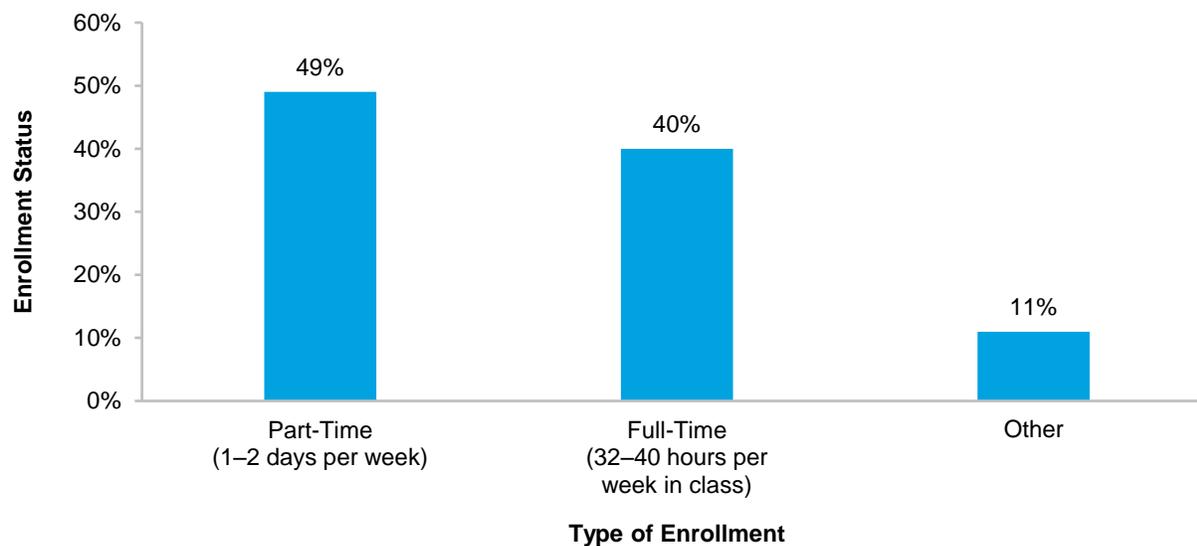
* Note: Total N=518 after removing 39 missing responses.
Source: IERTC Baseline data, Fall 2016–Spring 2018.

In the program, colleges tracked indicators on student participation and outcomes, and the totals across the consortium were reported to DOL. This section shows how the participant enrollment numbers changed during the grant period and how they compared to IERTC's original targets, focusing on three of the metrics: number of participants enrolled, number who completed a program, and number who earned credentials. Only data from the first 3 years of the grant are reported since that was what was available at the time the report was being developed. For each year, the number of "participants enrolled" referred to the number of new participants that enrolled each year that had not enrolled in previous years. As shown in Exhibit 11, the number of new participants enrolled greatly increased in Year 2 and then slightly decreased in Year 3, but still exceeded the expected metric. It is possible that this slowed growth may reflect a limited enrollment capacity for some colleges, or suggest that program expansion slowed for some schools as the grant progressed. Also, this metric only includes new participants who enrolled in Year 3, and did not include students who had enrolled previously and remained in the program. Therefore, the overall number of participants enrolled in the program may still have grown as new students were added to the program.

Exhibit 11: Number of New Participants Enrolled, Years 1–3 of the Grant*
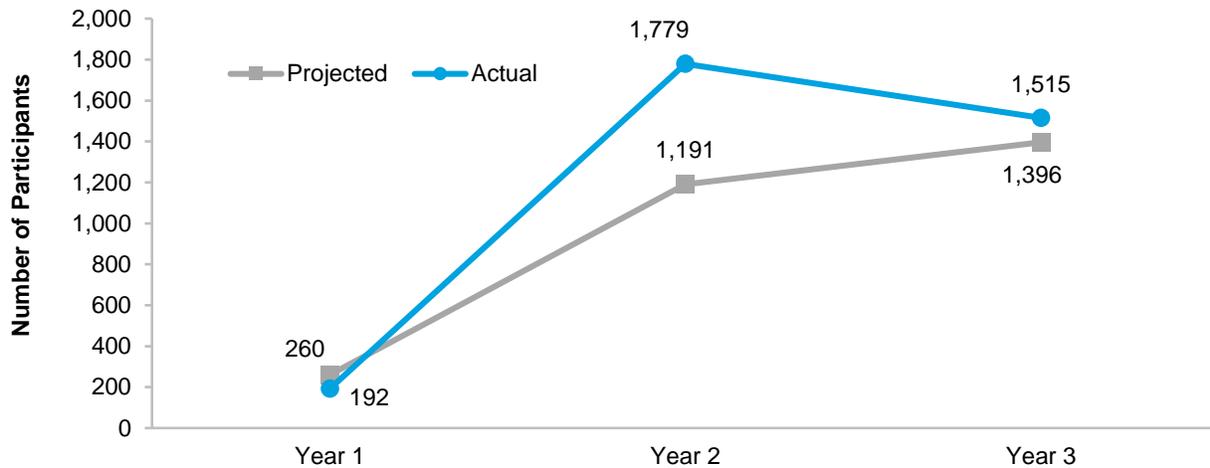
* Note: "Projected" refers to targets that IERTC established prior to starting the grant. "Actual" refers to the total number reported across colleges.
Source: Colleges' Annual Performance Report (APR) data

As shown in Exhibits 12 and 13, the number of participants completing and earning credentials each year increased over time. These trends reflect the continued growth in the overall number of participants and the greater number of colleges that enrolled students each year. While the number of participants earning credentials exceeded the target for each year, the number of participants completing the program did not.

Exhibit 12: Participants Completing the Program, Years 1–3 of the Grant*
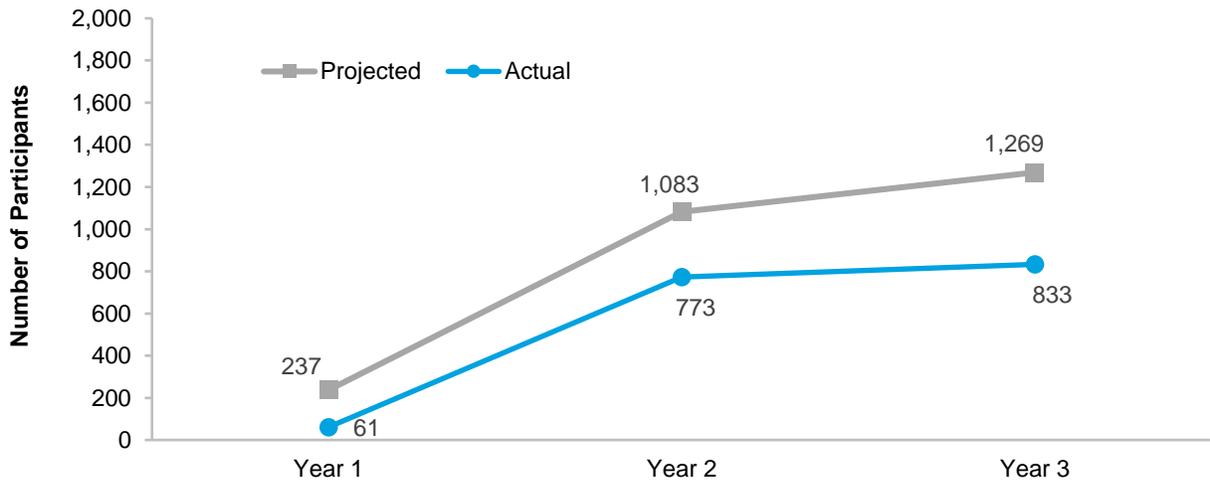
* Note: "Projected" refers to targets that IERTC established prior to starting the grant. "Actual" refers to the total number reported across colleges.
Source: Colleges' Annual Performance Report (APR) data

Exhibit 13: Participants Earning Credentials, Years 1–3 of the Grant*
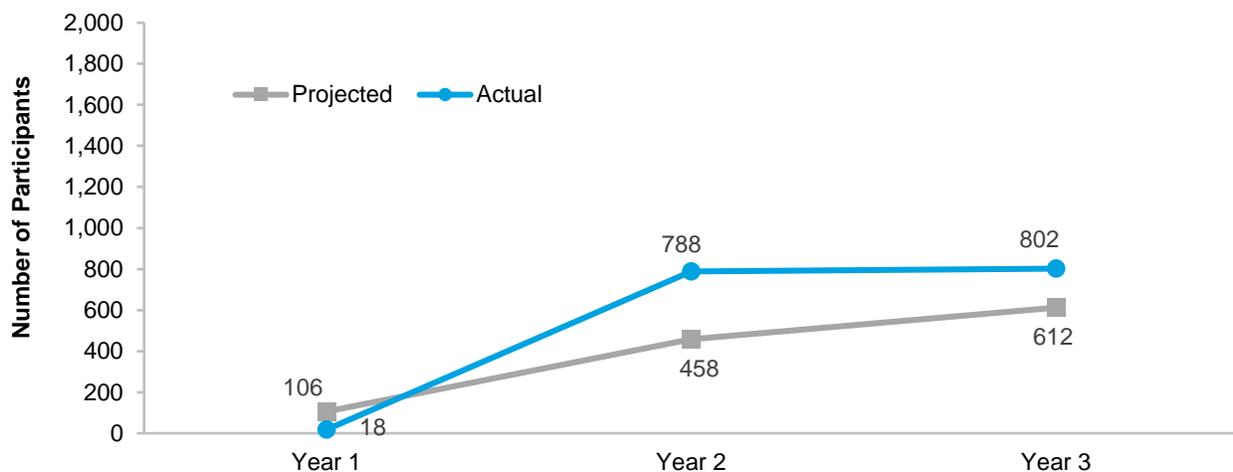
* "Projected" refers to targets that IERTC established prior to starting the grant. "Actual" refers to the total number reported across colleges.
Source: Colleges' Annual Performance Report (APR) data

Students, staff, and faculty discussed barriers to students completing their training. In trying to include students with diverse employment backgrounds and needs, some of the students served had challenges that made it more difficult for them to stay in the training. The most common areas noted were preparedness for courses, such as computer and math skills. Others mentioned were level of commitment, lack of financial support, program intensity, and difficulty balancing work and training. Some students indicated that they left the program to take a job. Students also noted that sometimes courses they needed to complete a program were canceled due to low enrollment.

Career and Training Support Services

To facilitate the success of their students, colleges offered additional academic and career support services. These included services that addressed students' barriers to completing training, and services that helped students with job placement and career readiness. These activities aligned with IERTC's original program plan to provide wrap-around services such as remedial services and tutoring that supported academic success, along with career placement and career readiness training that focused on employment outcomes. In the grant, colleges also were expected to work with students to plan academic and career pathways (e.g., Comprehensive Employment Plans) that would help students achieve their goals.

As courses were implemented, the colleges connected students with support services, such as tutoring (e.g., math tutoring) and financial aid resources. During the grant, colleges continued to work on strengthening some of these supports, for example, by hiring additional staff focused on career services or academic counseling. A common strategy was to leverage other resources, such as other grants, services at their college, and workforce agency resources. For example, college staff helped students secure Workforce Innovation and Opportunity Act funds for student training and course materials.

As described further in the Industry Partnerships section of this report, colleges also leveraged their relationships with employers to offer job placement activities, for example, by hosting career fairs and connecting students directly to employer partners who had open positions. Especially later in the grant, staff at some colleges created internship and apprenticeship programs in collaboration with employer partners. These were initiated to provide students with additional real-world, hands-on training, and to give employers a chance to get to know potential employees before they hired them. As colleges continued to develop relationships with employers, colleges also expanded soft skills training to address employer feedback.

On the survey, students were asked about their use of and satisfaction with student support services. We report on the 6-month survey data because it most closely followed their experiences in the program. As shown in Exhibit 14, the most commonly used services were related to employment placement, such as job search assistance (74%), job readiness training (72%), and career planning (51%). These areas were important to prepare students to obtain and keep a job, especially since many were new to the workforce or had existing barriers to employment to overcome. Academic support was less commonly used, with academic coaching (37%), tutoring (33%), and academic counseling (33%) used by about a third of the students. It is not clear why these services were less frequently used. Given reported student challenges with the courses noted above, it is possible that students making greater use of these types of supports would have been helpful. Internship placement also was not a service often utilized by students (25%). This may be because internship positions and placement were limited at some colleges, especially during the initial years of the grant. These opportunities also may have been less relevant to incumbent workers who already were employed. Expanding internship opportunities early on may have increased students' utilization of these services.

**Exhibit 14: Percentage of Students Who Used Support Services (N=57)***
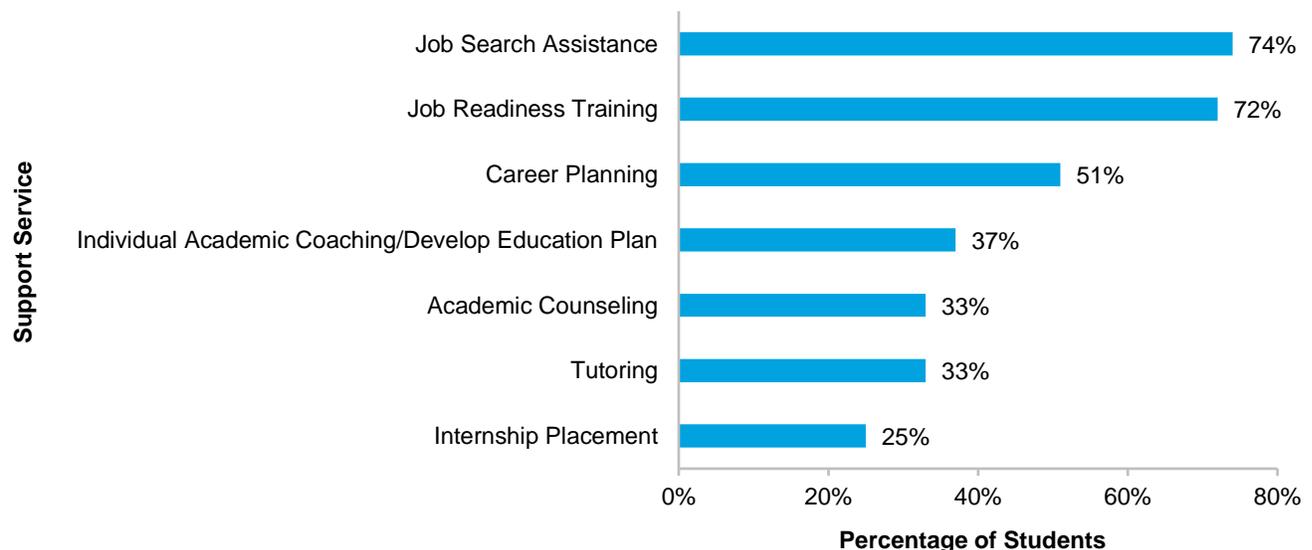
* Total N=57 after removing 37 missing responses.
Source: IERTC Follow-up data, Fall 2017–Summer 2018.

Students who did take advantage of support services, however, tended to be satisfied with them. The majority of students in the 6-month follow-up survey were satisfied or very satisfied for each type of support service. The percentage satisfied was more than 80 percent for each type, except for tutoring (77%) and internship placement (62%), suggesting that these are areas where more improvement was needed. These findings also reflect student feedback collected during focus groups about interest in greater access to internship opportunities and additional individualized academic support, such as teaching assistants or tutors.

Exhibit 15: Percentage of Students Satisfied with Support Services (N=54)*
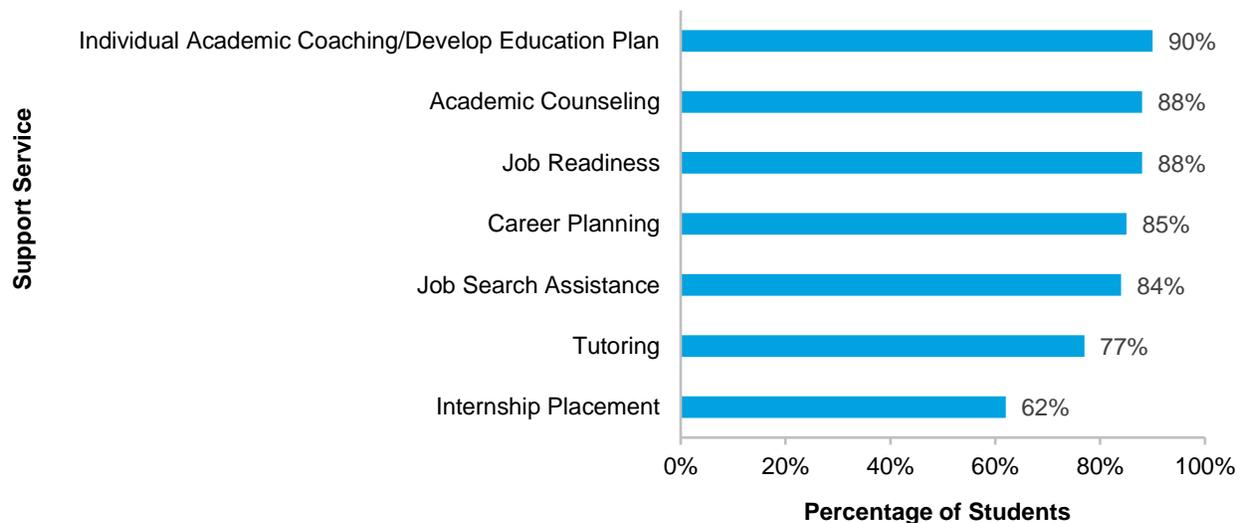
* Total N=54 after removing 40 missing responses.
Source: IERTC Follow-up data, Fall 2017–Summer 2018.

Participant and Program Assessment

In the grant model, programs were expected to conduct baseline assessments to understand student learning needs and to conduct competency-based assessments while they were enrolled in the program. In the third year of the grant, we collected data on the type of assessments conducted by the 10 colleges that served students at the time.[7] The majority of these colleges conducted pre-program assessment (n=6), although the colleges' approaches were inconsistent. An example of a pre-program assessment was the WorkKeys KeyTrain, which assessed students' math, mechanical and electrical skills, and other aspects of students' preparedness for the program. Reflecting that only some sites administered baseline assessments, when surveyed, more than one-third (39%) of the students reported completing a baseline assessment, whether it was AccuPlacer (39%), WorkKeys KeyTrain (26%), or another assessment (35%).

All colleges (n=10) collected data about grant participants that were required by the TAACCCT grant. However, program staff often described challenges in managing and reporting this data because of inconsistent guidelines and differences in how information was tracked. The consortium began using a common data system, called Grant Maximizer, in the third year of the

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[7] The 11th college was not yet serving students in the program.

grant, but it was discontinued at most colleges because of challenges with the time required to enter the data, as well as perceived lack of utility of the system in providing information about program performance.

Almost all colleges (n=9) collected course assessment data, which were tests that students completed as part of their courses to measure student ability or learning. In addition, almost all collected student feedback (n=9). Given the focus of the courses, faculty spoke about using hands-on assessments to understand student progress and readiness for certification exams, in place of or in addition to written exams. While less than half of the colleges reported collecting certification data (n=4), in some cases, this may be because exams were administered through a third party.

Exhibit 16: Participant Data Collected*
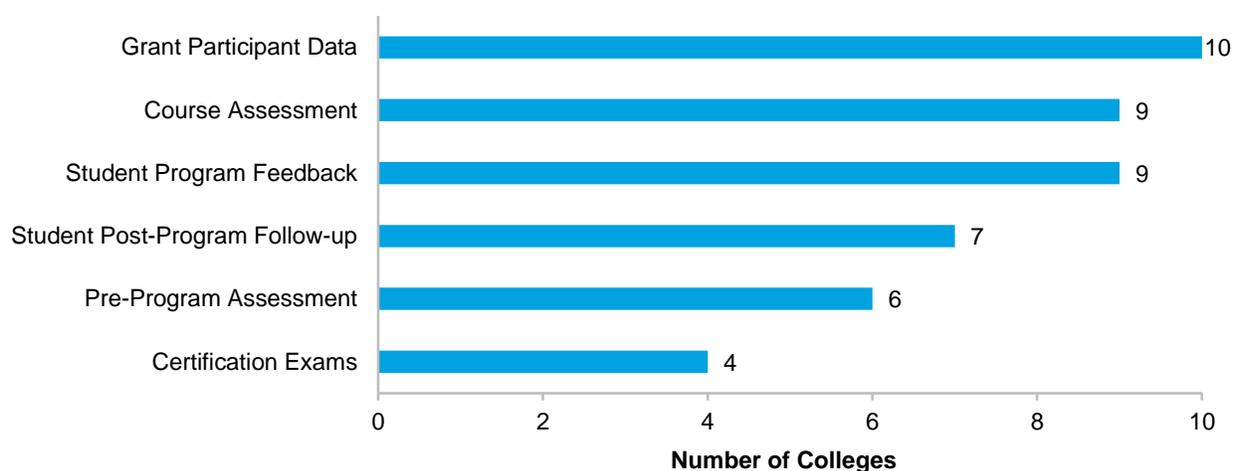
* Total N=10 colleges.
Source: Year 3 site visit and interview data.

While the majority of the colleges (n=7) also collected follow-up employment data from students leaving the program (whether formally or informally), these colleges reported challenges in collecting that data. They reported a few main concerns. First, it was not always possible to reach students after they left the program if their contact information changed, which would happen, for example, if a student moved in order to start a new job. In addition, even with the correct contact information, students often did not respond to requests for information. Colleges used a range of strategies to reach out to students, such as email, phone calls, text, social media, and reaching out to employers.

Student Program Satisfaction

In general, students felt that the programs they enrolled in were beneficial to them. In the follow-up surveys, students were asked to indicate how much they had changed as a result of their program. They ranked their agreement with a set of statements related to program satisfaction on a scale from "strongly disagree" to "strongly agree." Exhibit 17 reflects the number and percentage of respondents that "agreed" or "strongly agreed" with each statement. The highest

proportion of respondents from both the 6- and 12-month survey groups indicated that they agreed or strongly agreed that the knowledge they gained in their training helped them earn certification or a certificate (n=58, 76%; n=86, 80%, respectively).

Approximately three-quarters of the respondents agreed or strongly agreed that the knowledge they gained helped them with work (on the job) (n=56, 74% for 6-month survey respondents; n=86, 80% for 12-month survey respondents). The level of agreement with each of the other statements ranged from 59 percent for both 6- and 12-month survey respondents ("training helped me find a job") to 66 percent and 70 percent (6- and 12-month surveys, respectively) ("training helped me get ahead in my career"), and 74 percent and 70 percent (6- and 12-month surveys, respectively) ("want to get more training to further career and employment in advanced manufacturing"). Similarly, in the focus groups, current enrollees in most colleges (n=7 colleges) shared that they felt the training itself provided them with useful knowledge and skills in the manufacturing domain, and also with the skills required to get employment. As one student said: "One of the bestselling points of the program is they have many connections to industry in the area, and they encourage us with the different skills with the different trades, but also learning how to network to help with finding jobs."

Exhibit 17: Student Satisfaction: Percentage of Students Who Agree with Program Impacts*
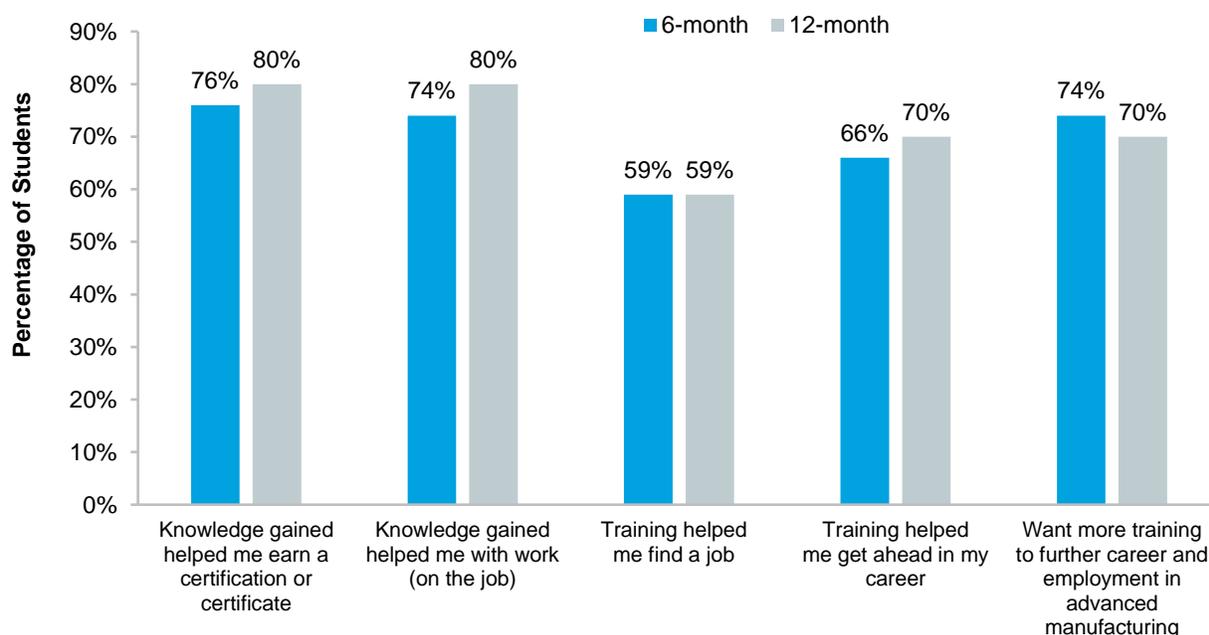
* Total N=76 for 6-month follow-up after removing 17 missing responses, and 107 for 12-month follow-up after removing 23 missing responses.
Source: IERTC Follow-up data, Fall 2017–Summer 2018.

## Partnership Engagement

As colleges developed and implemented their programs, they benefited from collaborations with multiple partners. Throughout the first 2 years of the grant, the colleges developed and maintained relationships with external organizations and individuals. This included forming new partnerships and further strengthening ones the program staff already had prior to beginning the

grant. For the purposes of this report, any of these external entities that colleges worked with as part of grant activities were referred to as "partners" and could include, for example, employers, workforce agencies, other colleges, or other individuals at these institutions. These relationships continued to expand over time and were continuing to grow even as TAACCCT program implementation was ending.

Industry partnerships. Industry partners played different roles in the program that were critical to its success. Exhibit 18 describes the types of roles that industry had in the program. Industry partners contributed to program development through providing input on curriculum and participating on advisory councils. In some cases, they contributed resources such as equipment or training space. For example, California Steel Industries leased the InTech Center building to Chaffey College for only a dollar and is continuing to work with them to find additional space on their campus. Some employers also helped with participant recruitment through referring students for training or requesting that the college offer specific training for their employees. In addition, local employers played a key role in instruction as their employees would occasionally serve as training faculty. Staff noted that this is important because to offer hands-on and industry-relevant training, faculty benefit from having industry experience. As programs and relationships with industry expanded, employers played an even greater role in connecting students to employment, through visiting the college or career fairs to talk about career opportunities and what employers are looking for, hiring students for jobs, or partnering with colleges to offer internships or apprenticeships. Employers' experiences working with students who they had hired as employees or interns allowed them to give the program more feedback as they shared what they saw as the strengths and skill gaps of students.

Exhibit 18: Industry Contributions to the Program
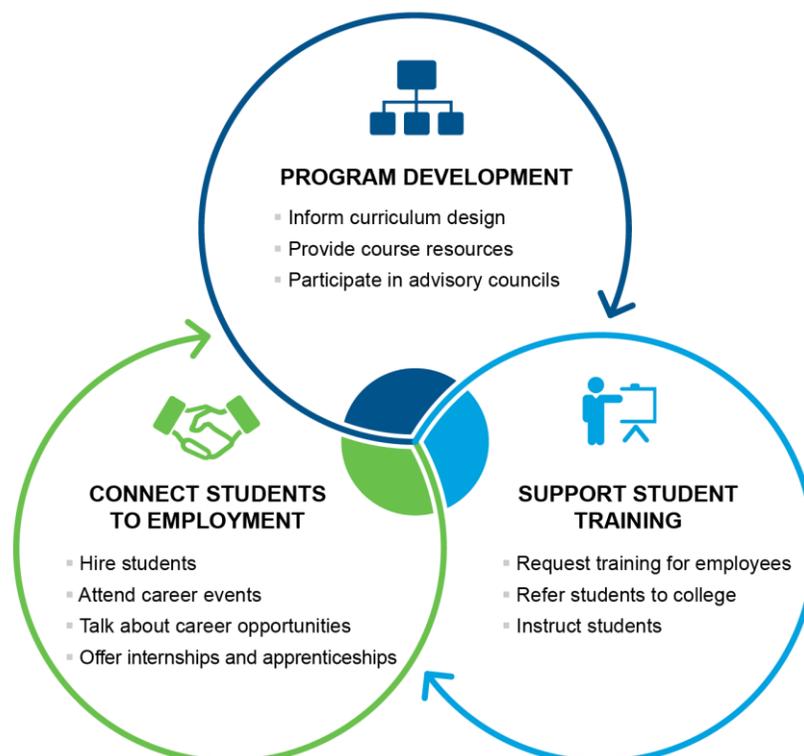
Strategies for engaging industry. Colleges engaged in multiple activities to engage employers, which are highlighted in Exhibit 19. Especially by the third year of the grant, colleges described not only expanding their outreach to industry partners, but also that employers would independently seek out more information about their program and their students. Because of IERTC, employers reported that they had less of a need to go outside the region to identify candidates, as employers felt that they now had access to a pool of potential employees and a place to train their existing employees.

> "There's an opportunity for us to get good quality people into our programs from their programs…. It's much more convenient for companies to find people with a skill set. That's what I hear from the people I deal with. If you train people in those skill sets, there will be opportunities."
> – Employer Partner

Exhibit 19: Colleges Conducted Multiple Activities to Engage Employers

- **Offering tours** to employers to see programs firsthand.
- **Gathering feedback** from employers about interns' progress after placement.
- **Forwarding resumes** from trained/exiting cohorts of students, either proactively or at the request of the employer.
- Further **outreach communication** to employers/HR departments either through phone, email, flyers, or hosting events to share information about internship programs.
- Hosting **job fairs or other events for students to meet** with employers for interviews so that they can see the options available and practice interviewing skills.
- **Taking mobile equipment directly onsite** with companies, and providing training on employers' sites.
- **Creating a newsletter** to share information with employers about program offerings and students trained.

Workforce Investment Board (WIB) and workforce agencies. While industry partnerships played significant roles in the programs, the role of WIBs was less consistent. The most common contribution that WIBs and other local workforce agencies (e.g., State of California Employment Development Department, or EDD) made was to provide TAACCCT program student recruitment (n=5 colleges) and job placement (n=3) opportunities, and to provide student resources (n=3) such as financial assistance and transportation support. Three colleges also noted that WIB representatives attended the IERTC consortium meetings. During Year 3, the colleges' relationships with WIBs ranged from no engagement with WIBs for this grant other than consortium meetings (n=3) to high engagement and involvement in multiple activities (n=4), for example, by having a WIB staff member located at their college. The remaining colleges had started to work with WIBs, but WIBs still had a limited role in their programs (n=3). Colleges suggested that barriers to WIB involvement included that WIBs primarily provided short-term support, WIBs were not fully aware of the TAACCCT programs, or they were not sufficiently proactive in referring students to the program.

Partnerships among IERTC colleges. Partnerships among IERTC colleges continued to strengthen over the course of the grant. Exhibit 20 shows the most common ways that the IERTC colleges worked together by the third year of the grant. Most colleges (n=8) reported that they learned from one another through regular consortium meetings, as well as through separate meetings between individual colleges. An area that appeared to grow was in coordinating around curriculum development, with the majority (n=7) reporting that they

engaged in this type of activity by the third year of the grant. For example, colleges reporting uploading curriculum materials that could be shared with one another using the Creative Commons website. One activity that occurred during the third year of the grant was to collaborate to obtain EDD employment data for their program (n=3).

Exhibit 20: Partnership Activities Within IERTC*
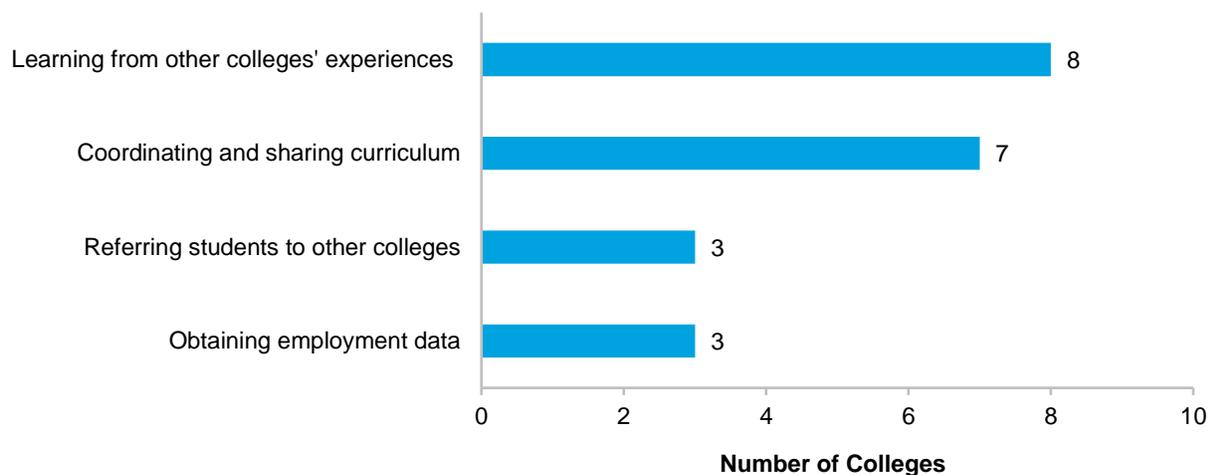
* Total N=10 colleges enrolling students.
Source: Year 3 site visit and interview data.

As the lead, Chaffey College provided support to colleges as they implemented their grants. Colleges described how they could ask Chaffey College questions about various aspects of the grant requirements and they believed that Chaffey College was very responsive to their questions and concerns. One challenge that employers and college staff mentioned was how there were large distances between the InTech Center and some of the other colleges, given the size of the Inland Empire region. When asked about whether they accessed the InTech Center in Fontana, about one-fifth of the 6-month survey respondents (n=16, 22%) reported that they had accessed the InTech Center. In line with the initial program model, colleges suggested offering distance learning opportunities, creating formal agreements about shared resources, and allowing students to take classes at multiple colleges. In fact, staff at the InTech Center began developing online options to improve access to the center during the final year of the grant. Staff at Chaffey College and other colleges shared how others in the region were interested in starting similar types of centers in different regions of the Inland Empire that would be more accessible to certain communities. For example, some of the employers and colleges located in the High Desert region expressed a need for more resources closer than where the InTech Center is located. In response, the High Desert consortium started planning development of a center that could provide these types of training resources in their local area.

Capacity Building and Sustainability

Program Sustainability

In the final year of the grant, stakeholders discussed plans to sustain the program after TAACCCT funding had ended. While the sites' plans for sustainability were not finalized at the time of the final site visits and interviews (February–April 2018), they provided insight into how sites were planning to continue program activities once they were no longer covered by TAACCCT funds.

Curriculum. Sites described how they anticipated the training offered would change after TAACCCT funding ended. College staff reported that their programs will continue, but that they will continue to adapt them over time to serve students and industry needs. Some colleges were already discussing specific changes, such as starting new courses or adapting existing courses. Common reasons that

> "They'll be reconfigured so that they can fit into a broader scheme and more properly prepare the students for what we really needed, which is get them job skills, get them past that certification exam, and then have them be able to enter the workforce."
> – Instructor on future course changes

colleges were planning to change their program were to increase student enrollment, make students more employable, or make sure that their program continued to be relevant to local employers, even as industry needs continued to change over time

Student supports. Staff shared that other program elements would continue, including student career and training supports. However, with the end of the program, staff were considering how to optimize these aspects of their program. By the final site visit, staff at most colleges reported that student support services were already covered by other leveraged resources, such as college services, workforce partners, or another grant. As some staff explained, they saw the services as valuable, but needed to be more strategic about what was offered given funding changes.

Recruitment and intake. Staff at some colleges reported that recruitment would change to become more strategic or, in some cases, to target different student populations, such as women or veterans. When asked, staff reported that intake would continue but be more streamlined and integrated with college systems. Under TAACCCT, colleges were required to have students fill out a hardcopy intake form, but they could now create a form that captured what they wanted to know and could combine it with the paperwork that their college required of students.

Industry partnerships. Colleges were planning to continue their partnerships with industry, and even expand them to take on more partners or increase the role of partners in the program. The industry role was seen as critical for the continued success of their program in offering connections to student jobs, faculty, or guest speakers for courses, as well as on-the-job training opportunities. Colleges hoped to have resources to continue to expand partnership outreach and, in some cases, have partners invest resources to continue to support the program given its value to them. Staff was less consistent in reporting how colleges will work with each other or whether workforce agencies would continue to be involved, although some were already making plans for these partnerships to continue.

Sustainability factors. When discussing sustainability, staff and faculty were asked about factors that would support sustainability moving forward. In general, the most important factor

was funding. Colleges reported that they had organizational buy-in and personnel to continue the programs but needed to have enough funding to continue to support it. To that end, most programs had already secured funding to support components of their program. In addition, there were some program functions that were institutionalized in some colleges, such as student support services or courses, and would not require much, if any, grant funding to sustain them.

Exhibit 21 shows the type of funding sources that colleges had secured or were pursuing to continue their program activities. A few colleges talked about emerging opportunities from the State of California to support workforce initiatives, which would take over for some of the TAACCCT funding, such as the Strong Workforce Grant given to community colleges for career and technical education programs. College courses that were non-credit or for-credit were also eligible to receive state education funding for each student enrolled, which provided institutional funding to pay for courses, assuming sufficient enrollment.

Exhibit 21: Example of Continuing and Future Funding Sources

- State and federal grants
- Foundation grants
- Local industry
- Leveraging other college departmental resources
- State education funding for each enrolled student

College staff also talked about the benefit of buy-in for their programs that had developed within their institutions, particularly at the leadership level. Some staff discussed how this support had strengthened over the years as colleges had demonstrated their success. Institutional support was critical for sustainability in multiple ways. For example, to apply for more funding, they would need college approval and for the college to be involved in the application process. In addition, they relied on their college for continued financial support for certain aspects of their program, and as mentioned above, often used institutional services to provide career and training support to their students.

Institutional Capacity Building

Colleges discussed how program sustainability was supported by the capacity building that had occurred during the grant in different areas.

Course development. A significant result of the TAACCCT grant was the development of program curriculum, such as not-for-credit and for-credit courses. Developing courses took a lot of time, including time for faculty to design courses and to get curriculum approval from advisory committees and the state chancellor's office, and time to pilot courses and optimize them to meet student and industry needs. Once the grant had ended, staff could continue to offer these courses that had already been developed, and even if new programs were developed, they could use their lessons learned to make the new courses successful.

Physical infrastructure. A large capacity-building effort in the grant was the building of the InTech Center itself, along with other facilities and labs at other campuses. Staff and faculty talked about large investments in equipment that were essential for teaching the industry-relevant skills. Some colleges described how facilities and equipment were a draw for industry and the community to show what the program provided, and they helped their outreach efforts and would continue to serve these purposes. However, a few staff noted that even though equipment had already been purchased, there would be continued costs to maintain the

equipment, update the equipment to teach new areas or respond to technology innovations, and replace expendable materials.

Faculty development. In the second year of the grant, a common challenge was having faculty to teach their courses. While a few staff noted in the final year that faculty were in high demand, in general, staff felt that they had the high-quality faculty needed to teach their curriculum. To be effective, staff noted that faculty needed to have both industry experience and often credentials, be an effective teacher, and be available and willing to teach. It appeared that one way that staff had been able to secure faculty is by developing relationships with partners and, over time, identifying faculty who could be effective. When asked, faculty at most colleges did not report that the college itself offered formal training, but some reported attending outside professional development opportunities. The exception was colleges that offered a train-the-trainer program designed to improve the quality of teaching among faculty. Faculty also talked about improving their teaching over time through responding to student feedback or reactions to their courses. They made changes in their instruction to increase student satisfaction in the course and also to encourage enrollment.

Partnership development. Partnership development was another significant outcome of the grant. As described above, the colleges continued to build industry partnerships, which were important for the continued success of their program. Partnerships among the IERTC colleges developed over time and provided a network of people that colleges could rely on or go to for assistance, and in some cases, colleges had begun to pursue additional joint-funding opportunities. A few colleges had worked to align curriculum across colleges, with the goal of allowing students to transfer between programs more easily. While some colleges did not use the InTech Center, often because of the difficulty of traveling to that site, there has been interest in using that center as a model for other areas. The High Desert region, in particular, where three of the colleges were based, had already started planning a similar center in that area that would be led by the High Desert Manufacturers' Council.

Program outreach. In some cases, programs described getting recognition at the state and national levels for their programs and the work they were doing in the region. For example, the InTech Center received recognition from United States Senator Kamala Harris (California). As one staff member at the InTech Center said: "We have had so many political dignitaries come through the Center. And once we appeal to them, then they appeal to—they go to DC, and that's when we get the senators, and the bigger dogs kind of come down." A staff member at another college shared how others were interested in replicating their program across the state. "Well, it's definitely had an impact because of the [program]; the whole sector for energy construction and utilities was impacted by it. Every Deputy Sector Navigator in the state, all the Prop 39 Directors, are fully aware of the program and onboard; [they] want it in their regions. It had a great impact." External recognition of the programs led to some reaching out to the programs about funding and partnership opportunities, which may play a role in the programs' continued growth.

Regional Impact

Staff, faculty, and partners described how a key impact of the grant was capacity building in the region's economy. During the final year of the grant, they described how the program had connected students to high-paying jobs, and provided a career pathway where students could be successful. Employers who had started to hire students from the program, or sent their workers to receive training, appreciated what the program offered and how it allowed them to address skill gaps in their area. Over the long term, program stakeholders expected that the impact of the initiative would continue to grow as more individuals and business were affected.

> "I think the economic impact [of the program] is huge, because what we're going to do is we're going to allow our local residents an opportunity to have a high-skills, high-paying job that will sustain a family, which is going to drive the entire economic sustainability of the region up."
>
> – Employer Partner

Outcome Study Findings

To address key research questions on education and employment from baseline to follow-up, the outcome study asked students questions about their education and employment status, including baseline and follow-up education and employment status, barriers to employment, and health insurance and public benefits. Due to large numbers of missing data, missing responses are not included in any of the calculations for the outcome study sample.

Education

Exhibit 22 shows the proportion of students by educational attainment prior to enrolling in the TAACCCT program. Over one-third of the students (n=214, 39%) had some college credit, but had not received a degree. Almost the same proportion had a high school diploma or GED (n=209, 38%), while lower proportions of students completed an associate degree (n=55, 10%) or a bachelor's degree or higher (n=43, 8%). This highlighted how the program included students from a range of educational backgrounds, including both those who had already received some college credit, and those who had not.

Exhibit 22: Highest Level of Education Obtained: Baseline (N=547)*
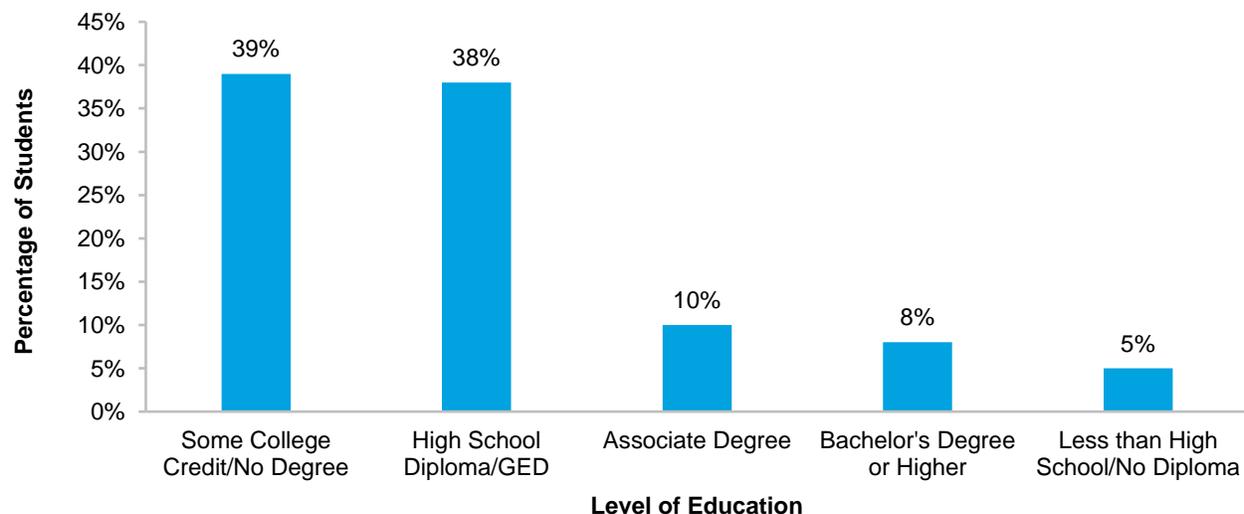
* Total N=547 after removing 10 missing responses.
Source: IERTC Baseline data, Fall 2016–Spring 2018.

At follow-up, the majority of both the 6- and 12-month survey respondents received certificates (n=64, 81%; n=79, 83%, respectively). About 1 in 10 students from the 6-month (n=7, 9%) and 12-month (n=11, 12%) follow-ups received an associate degree as part of their TAACCCT training. Similarly, 12 percent of 6-month respondents (n=8) and six percent of 12-month respondents (n=6) selected "Other." This trend aligned with how most programs offered certifications or certificates, and fewer offered an associate degree as an option. However, it might also reflect how students could complete a certificate program before getting an associate degree, so it is possible that some of the surveyed students would still obtain an associate degree in the future.

Among students who reported receiving a certificate, approximately half of the students who completed the 6-month (n=27, 48%) and 12-month (n=46, 52%) follow-up surveys reported having received Occupational Safety and Health Administration (OSHA) certification. As a few faculty noted, this type of certification was an important foundation for many areas of advanced manufacturing, given the importance of being safe when working with equipment. Additional certifications, such as the National Center for Construction Education and Research (NCCER), Welding, and the U.S. Environmental Protection Agency (EPA), accounted for about 15–20 percent of certifications obtained by students.

Exhibit 23: Students' Degree Attainment at Program Completion*
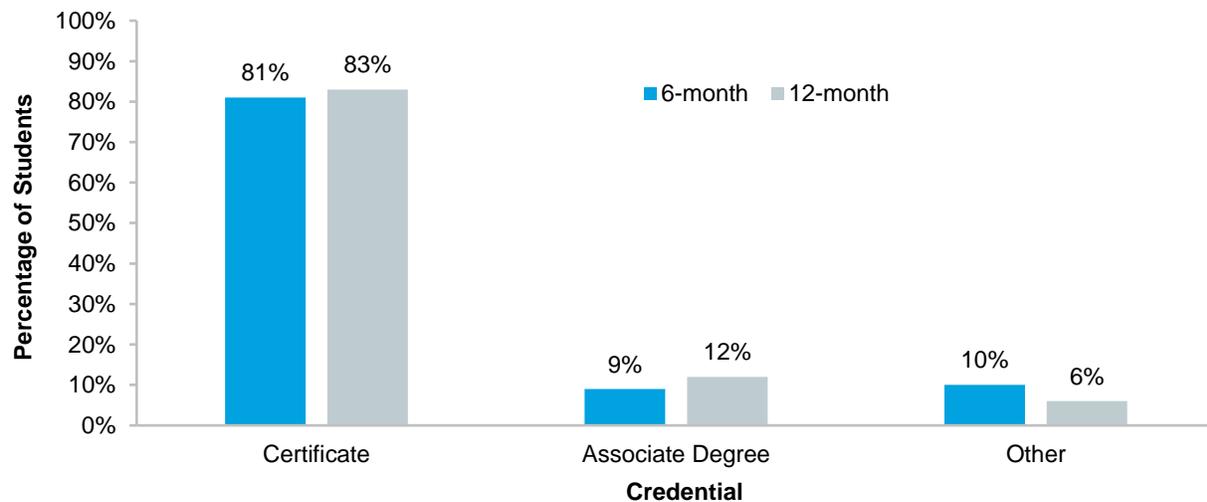
* Total N=79 for 6-month follow-up after removing 14 missing responses, and N=95 for 12-month follow-up after removing 35 missing responses.
Source: IERTC Follow-up data, Fall 2017–Summer 2018.

As noted above, the programs targeted both incumbent workers interested in further training and unemployed individuals not already working in the advanced manufacturing field. Similarly, the students started the program with diverse employment backgrounds. At baseline, the students were asked whether they held a vocational license or training in a specific field of study. One-third (n=172, 33%) of the participants reported that they did, while a larger number (n=357, 69%) reported that they did not hold any vocational license or training. Among those who held a vocational license or training in a specific field, more than one-third of the students reported "Other" as their certification (n=73, 39%), with smaller proportions reporting vocational training in additional categories, such as installation, maintenance, and repair (n=35, 19%); production and manufacturing (n=15, 8%); and food preparation and serving (n=15, 8%).

In addition to asking about vocational certification, students were asked whether they had any prior work or volunteer experience. Previous volunteer experience in installation, maintenance, and repair was reported by one-fifth of the students (n=95, 20%), while production and manufacturing were reported by 18 percent (n=82) of the students. Few students reported any additional industry experience in other categories. Exhibit 24 displays the top industries in which students reported previous volunteer experience.

Exhibit 24: Student Work or Volunteer Experience by Industry Prior to Program Enrollment (N=466)*
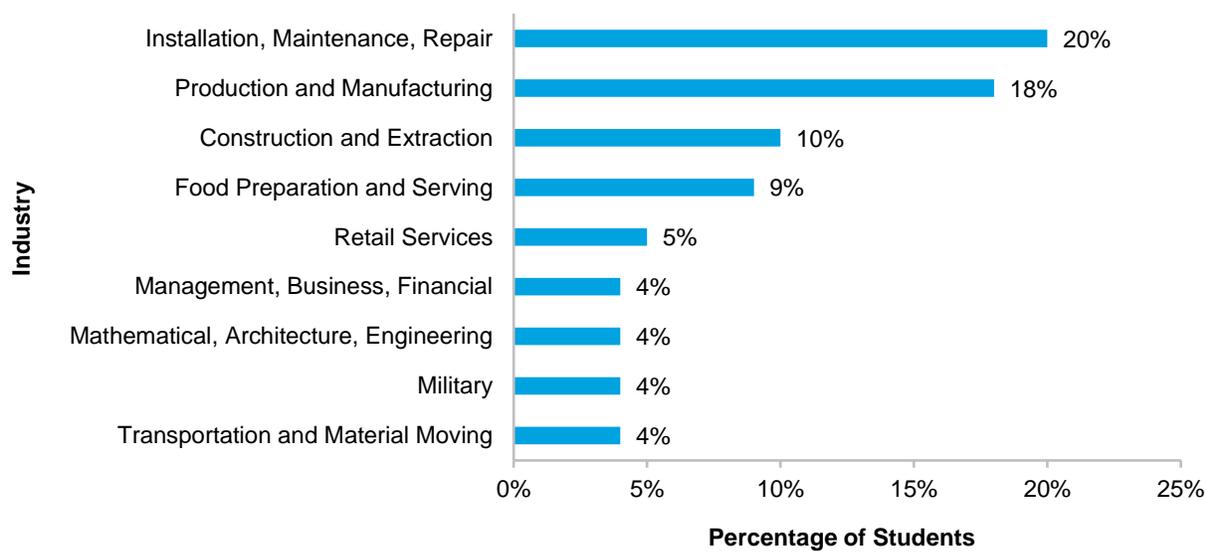


* Total N=466 after removing 89 missing responses.
Source: IERTC Baseline data, Fall 2016–Spring 2018.

Employment

To get a better sense of students' employment status and prospects, several questions were asked about the students' employment at the time of enrollment into the TAACCCT program and after completing their program, including their overall employment, wages and salary, previous and current employment status, and the extent to which circumstances/barriers affected their ability to secure or maintain employment.

Overall Employment, Wages, and Salary

At baseline, the majority (n=477, 89%) of the students reported previously holding a paying job, while more than half of the students were employed (n=250, 51%) when they enrolled in the program and another 47 percent (n=229) were unemployed.

In addition to whether they held a previous job, students were asked about their number of years in the industry prior to program enrollment, their annual salary, number of hours worked per week, and average hourly wage. At the time of enrollment, students reported a wide range of salaries, from a low of $2,000 to a high of $120,000 per year. Average annual salary was reported as $39,263 with almost 10 years in the industry. Exhibit 25 provides information on previous industry earnings and hours worked among students prior to TAACCCT enrollment.

Exhibit 25: Previous Industry Earnings and Hours Worked (Baseline)

	Responses
Annual Salary (n=77)	Mean: $39,263 Median: $35,000 Range: $2,000 to $120,000
Number of Years in Industry (n=485)	Mean: 9.6 years Median: 7.0 years Range: 1.3 years to 30.4 years
Hours Worked per Week (n=157)	Mean: 37.2 hours Median: 40.0 hours Range: 3.0 hours to 60.0 hours
Average Hourly Wage (n=166)	Mean: $18.17 Median: $16.00 Range: $10.00 to $50.00

Source: IERTC Baseline data, Fall 2016–Spring 2018.

Similar to the baseline survey, students at follow-up were asked about their average hourly wage and average number of hours worked per week. Among students who completed the program 6 months ago, students reported a wide range of hourly salaries, from a low of $10/hour to a high of $65/hour. The range of hourly salaries among students who completed the program 12 months ago was not as wide, from a low of $10/hour to a high of $34.50/hour. Exhibit 26 provides information on students' average hourly wage, number of hours worked per week, whether they received a promotion or changed jobs, and whether they were in the advanced manufacturing field after they completed their TAACCCT program.

Exhibit 26: Wages and Employment Status*

	6-month	12-month
Average Hourly Wage	Mean: $20.05 Median: $16.00 Range: $10.00 to $65.00	Mean: $19.74 Median: $18.97 Range: $10.00 to $34.50
Average Hours Worked per Week	Mean: 37.4 hours Median: 40.0 hours Range: 1.0 hour to 50.0 hours	Mean: 40.1 hours Median: 40.0 hours Range: 20.0 hours to 48.0 hours
Received a Promotion or Changed Jobs	Yes: 24 (33%) No: 48 (67%)	Yes: 39 (44%) No: 50 (56%)
Advanced Manufacturing Field	Yes: 41 (56%) No: 32 (44%)	Yes: 54 (59%) No: 38 (41%)

* A large portion of the data for the table was missing, from 22 percent to 86 percent.
Source: IERTC Follow-up data, Fall 2017–Summer 2018.

To gather additional information on income and wages, students at follow-up were asked about their annual salary as displayed in Exhibit 27. A higher portion of students at the 12-month follow-up (n=27, 37%) reported having an annual salary of $50,000 or more compared to students at the 6-month follow-up (n=13, 25%). Smaller portions of students at the 6- and 12-month follow-ups reported annual salary incomes of $1–$9,999 (n=10, 19%; n=8, 11%, respectively).

Exhibit 27: Annual Salary*

	6-month	12-month
$1–$9,999	n=10 (19%)	n=8 (11%)
$10,000–$14,999	n=4 (8%)	n=1 (< 1%)
$15,000–$19,999	n=3 (6%)	n=5 (7%)
$20,000–$29,999	n=8 (15%)	n=7 (10%)
$30,000–$39,999	n=5 (10%)	n=19 (26)
$40,000–$49,999	n=9 (17%)	n=6 (8%)
$50,000 and over	n=13 (25%)	n=27 (37%)

* Total N=52 for 6-month follow-up after removing 42 missing responses, and 73 for 12-month follow-up after removing 57 missing responses.

Source: IERTC Follow-up data, Fall 2017–Summer 2018.

Previous and Current Employment Status

To further expand on employment status at the time of program enrollment, more than one-third of students reported that they had full-time employment in their current field (n=104, 40%) or another field (n=89, 34%) for wages. Smaller percentages of students were employed part-time in their current (n=14, 5%) or another field (n=55, 21%) at the time of TAACCCT program enrollment. Among students who were employed, almost one in five students (n=75, 17%) were working in the advanced manufacturing field.

For students who were not employed at the time of enrollment, more than half of the students (n=149, 57%) were out of work and currently looking for work, while a smaller proportion (n=52, 20%) reported that they were not working because they were a full-time student.

When asked about future employment prospects and whether they believed their employment situation would change after completing the training, the majority of the students (n=422, 84%) believed that their employment situation would change after their TAACCCT training. More than two-thirds of the students (n=364, 70%) planned to find a job or change their job after the program. The primary activity that students planned after training was to secure full-time employment (n=257, 49%), followed by continuing in their current employment (n=138, 27%). Exhibit 28 displays the primary activities that students planned to undertake after completing their program.

Exhibit 28: Primary Activity After Completing the Training (N=520)*

Horizontal bar chart. Y-axis label: Activity. X-axis label: Percentage of Students.

- Employment, Full-time Paid: 49%
- Continue in Current Employment: 27%
- Further Undergraduate Education, Full-time: 9%
- Employment, Part-time Paid: 5%
- Further Undergraduate Education, Part-time: 4%
- Volunteer Services: 1%
- Military Services: 1%
- Other: 4%
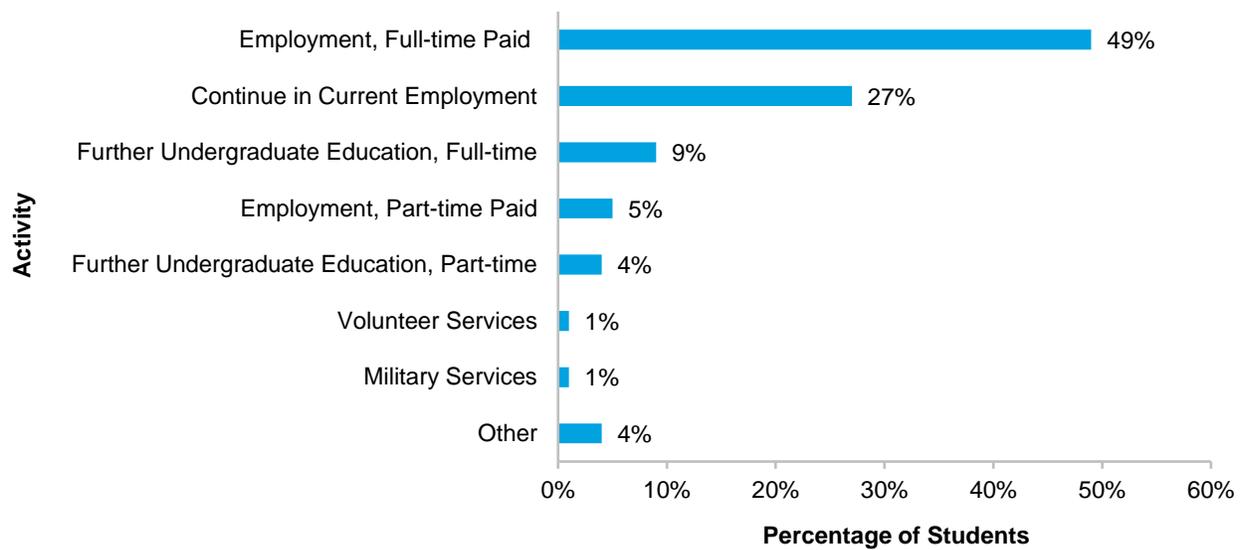
* Total N=520 after removing 37 missing responses.
Source: IERTC Baseline data, Fall 2016–Spring 2018.

At both the 6- and 12-month follow-ups, the students were asked a set of questions about their current employment situation, including how long it took them to obtain a job after program completion, how long they have been employed since program completion, and current employment status.

At the 6-month follow-up, 32 percent of the students (n=20) obtained a job prior to graduation, while an additional 35 percent (n=22) obtained a job less than 1 month following graduation, with 18 percent (n=11) within 1 to 3 months following graduation. Among students who responded to the 12-month follow-up survey, 49 percent (n=38) obtained a job prior to graduation, while 12 percent (n=9) and 18 percent (n=14) obtained a job less than 1 month and within 1 to 3 months following graduation, respectively.

As expected, more students in the 12-month follow-up survey than in the 6-month follow-up survey reported job retention of 9 months or longer. Among the 12-month survey respondents, 67 percent reported having their job for at least 9 months or more, compared with 15 percent of the 6-month survey respondents. More than one-third (n=24, 39%) of the students who completed the 6-month follow-up survey reported having been employed less than 6 months.

More than half of the respondents for both surveys were employed full-time, for wages, in their field of study (n=45, 54% of the 6-month respondents; n=59, 52% of the 12-month respondents). Relatively few students were employed part-time, either in their field of study or in another field. Notably, only 5–6 percent of the respondents for both the 6-month and 12-month surveys indicated that they were employed part-time in another field, and an even smaller proportion were employed part-time in their field of study. However, 18 percent of the 6-month respondents and 21 percent of 12-month respondents were unemployed at the time of the survey. These results are shown in Exhibit 29. It is possible that some of those who were unemployed were continuing their training, as some programs were designed to allow students to build on their training after receiving an initial certification.

Exhibit 29: Current Employment Status*

Bar chart showing Percentage of Students (y-axis, 0% to 60%) by Employment Status (x-axis), comparing 6-month and 12-month surveys:

- Full-time in field of study for wages: 6-month 48%, 12-month 45%
- Full-time in another field for wages: 6-month 18%, 12-month 19%
- Part-time in field of study for wages: 6-month 1%, 12-month 0%
- Part-time in another field for wages: 6-month 6%, 12-month 5%
- Unemployed: 6-month 16%, 12-month 19%

* Ten of 94 students and 16 of 130 students did not respond to the 6- and 12-month surveys, respectively.
Source: IERTC Follow-up data, Fall 2017–Summer 2018.

Barriers to Employment

Many participants had barriers to employment before entering the program or had little work experience. Survey respondents were presented with a scale that asked them to indicate the extent to which certain circumstances, such as poor health or a criminal history, affected their ability, to any extent, to secure or maintain employment. At baseline, the most common circumstances included lack of relevant work experience (33%) and lack of technical skills (31%), which the TAACCCT programs were designed to directly address (see Exhibit 30). Additional common barriers were being laid off or terminated by their employer (21%), poor health (20%), and lack of transportation (17%). Notably, the majority of the respondents mentioned that they had, to some extent, another barrier to employment (90%).

Exhibit 30: Baseline Employment Barriers

Barrier	To No Extent	To Any Extent
Poor health (e.g., physical/mental health) *Total N=433* *Missing N=124*	80%	20%
Inadequate childcare *Total N=433* *Missing N=124*	94%	6%
Inadequate resources to care for a sick or elder family member *Total N=434* *Missing N=123*	91%	9%
Inadequate housing *Total N=429* *Missing N=128*	89%	11%
Lack of transportation (personal vehicle or no accessible public transportation) *Total N=432* *Missing N=125*	83%	17%
Layoff or employer terminated *Total N=432* *Missing N=125*	79%	21%
Criminal history *Total N=430* *Missing N=127*	85%	15%
Lack of technical skills *Total N=430* *Missing N=127*	69%	31%
Lack of relevant work experience *Total N=429* *Missing N=128*	67%	33%
Other *Total N=232* *Missing N=325*	10%	90%

Survey question asked: To what extent did any of the following circumstances affect your ability to secure and maintain employment prior to enrolling in the program? Missing responses were not included in the calculations for barriers.

Source: IERTC Baseline data, Fall 2016–Spring 2018.

Many of the barriers that were present before the program remained after program completion, highlighting how this group needed continued support. For both the 6- and 12-month follow-up survey respondents, the most commonly reported barriers to employment were lack of relevant work experience (44% and 36%, respectively) and lack of technical skills (36% and 27%, respectively) (see Exhibit 31).

Exhibit 31: Post-Completion Employment Barriers

Barrier	Follow-up	To No Extent	To Any Extent
Poor health (e.g., physical/mental health)	6-month (N=81)	80%	20%
	12-month (N=112)	86%	14%
Inadequate childcare	6-month (N=81)	94%	6%
	12-month (N=111)	86%	14%
Inadequate resources to care for a sick or elder family member	6-month (N=81)	90%	10%
	12-month (N=111)	89%	11%
Inadequate housing	6-month (N=81)	85%	15%
	12-month (N=111)	88%	12%
Lack of transportation (personal vehicle or no accessible public transportation)	6-month (N=81)	83%	17%
	12-month (N=111)	84%	16%
Layoff or employer terminated	6-month (N=81)	88%	12%
	12-month (N=111)	82%	18%
Criminal history	6-month (N=80)	94%	6%
	12-month (N=111)	86%	14%
Lack of technical skills	6-month (N=81)	64%	36%
	12-month (N=111)	73%	27%
Lack of relevant work experience	6-month (N=81)	56%	44%
	12-month (N=111)	64%	36%
Other	6-month (N=67)	6%	93%
	12-month (N=90)	7%	93%

Survey question asked: To what extent did any of the following circumstances affect your ability to secure and maintain employment? Missing responses were not included in the calculations for the barriers.
Source: IERTC Follow-up data, Fall 2017–Summer 2018.

Health Insurance and Benefits

When asked about health insurance and public assistance from pre- to post-test, there were differences in the proportion of students who reported having health insurance through a current or former employer or through a union and those who used the Supplemental Nutrition Assistance Program (SNAP). At pre-test, about one-third (31%) of the students reported that they had health insurance through a current or former employer or union, whereas at the 6-month and 12-month follow-ups, about one-half (48%) to well over one-half (58%), respectively, reported having health insurance through a current or former employer or union. There were also decreases in the proportion of participants using public assistance from pre- to post-test, with 31 percent of the respondents at pre-test using SNAP, whereas half of that proportion used SNAP at the 6-month (8%) and 12-month (6%) follow-ups. These findings demonstrate a 55 percent to 87 percent increase from baseline to follow-up in the number of students with health insurance through a

current or former employer or union, and a 74 percent to 81 percent decrease in the number of students from baseline to follow-up who were collecting SNAP or food stamps. While not directly related to employment or wages, these findings imply that students were in a better financial position at follow-up because they were able to gain health insurance through an employer and did not rely on public assistance as much as they did at baseline.

Exhibit 32: Benefits and Public Assistance

	Baseline Percentage*	6-Month Follow-up Percentage (N=75)†	12-Month Follow-up Percentage (N=109)‡
Were you receiving any of the following benefits when you signed up for this class (baseline) and after you completed your program (6- and 12-month follow-up)? (select only one)			
Health insurance, including dental and vision, through a current or former employer or through a union	31%	48%	58%
Health insurance, including dental and vision, through a family coverage plan	14%	0%	0%
Health insurance purchased directly from an insurance company	2%	3%	4%
Medicare, medical assistance, or any kind of government assistance plan for those with low incomes or disabilities	38%	15%	17%
Tricare or other military health care	7%	5%	1%
Not applicable	0%	25%	16%
Other	8%	4%	6%
Were you collecting any of the following public assistance services when you signed up for this class? (select all that apply)			
Temporary Assistance for Needy Families (TANF)	10%	3%	4%
Supplemental Nutrition Assistance Program (SNAP) or Food Stamps	31%	8%	6%
Workforce Innovation and Opportunity Act (WIOA) Services and Funding	6%	0%	1%
Veteran's Benefits	10%	4%	1%
Supplemental Security Income	5%	0%	1%
Transportation Assistance	3%	0%	2%
Unemployment Insurance	21%	0%	4%
Not applicable	0%	85%	84%
Other	14%	1%	1%

Source: IERTC Baseline data, Fall 2016–Spring 2018; Follow-up data, Fall 2017–Summer 2018.

* There were 179 missing responses from the baseline health insurance data and 357 missing responses from the public assistance data, for a total N=378 and N=235, respectively.

† There were 17 missing responses from the 6-month follow-up health insurance and public assistance data.

‡ There were 21 missing responses from the 12-month follow-up health insurance and public assistance data.

Conclusions

Summary of Findings

Program Implementation and Fidelity

During the TAACCCT grant, the IERTC colleges developed programs that trained students to become part of the workforce that would address the high-need areas of advanced manufacturing. Colleges used many of the core strategies initially planned, such as industry partnerships, industry-relevant credentials, and providing academic and career support services to students. Certain elements were used at only some of the colleges, such as stacked credentials, online learning, and workforce agency partnerships. While colleges enrolled some students from high-need groups, such as veterans, their recruitment focused on a broader set of individuals, including incumbent workers, college students, and high school students.

Program Successes and Challenges

There were various reasons why programs differed from their original implementation plans. Often there were barriers to getting courses established, such as delays in hiring, equipment purchasing, and course approvals. Another common reason why programs changed direction was to respond to the feedback from the industry about job market trends and the types of skills needed. Programs also were responsive to student interests, the need to generate sufficient levels of enrollment, and helping students be successful.

The colleges' success was bolstered by different factors. Industry partnerships were key facilitators throughout the grant, helping to develop programs, deliver training, provide resources, and connect students to employment. The support of the lead college and fellow consortium members also helped colleges navigate grant activities and share best practices for program implementation. Colleges were also able to leverage additional resources provided by their college and other grants to implement program activities and meet student needs.

Institutional Capacity Building

During the grant, colleges developed the capacity to provide workforce training. By the end of the grant, most colleges felt that they had the curriculum, equipment, and facilities needed to operate their existing programs. However, some explained that to further adapt and expand their curriculum would require additional resources and time. Most colleges felt that they had buy-in from their home institutions and had institutionalized some of the elements of their program into their college, such as getting funding for each enrolled student and utilizing campus support services. Colleges had built up their capacity to expand the awareness of their programs to the industry and local workforce through community outreach. They also established strong partnerships with other IERTC colleges and local industries that they expected to continue and grow into other opportunities in the future.

Student Outcomes

Given the low response rate to the survey and program staff's challenges in monitoring employment outcomes, it is difficult to quantify the program impact with the data available. Despite these challenges, the evaluation demonstrated how the program improved employment outcomes for students in the region. The proportion of students who reported being unemployed decreased from the beginning of program participation to the 6 and 12 months following program completion, and some students received promotions or changed jobs during the follow-up time period. After program participation, a smaller proportion of students received public assistance, while a higher proportion reported receiving health care through their employer. However, employment barriers remained for many participants surveyed from baseline to follow-up, particularly around lack of relevant work experience and lack of technical skills.

Stakeholders shared how the program had been highly valuable in helping students gain skills and qualifications to obtain employment or career advancement, and most students surveyed agreed that it had helped them with their careers. These results suggest that the program has made an impact on employment in the advanced manufacturing sector in the Inland Empire region. Based on these findings, once IERTC has successfully filled the immediate needs to get an entry-level workforce trained, it can then turn its focus onto upskilling incumbent workers with additional support and training, and in developing programs for those with persistent employment barriers, thereby contributing to gains in employment and the local economy.

Implications for Workforce Training Programs

The findings from the evaluation had multiple implications for workforce training initiatives.

To prepare students for jobs, advanced manufacturing training should include hands-on instruction and opportunities for on-the-job training.

- Throughout the evaluation, stakeholders spoke of the value of hands-on training, which involves project-based instruction and assessment, and opportunities to use state-of-the-art industry tools and equipment. These types of experiences help students learn and help them to prepare for what they will do on the job. It also is valuable for students to have experience in the workplace itself, practicing their skills, either through apprenticeships as incumbent workers, or through an internship for those who are unemployed. These experiences can help them transfer what they learn to an actual work setting, and potentially build career connections by working with potential employers and their employees.

Providing academic and career supports is necessary for student success, especially when targeting a population with high employment barriers.

- While students felt that the programs helped them with work-related skills, some reported continued employment barriers. Like the IERTC populations, many workforce programs target diverse populations with various barriers to employment. Providing continued supports (e.g., technical support through faculty connections, soft skills coaching, career guidance and job placement, financial aid to pursue an associate or 4-year degree), whether through the training program or a partner, helps support students after they complete the training.

Responsiveness to industry is important, but can be challenging given the time and financial investment to develop new programs.

- A key strategy of the consortium was to adapt their curriculum based on feedback from the industry and students. However, colleges also acknowledged the large time and cost investments necessary to create new programs, which, in some cases, delayed program initiation and student enrollment. It is important for program administrators and funders to plan for enough time for curriculum approvals (especially with for-credit programs), equipment purchases, hiring and training faculty, and student recruitment. Accordingly, they should also understand that many programs will not be able to enroll students right away. One strategy that programs used was to offer not-for-credit programs that did not require lengthy approval processes. However, for some career pathways in advanced manufacturing (e.g., engineering), a degree is needed for students to advance.

Partnerships are critical for workforce training programs and benefit from communication and aligned interests.

- IERTC showed that partners can play different roles in a program, for example, teacher, advisor, employer, or funder. Partnerships also can vary in intensity or over time, but still bring value to the program and help boost progress. To maintain partnerships, it is important to have continued communication and identify where interests and opportunities align. In consortiums, such as IERTC, early communication to make sure everyone is on the same page and understands expectations is critical. Ongoing communication is especially key in industries and programs that change over short periods of time, or when challenges arise.

Appendix A: IERTC Colleges and Universities

Site Name	TAACCCT Project	Program Type	Credentials	Target Population
Barstow Community College	Industrial Maintenance Electrical and Instrumentation	For-credit	1-Year Certificate; Associate degree; NCCER certification; OSHA 10	Incumbent workers; college students; high school concurrent enrollment
	Industrial Maintenance Mechanic	For-credit	1-Year Certificate; Associate degree; NCCER certification; OSHA 10	Incumbent workers; college students; high school concurrent enrollment
	Welding	For-credit	1-Year Certificate; Associate degree; American Welding Society (AWS) Certificate of Preparation; OSHA 10	Incumbent workers; college students; high school concurrent enrollment
	Welding Contract Training	Not-for-credit	100-Hour Certification of Completion	Dislocated, un-employed, under-employed, and incumbent workers
	OSHA Contract Training	Not-for-credit	10-Hour OSHA Card	Dislocated, un-employed, under-employed, and incumbent workers
	Advanced Industrial Maintenance Mechanic with NCCER Certification	Not-for-credit	190-Hour Certificate of Completion; NCCER Certification	Incumbent workers
	Industrial Maintenance Mechanic with NCCER Certification	Not-for-credit	206-Hour Certification of Completion; NCCER Certification; OSHA 10	Dislocated, un-employed, under-employed, and incumbent workers
California State University, San Bernardino	Entrepreneurial Technician 1.0	Not-for-credit	Course Completion Certificate	IERTC students; all interested parties
	Entrepreneurial Technician 2.0	Not-for-credit	Course Completion Certificate	IERTC students; all interested parties
	Entrepreneurship for Educators	Not-for-credit	Course Completion Certificate	Middle and HS educators
	Own It Workshop(s)	Not-for-credit	N/A	IERTC students; all interested parties
Chaffey College (InTech Center)	Audiovisual	Not-for-credit	Certificate	Incumbent workers; college students
	AutoCAD	Not-for-credit	Certificate	Incumbent workers; college students

Site Name	TAACCCT Project	Program Type	Credentials	Target Population
	Automation and Process Control	Not-for-credit	Certificate	Incumbent workers; college students
	CAD for Machinists [Introduction to]	Not-for-credit	Certificate	Incumbent workers; college students
	Craft Fundamentals	Not-for-credit	Certificate	Incumbent workers; college students
	Forklift Operation	Not-for-credit	Certificate	Incumbent workers; college students
	Heating, Ventilation, and Air Conditioning (HVAC) Levels 1–4	Not-for-credit	Certificate; NCCCER Certification	Incumbent workers; college students
	Industrial Electrical Levels 1–4	Not-for-credit	Certificate; NCCCER Certification; Cal OSHA 10 Certification	Incumbent workers; college students
	Industrial Maintenance Mechanic Levels 1–4	Not-for-credit	Certificate; NCCCER Certification; Cal OSHA 10 Certification	Incumbent workers; college students
	Manufacturing Basic Electrician	Not-for-credit	Certificate; NCCCER Certification; Cal OSHA 10 Certification	Incumbent workers; college students
	Manufacturing Basic Machine Operator	Not-for-credit	Certificate; NCCCER Certification; Cal OSHA 10 Certification	Incumbent workers; college students
	MasterCam	Not-for-credit	Certificate	Incumbent workers; college students
	Prototyping	Not-for-credit	Certificate	Incumbent workers; college students
	SolidWorks	Not-for-credit	Certificate	Incumbent workers; college students
	Construction	Not-for-credit	Certificate	Incumbent workers; college students
	Mechatronics	Not-for-credit	Certificate	Incumbent workers; college students
	Welding	Not-for-credit	Certificate	Incumbent workers; college students
	Office Occupations	Not-for-credit	Certificate	Incumbent workers; college students
College of the Desert	Zero Net Energy Core Certificate	For-credit	Certificate of Completion	Unemployed, Veterans, Incumbent workers, and HS students
	Alternative Energy Technician	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students

Site Name	TAACCCT Project	Program Type	Credentials	Target Population
	Facilities Operations Technician	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	HVACR Technician	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	Building Automation Controls	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	Advanced Lighting Technician	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	Building Energy Consultant	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	Construction Manager	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	Building Inspector Technology	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	Building Commissioning Technician	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	Zero Net Energy Technician	For-credit	BESP Associate Degree	Unemployed, Veterans, Incumbent workers, and HS students
	BESP Entrepreneurship Track	For-credit	Certificate of completion	Unemployed, Veterans, Incumbent workers, and HS students
	Commercial Gas Heating	For-credit	Certificate of Achievement	Unemployed, Veterans, Incumbent workers, and HS students
	Green HVAC Commercial	For-credit	Certificate of Achievement	Unemployed, Veterans, Incumbent workers, and HS students

Site Name	TAACCCT Project	Program Type	Credentials	Target Population
	Green HVAC Residential	For-credit	Certificate of Achievement	Unemployed, Veterans, Incumbent workers, and HS students
	Heat Pumps	For-credit	Certificate of Achievement	Unemployed, Veterans, Incumbent workers, and HS students
	Residential Gas Heating	For-credit	Certificate of Achievement	Unemployed, Veterans, Incumbent workers, and HS students
	Air Properties and Economizer Performance	Non-credit	Certificate of Completion	Unemployed, Veterans, and Incumbent workers
	Proper HVAC System Preparation & System Charging	Non-credit	Certificate of Completion	Unemployed, Veterans, and Incumbent workers
	Refrigerant Management & EPA-608 Preparation	Non-credit	Certificate of Completion	Unemployed, Veterans, and Incumbent workers
	Residential Solar Installation	Non-credit	Certificate of Completion	Unemployed, Veterans, and Incumbent workers
	Residential Solar Surveying & Planning	Non-credit	Certificate of Completion	Unemployed, Veterans, and Incumbent workers
	Solar Battery Storage and Installation & Maintenance	Non-credit	Certificate of Completion	Unemployed, Veterans, and Incumbent workers
	Solar Site Planning Project	Non-credit	Certificate of Completion	Unemployed, Veterans, and Incumbent workers
Crafton Hills College	Computer-Assisted Graphic Design (Art) Certificate	For-credit	Certificate of Completion	N/A
	Digital Media Certificate	N/A	N/A	N/A
MiraCosta College	AutoCAD	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Blueprint with GDAT	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	CNC Operation	Not for credit	Certificate of Accomplishment	College students; Incumbent workers

Site Name	TAACCCT Project	Program Type	Credentials	Target Population
	CNC Programming [Intermediate]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	CNC Programming [Introduction]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Digital Precision Measurement	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Engineering Technician Program	Not for credit	Certificate of Accomplishment; National Career Readiness Certificate; OSHA-10 certification	College students; Incumbent workers
	Machinist	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Metal Fabrication [Introduction]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Quality Assurance	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Welding I	Not for credit	Certificate of Accomplishment; test to qualify to an AWS code	College students; Incumbent workers
	Electromechanics [Introduction]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Electronic Assembly	Not for credit	Certificate of Accomplishment; IPC certification	College students; Incumbent workers
	Electronics [Basic]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Hydraulic and Pneumatic Systems	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	MATLAB	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Microcontroller Programming [Introduction]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	PLC Program – AB & Siemens	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Python XY	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Soldering [Basics]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Solidworks [Advanced]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
	Solidworks [Beginner]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers

Site Name	TAACCCT Project	Program Type	Credentials	Target Population
	Solidworks [Intermediate]	Not for credit	Certificate of Accomplishment	College students; Incumbent workers
Mt. San Jacinto College	Engineering Technology Support Certificate	For-credit	Engineering Technology Support Certificate	Incumbent workers; college students
	ENGR-120 Principles of Engineering	For-credit	None	Incumbent workers; college students
	ENGR-180 Introduction to Engineering	For-credit	None	Incumbent workers; college students
	ENGR-181 Statics	For-credit	None	Incumbent workers; college students
	MATH-055 Accelerated Pre-Algebra with Arithmetic	For-credit	None	Incumbent workers; college students
	MATH-090 Elementary Algebra	For-credit	None	Incumbent workers; college students
	MATH-105 College Algebra	For-credit	None	Incumbent workers; college students
Norco College	Industrial Automation/Automated Systems Technician	For-credit	Certificate; OSHA Certification	Unemployed; Recent high school graduates
	Computer Numerical Controls (CNC)	For-credit	Certificate	Unemployed; Recent high school graduates
	Electrician	For-credit	Certificate	Unemployed; Recent high school graduates; Incumbent workers
	Machine Operator	For-credit	Certificate	Unemployed; Recent high school graduates
	Facilities Maintenance	For-credit	Certificate	Unemployed; Recent high school graduates
Riverside City College	Information Security and Cyber Defense Certificate	For-credit	Information Security and Cyber Defense Certificate	Incumbent workers; unemployed; HS & college students
	Quality Assurance Level 1 Certificate	For-credit	Certificate	Incumbent workers; college students
	Quality Assurance Process Analyst Certificate	For-credit	Certificate	Incumbent workers; college students
	Quality Assurance Inspector Certificate	For-credit	Certificate	Incumbent workers; college students

Site Name	TAACCCT Project	Program Type	Credentials	Target Population
	Quality Assurance Auditor Certificate	For-credit	Certificate	Incumbent workers; college students
	A.S. Degree in Quality Assurance	For-credit	Associate Degree	Incumbent workers; college students
	Quality Assurance Level 2 Certificate	For-credit	Certificate	Incumbent workers; college students
San Bernardino Valley College	Mechanical Craft (Beginner)	Not-for-credit	OSHA 10 certification	Incumbent workers
	Mechanical Craft (Intermediate)	Not-for-credit	OSHA 10 certification	Incumbent workers
	Welding	Not-for-credit	American Welding Society (AWS) Certification (upon passing exam)	Incumbent workers
Victor Valley College	Welding and Fabrication – Basic	For-credit	Certificate; option to test for Welding Certification	Incumbent workers; college students
	Welding and Fabrication – Advanced	For-credit	Certificate; option to test for Welding Certification	Incumbent workers; college students
	Employer Training Program (ETP)	For-credit	American Welding Society (AWS) Certification (upon passing exam)	Incumbent workers
	Welding Blue-Print	N/A	N/A	N/A

Appendix B: Logic Model

Inland Empire Regional Training Consortium (IERTC) Logic Model: Developed in 2014

Inputs	Activities	Outputs	Short-Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
Program Participants • U.S. veterans/active military • TAA eligible workers • Dislocated workers **Program & Partners** • U.S. DOL (TAACCCT) funding • IERTC Members & Staff • Employers • Public Workforce System • Community/ • Foundations • K–12/Adult Education **Resources** • Online Training & Resources • Closed circuit at InTech Center and participating colleges • Mobile Training Labs	**Program & Partnership Development** • STEM Education Business Incubator • Employer-oriented curricula review, feedback, and training • Leverage TAA resources • Online learning, recruitment, media campaigns, student services, and industry partnerships • Career path options, entrepreneur training, and engineering feasibility study **Degree/Certificate Program** • Multi-modal, competency-based curricula • Individualized assessment and education • Multiple certifications	**Highlighted Statistics*** • Unique participants served: 2,847 • Participants completing TAACCCT Program: 2,589 • Participants earning credentials: 1,176 • Participants enrolled in further education: 909 • Participants employed and retained: 1,542 • Already employed participants seeing a wage increase: 46 • Increased numbers of sector-based partnerships, trained entrepreneurs, and updated curricula * Totals are for entire period of the grant	**Participants** • have increased course and program completion rates • have increased skills and practical experience **Program & Partners** • expanded curricula • strengthened partnerships • increased program reach, course accessibility, and hands-on training	**Participants** • have increased certification, employment, retention, and advancement rates • have increased earnings • pursue further education **Program & Partners** • IERTC has improved curricula, best practices for training and TAA, and AA program • Employers have skilled workforce • Stronger network partnerships • Credit for Prior Learning/Credit by Exam	**Graduates** • have transferrable skills • have improved self-sufficiency and financial stability **Program & Partners** • Employers are more satisfied and know IERTC colleges are reliable resources for workforce pipeline • Sustainable advanced manufacturing career pathway

Context: The Inland Empire (IE) tops the list of the Nation's largest metropolitan areas in economic devastation. Recent studies prior to the grant beginning indicated that the average educational attainment in the IE was lower than both state and national averages. Despite these staggering facts, the manufacturing industry in the IE and in the State of California has emerged as the primary economic driver with nearly 2 million job openings expected by 2018. The IERTC has been funded by DOL to develop training and pathways leading to industry-recognized credentials in the high-demand field of Advanced Manufacturing in the Southern California region. **Assumptions:** IERTC will focus on the curricula that supports occupations related to Advanced Manufacturing. The program is expected to support systematic change and build synergy among higher education and industry partners throughout the region. Utilizing wrap-around student support, rapid remediation, and contextualized core skills, IERTC will build capacity to deliver and prepare TAA-eligible and other adult workers with skills for the Advanced Manufacturing sector.

Appendix C: Site Visit Protocols (Year 4 Version)

Project Manager and Project Coordinator Interview Facilitation Guide

My name is *[introduce self and note-taker]*. We are from ICF, a team that is evaluating the IERTC TAACCCT program. As you may know, the program is training students to gain employment in the advanced manufacturing industries in the Inland Empire. We are studying how the program is being implemented and whether it is helping students get jobs. As this is the last year of the program, our primary aim for this year's interviews is to learn about your colleges' programs and how they have changed since last year, how programs will be sustained after the end of the grant, and to learn colleges' and partners' views of the impact of the grant. We expect the interview will take about 60 minutes.

I'll be asking you questions and *[note-taker's name]* is here to take notes on our conversation. To help us take notes today, we would like to record our interview. *Would that be ok with you? (Yes or no)*

Before we begin, we want to remind you that your participation in this interview is voluntary and the information you share with us will be kept confidential. Specifically, this means that

(1) You can decline to answer any questions or leave at any time;

(2) We will not connect your name with what was said in any written reports; and

(3) Only evaluation staff will have access to the interview data.

In our evaluation reports we will only provide summaries and anecdotes from what was learned in the interviews. We will not report or present the information you share with us in any way that will identify a specific person.

Interview Questions

Grant Startup, Structure, and Overview

1. Please briefly describe your role relative to the grant and whether it has changed since last year.

2. Has the administrative structure of the IERTC grant at your college changed this past year?

   a. If yes, what were the changes, and what were the implications for the program?

3. In the site visit overview guide we included a table with your TAACCCT-funded programs from last year. Thinking about the past 6 months, should any of the information in this table be updated? *[Refer to the program matrix.]*

   a. Probes *[note updates in any of the following]*:
      * *Courses offered*
      * *Industry-recognized credentials or other credentials offered*
      * *Students targeted*
      * *Program start date*

b. Are any of your courses offered online? If so, which courses?

4. *[If not already answered:]* Were you able to get all your courses approved in the timeframe of the project? Do you have anything you would add to the program?

5. Last year we asked you questions about your program structure. Briefly tell me if there have been any *changes* in how the following were implemented at your site this past year. **[Discuss each one separately]**

   a. Student recruitment
   b. Intake/enrollment
   c. Staff training or staff capacity building
   d. Assessment
      • pre-program assessment
      • academic performance/course completion
      • certifications earned
      • post-program employment outcomes (including informal tracking)

6. We understand that the programs are no longer required to use grant maximizer.

   a. Are you still using it?
   b. Did you find grant maximizer to be a useful tool? *[If applicable mention last year's challenges with grant maximizer.]*
   c. *[If not]* what changes might have made a centralized database tool like that more useful? *(Probe: For example, changes in the training)*

Student Support Design and Delivery

7. Please describe any changes to academic and personal support services offered to students in your program this past year such as tutoring, retention services, childcare or transportation supports.

8. Please describe any changes to career support services offered to students in your program this past year such as career/program guidance, career planning, job/internship placement or other career supports.

External Engagement

9. We want to ask about changes in your work with external program partners. *[Possible prompt: This may include any external organization you work with as part of the grant, either formally or informally.]*

   For each type of partner can you briefly describe how your work with them has changed, if at all, since last year?:

   a. Workforce partners (e.g., WIBs)
   b. Employers
   c. InTech Center
   d. Other IERTC colleges
      • *Probe: For example, do you still share lessons learned?*

e. The consortium has a representative from UC Riverside that helps with consortium outreach. Have you worked or interacted with this representative at all as part of the TAACCCT grant? If yes, please describe.

Program Sustainability

The next set of questions will ask additional information about how your program will be sustained after the grant is over.

[Note: Definition of "sustainability"—the effort to maintain the impact and capacity of programs and innovations[8] after the grant has ended]

10. *[Program coordinators:]* Have you been involved in any planning or discussions about sustaining the TAACCCT program after the grant has ended? *[If no, then skip the next two questions.]*

11. Has your college developed a plan for sustainability after the TAACCCT grant?

12. Please indicate whether *(yes or no)* each of the following elements will likely continue to be a part of your college's program(s) after the TAACCCT grant ends. If an element is not applicable to your program, please let me know. *[Only mention potentially applicable components that are part of their TAACCCT grant. Responses should indicate Yes/No/Not Applicable. If interviewee indicates that element will be partly sustained, ask them to briefly describe what will be sustained.]*

   a. Will the TAACCCT **programs** continue to be offered after the TAACCCT grant ends? Please describe. *[Note: This refers to programs highlighted in the program matrix.]*
       Probes:
       - *Curriculum alignment among colleges*
       - *Evidence-based curriculum*
       - *Are there specific courses that you are planning to keep or eliminate?*
   b. Will the **credentials** offered in your TAACCCT program continue to be offered after the TAACCCT grant ends? Please describe.
       Probes:
       - *Offering industry-relevant credentials*
       - *Career pathways with stacked and latticed credentials*
       - *Transferability and/or articulated credit*
   c. Will the method of **instruction** in your TAACCCT program likely continue to be used after the TAACCCT grant ends? Please describe.
       Probes:
       - *Hands-on and interactive instruction*
       - *Competency-based assessment (assessing student skills through hands on and/or industry-aligned assessments)*
       - *Online learning*
       - *Technology-enabled learning*
       - *Online and/or mobile resources to serve training needs of colleges and industry in the region*

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[8] TAACCCT Sustainability Toolkit.

   d. Will your TAACCCT program's **recruitment/intake** process continue after the TAACCCT grant ends? Please describe.
     Probes:

- *Participant recruitment that targets underserved or high-need individuals (e.g., veterans, unemployed)*
- *Intake process that includes gathering student baseline data to help determine student skills and needs*

   e. Will students in your program still be offered the student **support services** connected with your TAACCCT program after the TAACCCT grant ends? Please describe.
     Probes:

- *Academic and personal support services*
- *Career planning assistance including developing a plan with employment goals and steps to achieve them*
- *Career placement assistance (e.g., internship placement, resume preparation)*

   f. Will your TAACCCT program's **partnership** strategy continue after the TAACCCT grant ends?
     Probes:

- *Employer engagement*
- *Strategic alignment with workforce systems and partners*
- *Focus on a specific industry sector*
- *Partnerships with workforce agencies (e.g., Workforce Investment Boards)*
- *Other local/regional/(if applicable: federal) partnerships related to workforce development (including among consortium colleges)*
- *Centralized training center (i.e., the InTech Center) available to the region*

Sustainability Factors *[If applicable]*

13. Will your college try and scale (expand or replicate) your TAACCCT program within your college? Beyond your college? Please describe.

14. During the course of the TAACCCT grant, were there any changes to policy or practice at your college as a result of your program? If so, please describe.

15. Have you pursued new sources of funding to sustain your TAACCCT program or components of your TAACCCT program? *[If yes]* Which ones?

   a. If yes, have you secured new funding? Which sources are you pursing/have secured?
   b. Are you planning to pursue new sources of funding to sustain your TAACCCT program? If yes, which sources will you pursue?

16. Have you established organizational buy-in, for example from departmental and/or college leadership, to sustain your TAACCCT program *[Probe: or components of your TAACCCT program]*? If yes, please describe.

17. After the grant ends, will you have sufficient personnel, such as staff, faculty, and *[if applicable]* partners, to continue to operate the TAACCCT program effectively *[Probe: or components of your TAACCCT program]*? Please describe.

18. Aside from funding, organizational buy-in, and personnel, what other elements are needed for you to sustain your TAACCCT program activities *[Probe: or components of your TAACCCT program]*?

    a. *Probes: What challenges do you anticipate to sustaining the program? What would prevent you from sustaining the program?*

Overall Assessment and Lessons Learned

19. As the grant comes to a close, how are you feeling about the IERTC TAACCCT grant overall?

    a. With which areas are you most pleased?
    b. What are your biggest concerns, beyond those you have already mentioned?
    c. What would you have changed about the grant/program if you could?

20. Are there any lessons learned that you think would be helpful to other colleges implementing this type of program?

    • *Probe: Are there any effective strategies for program implementation that would be helpful to share?*

21. How do you feel your program has helped participants' employment outcomes, such as career readiness and employment, and wage increases?

    a. In what way was the program most helpful for participants' employment outcomes?
    b. Can you share a success story about a participant in your program?

22. How has your program contributed to the local community and industry?

    Probes:
    • *Did it improve the economic development of the Inland Empire region? If yes, how?*
    • *Has it strengthened the advanced manufacturing industry in the region? If yes, how?*
    a. What, if any, future impacts do you anticipate this program will have on the region?

Data Specialist Staff Interview Facilitation Guide

My name is **[introduce self and note-taker].** We are from ICF, a team that is evaluating the IERTC TAACCCT program. As you may know, the program is training students to gain employment in the advanced manufacturing industries in the Inland Empire. We are studying how the program is being implemented and whether it is helping students get jobs. As this is the last year of the program, our primary aim for this year's interviews is to learn about your colleges' programs and how they have changed since last year, how programs will be sustained after the end of the grant, and to learn colleges' and partners' views of the impact of the grant. We expect the interview will take about 45-60 minutes.

I'll be asking you questions and **[note-taker's name]** is here to take notes on our conversation. To help us take notes today, we would like to record our interview. *Would that be ok with you? (Yes or no)*

Before we begin, we want to remind you that your participation in this interview is voluntary and the information you share with us will be kept confidential. Specifically, this means that:

(1) You can decline to answer any questions or leave at any time;

(2) We will not connect your name with what was said in any written reports; and

(3) Only evaluation staff will have access to the interview data.

In our evaluation reports we will only provide summaries and anecdotes from what was learned in the interviews. We will not report or present the information you share with us in any way that will identify a specific person.

Interview Questions:

[Note: Questions that are not asked in the Project Manager Interview are starred (*). Ask those questions, even if the Data Specialist participated in the Project Manager interview.]

1. Please briefly describe your role in the program and if it has changed since last year.

2. Can you describe how you are monitoring student outcomes and how that has changed since last year?

   a. Progress in the program, such as student certification exams or program completion?
   b. Employment and wage increases?
   c. *[If applicable]* Track changes from year to year?
   d. * How has the program used the data it has collected? *Probe: For example, to improve the program?*

3. * What system do you use to track student data? For example, excel?

   a. How effective is the system in tracking TAACCCT students, and reporting TAACCCT program metrics to Chaffey?

4. Have you interacted with the other IERTC colleges as part of this grant? If yes, which ones and in what way? *[Probe specifically for interaction with Chaffey College as the lead college.]*

[If applicable] Program Sustainability

The next set of questions will ask additional information about how your program will be sustained after the grant is over.

[Note: Definition of "sustainability"—the effort to maintain the impact and capacity of programs and innovations[9] after the grant has ended.]

5. Have you talked with program staff about plans to sustain the program after the grant is over?

6. *[If applicable]* Please indicate whether *(yes or no)* each of the following elements will likely continue to be a part of your college's program(s) after the TAACCCT grant ends. If an element is not applicable to your program, please let me know. *[Only mention potentially applicable components. Responses should indicate Yes/No/Not Applicable. If interviewee indicates that element will be partly sustained, ask them to briefly describe what will be sustained.]*

   Recruitment/Intake

   • Intake process that includes gathering student baseline data to help determine student skills and needs.

   Instruction

   • Competency-based assessment (assessing student skills through hands on and/or industry-aligned assessments)

   Workforce Partnerships

   • Employer engagement
   • Partnerships with workforce agencies (e.g., Workforce Investment Boards).
   • Other local/regional/(if applicable: federal) partnerships related to workforce development (including among consortium colleges)

Overall Assessment and Lessons Learned

7. As the grant comes to a close, how are you feeling about the grant right now?

   • Which areas of the IERTC grant are working well?
   • What are your biggest concerns?

8. Are there any lessons learned that you think would be helpful to other colleges implementing this type of program?

   a. ** Probe: Are there any effective strategies for data collection or management that would be helpful to share?*

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[9] TAACCCT Sustainability Toolkit.

Instructor Interview Facilitation Guide

My name is ***[introduce self and note-taker]***. We are from ICF, a team that is evaluating the IERTC TAACCCT program. As you may know, the program is training students to gain employment in the advanced manufacturing industries in the Inland Empire. We are studying how the program is being implemented and whether it is helping students get jobs. As this is the last year of the program, our primary aim for this year's interviews is to learn about your colleges' programs and how they have changed since last year, how programs will be sustained after the end of the grant, and to learn colleges' and partners' views of the impact of the grant. We expect the interview will take about 45–60 minutes.

I'll be asking you questions and ***[note-taker's name]*** is here to take notes on our conversation. To help us take notes today, we would like to record our interview. *Would that be ok with you? (Yes or no)*

Before we begin, we want to remind you that your participation in this interview is voluntary, and the information you share with us will be kept confidential. Specifically, this means that:

(1) You can decline to answer any questions or leave at any time;

(2) We will not connect your name with what was said in any written reports; and

(3) Only evaluation staff will have access to the interview data.

In our evaluation reports we will only provide summaries and anecdotes from what was learned in the interviews. We will not report or present the information you share with us in any way that will identify a specific person.

Interview Questions

Curriculum Design, Delivery, and Assessment

1. What course(s) do you teach that are related to the TAACCCT grant?

2. What changes or refinements have occurred to your course(s) this year?

3. Briefly tell me if there have been any changes in how the following are implemented at your site this past year. [Note: If instructor was not in the program and/or interviewed last year instead ask them to describe the following.]

   a. pre-program assessment
   b. academic performance/course completion
   c. certifications earned
   d. obtaining feedback on your courses
   e. *[if applicable]* post-program employment outcomes (including informal tracking)

Student Support Design and Delivery

4. Are you aware of academic and personal support services offered to students in your program such as tutoring, career/program guidance, retention services, transportation or childcare support?

    a. *[If yes]* How have these services changed since last year?

5. Are you aware of career support services offered to students in your program such as career/program guidance, career planning, job/internship placement or other career supports?

    a. *[If yes]* How have these services changed since last year?

Grant Implementation and External Engagement

6. Have you collaborated with other IERTC consortium members this year? If so, how?

Sustainability *[If applicable]*

The next set of questions will ask additional information about how your program will be sustained after the grant is over.

[Note: Definition of "sustainability"—the effort to maintain the impact and capacity of programs and innovations[10] after the grant has ended.]

7. Have you talked with program staff about plans to sustain the program after the grant is over? *[If no, then skip this question.]*

    [If applicable] Please indicate whether *(yes or no)* each of the following elements will likely continue to be a part of your college's program(s) after the TAACCCT grant ends. If an element is not applicable to your program, please let me know. *[Only mention potentially applicable components. Responses should indicate Yes/No/Not Applicable. If interviewee indicates that element will be partly sustained, ask them to briefly describe what will be sustained.]*

    a. Will the TAACCCT **programs** continue to be offered after the TAACCCT grant ends? Please describe. *[Note: This refers to programs highlighted in the program matrix.]*
       Probes:
       - *Curriculum alignment among colleges*
       - *Evidence-based curriculum*
       - *Are there specific courses that you are planning to keep or eliminate?*
    b. Will the **credentials** offered in your TAACCCT program continue to be offered after the TAACCCT grant ends? Please describe.
       Probes:
       - *Offering industry-relevant credentials*
       - *Career pathways with stacked and latticed credentials*
       - *Transferability and/or articulated credit*

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[10] TAACCCT Sustainability Toolkit.

    c.   Will the method of **instruction** in your TAACCCT program continue to be used after the TAACCCT grant ends? Please describe.
- Hands-on and interactive instruction
- Competency-based assessment (assessing student skills through hands on and/or industry-aligned assessments)
- Online learning
- Technology-enabled learning
- Online and/or mobile resources to serve training needs of colleges and industry in the region.

    d.   *[If applicable]* Will the student **support services** connected to your TAACCCT program continue after the TAACCCT program ends? Please describe.
Probe:
- *Academic and personal support services*
- *Career planning assistance including developing an employment plan*
- *Career placement assistance (e.g., internship placement, resume preparation)*

    e.   *[If applicable]* Will your TAACCCT program's **partnership** strategy continue after the TAACCCT grant ends? Please describe.
Probe:
- *Employer engagement*
- *Partnerships with workforce agencies (e.g., Workforce Investment Boards).*
- *Strategic alignment with workforce systems and partners*
- *Focus on a specific industry sector*
- *Other local/regional/(if applicable: federal) partnerships related to workforce development (including among consortium colleges)*
- *Centralized training center (i.e., the InTech Center) available to the region*

Overall Assessment and Lessons Learned

8. As the grant comes to a close, how are you feeling about the grant program right now?

    a.   With which areas are you most pleased?
    b.   What are your biggest concerns [beyond those you already mentioned]?

9. Are there any lessons learned that you think would be helpful to other colleges implementing this type of program?

- *Probe: For example, are there any effective strategies for instruction that would be helpful to share?*

10. During the course of the TAACCCT grant, were there any changes to policy or practice at your college as a result of your program? If so, please describe.

11. How do you feel the program has helped participants' employment outcomes, such as career readiness and employment, and wage increases?

    a.   In what way was the program most helpful for participants' employment outcomes?
    b.   Can you share a success story about a participant in your program?

12. *[If applicable]* How has your program contributed to the local community and industry?

- Did it improve the economic development of the Inland Empire region? If yes, how?
- Has it strengthened the advanced manufacturing industry in the region? If yes, how?
a. What, if any, future impacts do you anticipate this program will have on the region?

Student Focus Group Moderator's Guide

My name is *[introduce self and note-taker]*. We are from ICF, a team that is evaluating the Inland Empire Regional Training Consortium (IERTC) Advanced Manufacturing programs. The IERTC is composed of twelve colleges in the Inland Empire Region including *[college]*. As you may know, the program is training students to gain employment in the advanced manufacturing industry in the Inland Empire Region. We are studying how the program is helping students achieve certifications and certificates, get and retain jobs, and how the program has been implemented at the colleges. A focus group is a discussion that involves us asking you for your opinions about the IERTC program. It will last one hour.

We appreciate you taking the time to assist with this evaluation because your input is important to developing an understanding of what has been successful and what can be improved. Today, we want to hear your opinions on the program, how it is working, what is working well, and what you think might need to change.

Before we begin, we want to remind you that your participation in this focus group is voluntary, and the information you share with us will be kept confidential. Specifically, this means that:

(1) You can decline to answer any questions or leave at any time;

(2) We will not connect your name with what was said in any written reports; and

(3) Only evaluation staff will have access to the interview data.

There will be no penalty or repercussions for what you or others share in this focus group. In our evaluation reports we will only provide summaries and anecdotes from what was learned. We will not report or present the information you share with us in any way that will identify a specific person. You will receive a $10 gift card at the end of today's focus group.

As a reminder, as you agreed to during the focus group recruitment process, the focus group will be recorded for research purposes. This recording will not be shared with *[college]* or IERTC staff or faculty. If you no longer want to be recorded, you are free to leave the session at this time.

Focus Group Facilitation Rules

What we discuss today is private. We ask that you don't talk about what others said here today outside of this room.

To help the focus group work, we would like to ask each of you to:

1. Use your first names only when necessary during the focus group.

2. Be respectful of other participants and the facilitators. This includes being respectful about not sharing outside of this room without the participant's permission.

3. Fully participate to the best of your abilities by sharing your expertise and experiences with your peers.

4. Ask questions and make suggestions that will help everyone.

5. Turn off cell phones or set them to vibrate.

[Before we start recording, say: "Can you each share your name and *[if not already known to interviewer]* your program?"

Questions

1. What first attracted you to the [College/Industrial Regional Training Center] / [Course] training?

    a. How did you learn about the program?
        -   i.e., flyer, word of mouth, local workforce agency or One-Stop Center, college staff or faculty, or other?

2. Once you heard about the program, what did you have to do to enroll? (i.e., complete an application process, take assessment tests, be interviewed)

    a. What did you like? What didn't you like? *(For each stage)*

3. How long have you been in the program?

    a. [For those who have been in the program for 1+ years] What has changed in the delivery of the curriculum and/or supports received?

4. How do you like your training classes so far? What do think about the following (ask about each unless already discussed):

    a. pace of classes (Too fast, too slow, just right)
    b. the times they are offered,
    c. length,
    d. location
    e. instructor(s)
    f. training format(s) (e.g., hands on versus lecture)
    g. course materials and curricula?

5. Are there any other resources or supports that would help you to be successful?

6. Have you received individual coaching, tutoring, or career and job placement services?

    a. How often have you used these services?
    b. How were they helpful?
    c. Are there any other services you think should be offered? i.e., childcare, transportation assistance?

7. Overall, is this program increasing your knowledge of [college program name]?

    a. Do you think what you are learning will help you pass 3rd party certifications (i.e., [Certifications per college])?
    b. Do you think you will be able to apply the knowledge you learn in the real world or work environment?

8. If there is anything you could change about this program, what would it be?

Employer Interview Facilitation Guide

My name is ***[introduce self and note-taker].*** We are from ICF, a team that is evaluating the Inland Empire Regional Training Consortium (IERTC) TAACCCT program. As you may know, the Inland Empire Regional Consortium (IERTC) has been awarded a Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant from the U.S. Department of Labor (USDOL) to implement an advanced manufacturing training program.

As required by the Department of Labor, a third party, ICF, is evaluating the implementation of the program and its impact on the college's capacity and student achievement, employment, and earnings. As a part of the evaluation, we are seeking feedback from employers on their involvement with the grant and their experience working with consortium. As this is the last year of the program, our primary aim for this year's interviews is to learn about the colleges' programs and how they have changed since last year, how programs will be sustained after the end of the grant, and to learn colleges' and partners' views of the impact of the grant. We expect the interview will take about 30 minutes.

I'll be asking you questions and ***[note-taker's name]*** is here to take notes on our conversation. To help us take notes today, we would like to record our interview. Would that be ok with you? ***(Yes or no)***

Before we begin, we want to remind you that your participation in this interview is voluntary, and the information you share with us will be kept confidential. Specifically, this means that:

(1) You can decline to answer any questions or leave at any time;

(2) We will not connect your name with what was said in any written reports; and

(3) Only evaluation staff will have access to the interview data.

In our evaluation reports we will only provide summaries and anecdotes from what was learned in the interviews. We will not report or present the information you share with us in any way that will identify a specific person.

Interview Questions

1. Please briefly describe your company, your role there, and the kind of work you do.

2. How have you been involved with the IERTC program?

    a. What role have you played? Has this role changed since last year?
    [Only if role unclear, probe for contributions in:]
    - *program design or curriculum development;*
    - *recruitment of students into the TAACCCT program;*
    - *training (e.g., serving as faculty);*
    - *employment placement in your company or others;*
    - *program resource contributions, such as donating class materials;*
    - *involvement in the Industrial Regional Training Center,*
    - *offer an internship or apprenticeship*

b. *[If works with multiple colleges: Clarify what roles they take with different colleges.]* Of the roles you just discussed, which of them do you take with **[college]**? Which roles do you take with others?

3. Which areas of your involvement do you feel have been most successful or have had the most impact?

4. Which areas of your involvement do you feel have been least successful or could be improved?

5. Is there anything additional that IERTC should do when working with employer partners?

6. How, if at all, will you continue to work with the college(s) after the grant ends?

7. To what extent do you think the students exiting from the Advanced Manufacturing Programs will be well-prepared for work in the field?

    a. How well prepared will students be to adapt to the needs of the professional workplace environment, such as showing up to work on time?
    b. *[If applicable]* To what extent has the program helped other student employment outcomes such as obtaining employment, wage increases or promotions?
    c. *[If work with multiple colleges:]* What about students at this particular college?

8. Are you employing or do you plan to employ graduates of the IERTC TAACCCT program?

    a. Why or why not?
    b. If currently employing, how are they performing?
    c. What portion of your recruitment is from **[college]**?
    d. If currently employing, are there any additional skills that they need to develop?

9. *[If applicable]* How has the **[college]** program contributed to the local economy and effectively responded to the advanced manufacturing industry's need?

    Probe:
    - *Did it improve the economic development of the Inland Empire region? If yes, how?*
    - *Has it strengthened the advanced manufacturing industry in the region? If yes, how?*
    a. *What, if any, future impacts do you anticipate this program will have on the region?*

10. Is there anything else you want to share about the program or your experience as a partner?

Workforce Partner Interview Facilitation Guide

My name is *[introduce self and note-taker]*. We are from ICF, a team that is evaluating the Inland Empire Regional Training Consortium (IERTC) TAACCCT program. As you may know, the Inland Empire Regional Consortium (IERTC) has been awarded a Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant from the U.S. Department of Labor (USDOL) to implement an advanced manufacturing training program.

As required by the Department of Labor, a third party, ICF, is evaluating the implementation of the program and its impact on the college's capacity and student achievement, employment, and earnings. As a part of the evaluation, we are seeking feedback from workforce partners on their involvement with the grant and their experience working with the consortium. As this is the last year of the program, our primary aim for this year's interviews is to learn about how colleges' programs have changed since last year, how programs will be sustained after the end of the grant, and to learn colleges' and partners' views of the impact of the grant. We expect the interview will take about 30 minutes.

I'll be asking you questions and *[note-taker's name]* is here to take notes on our conversation. To help us take notes today, we would like to record our interview. Would that be ok with you? *(Yes or no)*

Before we begin, we want to remind you that your participation in this interview is voluntary and the information you share with us will be kept confidential. Specifically, this means that:

(1) You can decline to answer any questions or leave at any time;

(2) We will not connect your name with what was said in any written reports; and

(3) Only evaluation staff will have access to the interview data.

In our evaluation reports we will only provide summaries and anecdotes from what was learned in the interviews. We will not report or present the information you share with us in any way that will identify a specific person.

Interview Questions

1. Please briefly describe your organization and your role there.

2. How you have been involved with the IERTC program?

   a. What role have you played?
      [Only if role not clear, probe for contributions in:]
      - *recruitment of students into the TAACCCT program;*
      - *intake and assessment;*
      - *training;*
      - *employment placement;*
      - *supports for students (e.g., transportation, assist with resumes);*
      - *data sharing/tracking outcomes*
   b. *[If works with multiple colleges: Clarify what roles they take with different colleges.]* Of the roles you just discussed, which of them do you take with *[college]*? Which roles do you take with others?

3. Has your role or level of involvement changed at all since last year?

4. Which areas of your involvement do you feel have been most successful or have had the most impact?

5. Which areas of your involvement do you feel have been least successful or could be improved?

6. How, if at all, will you continue to work with the college(s) after the grant ends?

7. To what extent do you think the students completing the Advanced Manufacturing Programs will be well-prepared for work in the field?

8. Have you provided any employment services to graduates of the IERTC TAACCCT program (e.g., referred them to jobs, provided career coaching)?

    a. If yes, how successful have they been in getting jobs? Retaining jobs?
    b. If yes, are there any additional skills that they need to develop?
    c. *[If work with multiple colleges:]* What about students at this particular college?

9. Is there anything additional that the IERTC should do when working with the ***[WIB/workforce]*** partners, like yourself?

10. During the grant, how do you feel the program has helped participants' employment outcomes, such as career readiness and employment, and wage increases?

11. To what extent do you feel that the ***[college]*** program has or will contribute to local employment outcomes? Please describe.

12. Is there anything else you want to share about the program or your experience as a partner?

![Chaffey College logo]

Appendix D: Chaffey College Baseline Survey

The Inland Empire Regional Consortium (IERTC) Baseline Student Survey

Hello!

Your program of study is one of many designed to develop and strengthen career pathways in the fields of advanced manufacturing, welding and machining. Chaffey Community College is part of a group of colleges, the Inland Empire Regional Training Consortium (IERTC), which contracted ICF to evaluate your program of study to better understand how it is working and whether it is helping people such as yourself find better jobs.

STUDY PURPOSE AND PROCEDURES

The evaluation examines how your program is training students to find jobs and earn higher pay. Your participation and responses will help IERTC and your college understand if your program is successful and effective for people like yourself.

The purpose of this Baseline Survey is to gather information at the time of enrollment to help IERTC and your college establish the current status of students before attending classes.

- **Consent:** This section captures your name, college and agreement to participate in the survey. Enrollment: This section captures information on recruitment and enrollment.

- **Education:** This section captures information on educational attainment and certification.

- **Industry Experience:** This section captures information on your experience working in the field that you are studying.

- **Current Employment:** This section captures information on your current employment at the time of enrollment.

- **Previous Employment:** This section focuses on your previous employment prior to your current employment.

- **Benefits and Public Assistance:** This section captures information on benefits such as insurance and any public assistance.

- **Demographics:** This section captures information on your gender, age, etc.

If you have already completed the program, please answer the survey questions about your time **prior to enrolling**.

VOLUNTARY PARTICIPATION AND WITHDRAWAL

We ask that you voluntarily complete this 10-15 minute survey asking about your employment, education, and your opinion of the services you received at the community college. Your participation in this and any following survey is **voluntary** and you will be asked to complete a Consent Form confirming your agreement to participate before starting each survey. The information you share with us will be kept confidential and protected to the extent allowed by law. This means that: Your participation in this study is voluntary, and you can stop responding to the survey at any time or can decline to answer any questions with no penalty or risk of losing services offered to you by the college;

1. Your name will not be included in any reports, all data will be securely handled and will only be seen by the third-party evaluators; and

2. You can ask questions about the study or your rights as a participant by emailing the ICF evaluation team at IERTC_Evaluation@icfi.com.

We also ask that you complete this survey in one sitting. If you have any questions about your rights as a participant in the evaluation, please contact the ICF Institutional Review Board (IRB) at IRB@icf.com. If you have questions about the study or surveys, you can contact the ICF evaluation team at IERTC_Evaluation@icfi.com.

Chaffey College

Consent

1. Please indicate if you agree to participate in the evaluation and this survey (response required).

   - I understand that my participation in this study is voluntary and that I can stop responding to the survey at any time, with no penalty or risk of losing the services offered to me by the college.
   - I understand that my name will not be included in any reports, my data will be securely handled, and it will be seen only by third-party evaluators.
   - I know that if I have any questions about the study or my personal rights as a study participant, I can contact the ICF evaluation team at IERTC_Evaluation@icfi.com.

   ○ Yes, I will participate in the evaluation and complete this survey.
   ○ No, I do not want to participate in the evaluation and complete this survey.

2. This survey requires that you be 18 years of age or older to participate.

   Are you currently 18 years of age or older?

   ○ Yes
   ○ No

3. Please provide us your full name (response required):
   _____

4. What is your date of birth (response required)?

   Date (MM/DD/YYYY): _____

5. What courses are you currently enrolled in at Chaffey Community College?

   Please select all that apply:

   ○ Craft Fundamentals
   ○ Industrial Electrical
   ○ Industrial Maintenance
   ○ Heating, Ventilation, and Air Conditioning (HVAC)
   ○ Forklift Operation
   ○ Introduction to AutoCAD
   ○ Introduction to CAD for Machinists
   ○ Audiovisual

Chaffey College

Enrollment

This section captures information on recruitment and enrollment.

6. How did you hear about this class?

    Please select all that apply:

    ○ Job Center of California or Workforce Investment Board
    ○ Friend/Relative/Acquaintance
    ○ At the College
    ○ Media Campaign (e.g., Radio, TV ad)
    ○ Education or Career Fair
    ○ Employer
    ○ Other
    ○ If employer or other, please specify: _____

7. What was your enrollment date?

    If you have already completed the program, please answer the survey questions about your time prior to enrolling.

    Month: _____

    Year: _____

8. What is your enrollment status?

    ○ Full-time (32-40 hours per week in class, Monday-Thursday)
    ○ Part-time (one to two days a week, including evenings and weekends)
    ○ Other (please specify): _____

9. Did you take any of the following assessments before beginning your program?

    Please select all that apply:

    ○ WorkKeys Key Train
    ○ AccuPlacer
    ○ Other (please specify): _____

Education

This section captures information on educational attainment and certification.

10. What is the highest degree or level of schooling you have completed?

If currently enrolled, mark the last grade or highest degree received:

○ Less than high school, no diploma
○ High school graduate - high school diploma or the equivalent (for example: GED)
○ Some college credit, no degree
○ Associate degree (for example: AA, AS)
○ Bachelor's degree or higher (for example: BA, AB, BS, MS)

11. Do you hold any Vocational, Technical or Trade School Diploma/Certification or Professional License?

A Vocational, Technical, or Trade School Diploma/Certification or Professional License shows you are qualified to perform a specific job and includes things like Licensed Realtor, Certified Medical Assistant, Certified Construction Manager, a Project Management Professional, or PMP certification, or an IT Certification.

○ Yes, I hold a Vocational, Technical, or Trade School Diploma/Certification or Professional License.
○ No, I do not hold any Vocational, Technical, or Trade School Diploma/Certification or Professional Licenses.

If no, skip to question 13.

Please tell us about the Vocational, Technical, or Trade School Diploma/Certification or Professional license you have already acquired.

A Vocational, Technical, or Trade School Diploma/Certification or Professional license shows you are qualified to perform a specific job and includes things like Licensed Realtor, Certified Medical Assistant, Certified Construction Manager, a Project Management Professional, or PMP certification, or an IT Certification.

Chaffey College

12. In what field of study did you earn this certification?

- ○ Protective services
- ○ Food preparation and serving
- ○ Farming, fishing or forestry
- ○ Management, business, financial
- ○ Personal care and services
- ○ Computer and information systems
- ○ Sales, office or administrative support
- ○ Mathematical, architectural, or engineering
- ○ Construction and extraction

- ○ Community and social service
- ○ Installation, maintenance, and repair
- ○ Retail services
- ○ Legal, education, or library sciences
- ○ Production and manufacturing
- ○ Arts, design, entertainment, sports, or media
- ○ Transportation and material moving
- ○ Military Healthcare
- ○ Other (please specify):_____

Industry Experience

This section captures information on your industry experience.

13. In what industry do you have the most experience either through work or volunteering?

Please select one:

- ○ Production and manufacturing
- ○ Management, business, or financial
- ○ Computer and information systems
- ○ Mathematical, architectural, or engineering
- ○ Retail services
- ○ Community and social services
- ○ Legal, education, or library services
- ○ Arts, design, entertainment, sports, or media
- ○ Healthcare

- ○ Protective services
- ○ Food preparation and serving
- ○ Personal care and services
- ○ Sales, office, or administrative support
- ○ Farming, fishing, or forestry
- ○ Construction and extraction
- ○ Installation, maintenance, and repair
- ○ Transportation and material moving
- ○ Military
- ○ Other (please specify): _____

14. How many years of experience do you have in the industry you chose in the previous question?

Number of years: _____

15. Have you ever held a paying job?

- ○ Yes
- ○ No

If no, skip to question 25.

Chaffey College

Current Employment

This set of questions will focus on your employment at the time of enrollment into the program.

16. Which of the following is true for you at the start of this program?

○ Enrolled in high school, for those in a concurrent program **(skip to question 25).**
○ Employed
○ Unemployed (skip to question 18).

17. What was your employment status when you signed up for this class?

○ Employed **full-time in current field of study** for wages, for yourself or an employer (for 30 hours or more)
○ Employed **full-time in another field** for wages, for yourself or an employer (for 30 hours or more)
○ Employed **part-time in current field of study** for wages, for yourself or an employer (for less than 30 hours)
○ Employed **part-time in another field** for wages, for yourself or an employer (for less than 30 hours)

18. If you were unemployed at the start of this program, which of these was true for you when you signed up for this class?

○ Homemaker
○ Out of work and looking for work
○ Out of work but not currently looking for work
○ Not working because enrolled as a full time student
○ Retired
○ Unable to work

19. If you are looking for a job, how long have you been looking? You can give the number of days, weeks, months, or years. *You only need to provide information for one.*

Days: _____

OR Weeks: _____

OR Months: _____

OR Years: _____

20. Are you currently working in the Advanced Manufacturing industry?

○ Yes
○ No

21. What is the name of your employer? _____

22. How much did you earn when you signed up for this course?

    Annual salary: _____

    OR Average hourly wage: _____

    Average hours worked per week: _____

23. How long have you worked with this job?

    Years: _____

    Months: _____

Previous Employment

This set of questions will focus on your employment prior to the job you had at the time of enrollment.

24. Please indicate on the scale to what extent any of the following circumstances affected your ability to secure and maintain employment prior to enrollment in the program.

	To no extent	To a little extent	To a moderate extent	To a large extent	N/A
Poor health (e.g. physical health, mental health/stress)	○	○	○	○	○
Inadequate childcare	○	○	○	○	○
Inadequate resources to care for a sick or elder family member	○	○	○	○	○
Inadequate housing	○	○	○	○	○
Lack of transportation (personal vehicle or no accessible public transportation)	○	○	○	○	○
Layoff or employer terminated	○	○	○	○	○
Criminal history	○	○	○	○	○
Lack of technical skills	○	○	○	○	○
Lack of relevant work expertise	○	○	○	○	○
Other	○	○	○	○	○

If other, please specify: _____

Employment Prospects

This section captures information on future employment.

25. Do you expect your employment situation to change after you complete the training?

   ○ Yes
   ○ No

26. Do you have plans to find or change jobs after the program?

   ○ Yes
   ○ No

   If yes, please specify: _____

27. What is most likely to be your primary activity upon completing your training?

   ○ Continue in current employment
   ○ Employment, full-time paid
   ○ Employment, part-time paid
   ○ Further undergraduate, full-time
   ○ Further undergraduate, part-time
   ○ Military service
   ○ Volunteer activity
   ○ Other (please specify): _____

Benefits & Public Assistance

This section captures information on benefits such as insurance and any public assistance.

28. Were you receiving any of the following benefits when you signed up for this class?
    (Please select one)

   ○ Health insurance, including dental and vision, through a current or former employer or through a union
   ○ Health insurance, including dental and vision, through a family coverage plan
   ○ Health insurance purchased directly from an insurance company
   ○ Medicare, medical assistance, or any kind of government assistance plan for those with low incomes or disabilities
   ○ TRICARE or other military health care
   ○ Indian Health Services
   ○ Any other type of health insurance or health coverage plan (please specify):
   _____

![Chaffey College logo]

29. Were you collecting any of the following public assistance services when you signed up for this class? **(Please select all that apply)**

  ○ Temporary Assistance for Needy Families (TANF)
  ○ Supplemental Nutrition Assistance Program (SNAP) or Food stamps
  ○ Workforce Innovation and Opportunity Act (WIOA) services and funding
  ○ Veteran's Benefits
  ○ Supplemental Security Income
  ○ Transportation Assistance
  ○ Unemployment Insurance
  ○ Other (please specify): _____

Demographics

This section captures information on gender, marital status, etc.

30. What is your gender?

  ○ Male
  ○ Female
  ○ Other
  ○ Do not wish to disclose

31. Are you of Hispanic or Latino origin?

  ○ No, Not Hispanic or Latino
  ○ Yes, Hispanic or Latino
  ○ Do not wish to disclose

32. Are you of any of these races?

  Please select all that apply:

  ○ American Indian or Alaska Native
  ○ Asian
  ○ Black, African American
  ○ Native Hawaiian or Other Pacific Islander
  ○ White
  ○ More than one race
  ○ Do not wish to disclose

Chaffey College

33. Do you have a disability?

A disability is a physical or mental impairment that limits one or more major life functions.

○ Yes
○ No
○ Do not wish to disclose

34. What is your marital status?

○ Married
○ Domestic Partnership
○ Widowed
○ Divorced
○ Separated
○ Never married
○ Do not wish to disclose
○ Other (please specify): _____

35. Have you ever served on active duty in the U.S. Armed Forces, Reserves, or National Guard?

○ Never served in the military
○ Only on active duty for training in the Reserves or National Guard
○ Now on active duty
○ On active duty in the past but not now

Chaffey College

Thank you!

Can we contact you again?

The survey is now complete. Thank you for your participation. Your thoughts and answers will help us better understand Chaffey Community College's training programs.

In order for us to collect additional meaningful data that will help us achieve the goals of this evaluation, we would like to be able to follow up with you in the future. At that time, we will provide you with another consent form, where you can indicate your decision to continue participating in the evaluation and complete another survey.

If you agree to be contacted again, please provide your contact information below so that we can follow up with you in 6 months and again after 12 months. Upon completion of the follow-up surveys, you will receive a gift card.

36. Do you agree to be contacted for future data collections?

○ Yes
○ No

37. If you agree to be contacted again, please provide your contact information:

Name:	
Cell Phone Number:	
Email Address:	

Thank you for your participation!

Appendix E: Chaffey College Follow-Up Survey

The Inland Empire Regional Consortium (IERTC) Follow-Up Student Survey

Hello!

Your program of study is one of many designed to develop and strengthen career pathways in the fields of advanced manufacturing, welding and machining. Chaffey Community College is part of a group of colleges, the Inland Empire Regional Training Consortium (IERTC), which contracted ICF to evaluate your program of study to better understand how it is working and whether it is helping people such as yourself find better jobs.

STUDY PURPOSE AND PROCEDURES

The evaluation examines how your program is training students to find jobs and earn higher pay. Your participation and responses will help IERTC and your college understand if your program is successful and effective for people like yourself. **To be eligible for this survey, you must have completed your program at least 6 months ago.**

The purpose of this follow-up survey is to gather information after course or program completion to help IERTC and your college understand how the program may have helped you gain employment and whether the program satisfied your training needs. **Within one week of receiving your completed survey, we will email you a $10.00 electronic gift card to Amazon.** Please ensure that your email address is accurate for your contact information.

You will be asked the following:

- **Consent:** This section captures your name, college and agreement to participate in the survey.
- **Enrollment:** This section captures information on previous college enrollment.
- **Current Employment:** This section captures information on your current employment six months following completion of your program/courses.
- **Training Program Format and Satisfaction:** This section focuses on your training and if it had an effect on your current employment and whether you were satisfied with your training.
- **Benefits and Public Assistance:** This section captures information on benefits such as insurance and any public assistance.
- **Contact Information:** This section captures information to contact you for your gift card and asks about future surveys.

Chaffey College

VOLUNTARY PARTICIPATION AND WITHDRAWAL

We ask that you voluntarily complete this 10-15 minute survey asking about your current employment, benefits, and your opinion of the services you received at the community college. Your participation in this and any following survey is **voluntary** and you will be asked to complete a Consent Form confirming your agreement to participate before starting each survey. The information you share with us will be kept confidential and protected to the extent allowed by law. This means that:

1. Your participation in this study is voluntary, and you can stop responding to the survey at any time or can decline to answer any questions with no penalty or risk of losing services offered to you by the college;
2. Your name will not be included in any reports, all data will be securely handled and will only seen by the third-party evaluators; and
3. You can ask questions about the study or your rights as a participant by emailing the ICF evaluation team at IERTC_Evaluation@icfi.com.

We also ask that you complete this survey in one sitting. If you have any questions about your rights as a participant in the evaluation, please contact the ICF Institutional Review Board (IRB) at IRB@icf.com. If you have questions about the study or surveys, you can contact the ICF evaluation team at IERTC_Evaluation@icfi.com.

![Chaffey College logo]

Consent

1. Please indicate if you agree to participate in the evaluation and this survey (response required).

   - I understand that my participation in this study is voluntary and that I can stop responding to the survey at any time, with no penalty or risk of losing the services offered to me by the college.
   - I understand that my name will not be included in any reports, my data will be securely handled, and it will be seen only by third-party evaluators.
   - I know that if I have any questions about the study or my personal rights as a study participant, I can contact the ICF evaluation team at IERTC_Evaluation@icfi.com.

   ○ Yes, I will participate in the evaluation and complete this survey.
   ○ No, I do not want to participate in the evaluation and complete this survey.

2. This survey requires that you be 18 years of age or older to participate. Are you currently 18 years of age or older?

   ○ Yes
   ○ No

3. Have you completed your program of study?

   ○ Yes
   ○ No

Enrollment

This section captures information on recruitment and enrollment.

Please note that this survey requires you to have completed your program at least six months ago to be eligible.

4. How long ago did you complete your program of study?

   ○ 10 or more months ago
   ○ 6-9 months ago
   ○ 0-5 months ago

5. When did you finish your program?

   Month: _____

   Year: _____

6. Please provide us your full name. _____

Chaffey College

7. What is your date of birth?

    Date (MM/DD/YYYY): _____

8. What courses were you enrolled in at Chaffey Community College?

    Please select all that apply:

    ○ Craft Fundamentals
    ○ Industrial Electrical
    ○ Industrial Maintenance
    ○ Heating, Ventilation, and Air Conditioning (HVAC)
    ○ Forklift Operation
    ○ Introduction to AutoCAD
    ○ Introduction to CAD for Machinists
    ○ Audiovisual
    ○ N/A

9. When do you anticipate completing your program of study?

    Month: _____

    Year: _____

10. Were you enrolled as a full-time student?

    ○ Yes, full-time (32-40 hours per week in class, Monday-Thursday)
    ○ No, part-time (one or two days a week, including evenings and weekends)
    ○ No, other (please specify): _____

11. What degree did you receive?

    ○ Certificate
    ○ Associate Degree
    ○ N/A
    ○ Other (please specify): _____

12. If you received a certification, what is the third party/industry certification type?

    Ex: OSHA _____

Chaffey College

Current Employment

This set of questions will focus on your employment at the time of enrollment into the program.

13. What is your current employment status?

○ Employed **full-time in field of study** for wages, for yourself or an employer (for 30 hours or more)

○ Employed **full-time in another field** for wages, for yourself or an employer (for 30 hours or more)

○ Employed **part-time in field of study** for wages, for yourself or an employer (for less than 30 hours)

○ Employed **part-time in another field** for wages, for yourself or an employer (for less than 30 hours)

○ Unemployed

14. If you are employed, what is the name of your employer?

_____

15. Is your job related to the advanced manufacturing program you studied?

○ Yes
○ No
○ N/A

16. How long did it take you to obtain your job after leaving the college?

○ I obtained my job prior to leaving college or at graduation
○ Less than one month
○ 1 to 3 months
○ 4 to 6 months
○ 7 to 12 months
○ Over 12 months
○ N/A

Chaffey College

17. How long have you been employed after program completion?

○ Less than 3 months
○ 3 to 6 months after program completion
○ 6 or more months after program completion
○ 9 months after program completion
○ More than 9 months after program completion
○ N/A

18. Have you received a promotion or changed jobs in the last six months?

○ Yes
○ No
○ N/A

19. How much do you currently earn annually for your salary?

○ $1 - $9,999
○ $10,000 - $14,999
○ $15,000 - $19,999
○ $20,000 - $29,999
○ $30,000 - $39,999
○ $40,000 - $49,999
○ $50,000 and over
○ N/A
○ Hourly wage (please specify average hourly wage and average hours worked per week):
_____

20. Please indicate on the scale below to what extent any of the following circumstances affect your ability to secure and maintain employment.

	To no extent	To a little extent	To a moderate extent	To a large extent	N/A
Poor health (e.g. physical health, mental health/stress)	○	○	○	○	○
Inadequate childcare	○	○	○	○	○
Inadequate resources to care for a sick or elder family member	○	○	○	○	○
Inadequate housing	○	○	○	○	○
Lack of transportation (personal vehicle or no accessible public transportation)	○	○	○	○	○
Layoff or employer terminated	○	○	○	○	○
Criminal history	○	○	○	○	○
Lack of technical skills	○	○	○	○	○
Lack of relevant work experience	○	○	○	○	○
Other	○	○	○	○	○

If other, please specify: _____

Training Program Format and Satisfaction

21. On the scale below, please indicate how you have changed as a result of your program.

	Strongly agree	Agree	Disagree	Strongly disagree	N/A
The knowledge I gained in this training helped me earn a certification or certificate.	○	○	○	○	○
This training helped me find a job.	○	○	○	○	○
The knowledge I gained in this training helped me working on the job.	○	○	○	○	○
This training helped me get ahead in my career.	○	○	○	○	○
I want to get more training to further my career and employment in the advanced manufacturing sector.	○	○	○	○	○

22. While in the program, did you receive any of the following support services?
(Please select all that apply)

- ○ Job readiness training
- ○ Individual academic coaching/development of a comprehensive educational plan
- ○ Academic counseling
- ○ Tutoring
- ○ Career planning
- ○ Job search assistance
- ○ Internship placement assistance
- ○ N/A

23. On the scale below, please indicate your experience with the following:

	Very satisfied	Satisfied	Dissatisfied	Very Dissatisfied	N/A
Job readiness training	○	○	○	○	○
Individual academic coaching/development of a comprehensive educational plan	○	○	○	○	○
Academic counseling	○	○	○	○	○
Tutoring	○	○	○	○	○
Career planning	○	○	○	○	○
Job search assistance	○	○	○	○	○
Internship placement assistance	○	○	○	○	○

24. During the course of your training program did you access – either in-person or virtually – the Industrial Regional Training Center (InTech) in Fontana?

- ○ Yes
- ○ No

Chaffey College

25. If yes, please select the option that best describes your experience with the Industrial Regional Training Center (InTech).

○ The Regional Training Center was the primary physical location at which I received training.

○ I received hands-on training at the Regional Training Center but the classroom portion of my training took place at another location.

○ I interacted with the Regional Training Center virtually through online training.

○ I accessed the Regional Training Center on a limited basis for testing or for one of the services offered at the Center.

○ I did not access the Industrial Regional Training Center.

○ Other (please specify): _____

Benefits & Public Assistance

This section captures information on benefits such as insurance and any public assistance.

26. Are you currently covered by any of the following types of health insurance or health coverage plans?

○ Health insurance, including dental and vision, through a current or former employer or through a union

○ Health insurance, including dental and vision, through a family coverage plan

○ Health insurance purchased directly from an insurance company

○ Medicare, medical assistance, or any kind of government assistance plan for those with low incomes or disabilities

○ TRICARE or other military health care

○ Indian Health Services

○ N/A

○ Any other type of health insurance or health coverage plan (please specify): _____

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27. Are you currently collecting any of the following public assistance services?
(Please select all that apply)

○ Temporary Assistance for Needy Families (TANF)
○ Supplemental Nutrition Assistance Program (SNAP) or Food stamps
○ Workforce Innovation and Opportunity Act (WIOA) services and funding
○ Veteran's Benefits
○ Supplemental Security Income
○ Transportation Assistance
○ Unemployment Insurance
○ Other (please specify): _____

Demographics

This section captures information on gender, marital status, etc.

28. What is your gender?

○ Male
○ Female
○ Other
○ Do not wish to disclose

29. Are you of Hispanic or Latino origin?

○ No, not Hispanic or Latino
○ Yes, Hispanic or Latino
○ Do not wish to disclose

30. Are you of any of these races? **(Please select all that apply)**

○ American Indian or Alaska Native
○ Asian
○ Black, African American
○ Native Hawaiian or Other Pacific Islander
○ White
○ More than one race
○ Do not wish to disclose

31. Do you have a disability?

    A disability is a physical or mental impairment that limits one or more major life functions.

    ○ Yes
    ○ No
    ○ Do not wish to disclose

32. What is your marital status?

    ○ Married
    ○ Domestic Partnership
    ○ Widowed
    ○ Divorced
    ○ Separated
    ○ Never married
    ○ Do not wish to disclose
    ○ Other (please specify): _____

33. Have you ever served on active duty in the U.S. Armed Forces, Reserves, or National Guard?

    ○ Never served in the military
    ○ Only on active duty for training in the Reserves or National Guard
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    ○ On active duty in the past but not now

Chaffey College

Thank you!

Can we contact you again?

The survey is now complete. Thank you for your participation. Your thoughts and answers will help us better understand Chaffey Community College's training programs. You will receive your $10 Amazon e-gift certificate via email for your participation.

34. Please provide your contact information:

Name:	
Cell Phone Number:	
Email Address:	
Address:	

Chaffey College

Thank you!

Thank you for your time. In order for us to collect additional meaningful data that will help us achieve the goals of this evaluation, we would like to follow up with you six months after the completion of your program. At that time, we will provide you with another consent form, where you can indicate your decision to continue participating in the evaluation and complete another survey.

If you agree to be contacted again, please provide your contact information below so that we can follow up with you.

35. Do you agree to be contacted for future data collections?

○ Yes
○ No

36. Please provide your contact information:

Name:	
Cell Phone Number:	
Email Address:	
Address:	

About ICF

ICF (NASDAQ:ICFI) is a global consulting and technology services provider with more than 5,000 professionals focused on making big things possible for our clients. We are business analysts, policy specialists, technologists, researchers, digital strategists, social scientists, and creatives. Government and commercial clients have worked with ICF to overcome their toughest challenges on issues that matter profoundly to their success.

Founded in 1969 as the Inner City Fund, ICF got its start as a venture capital firm with a mission to finance inner-city businesses in the Washington, D.C area of the United States. Today, we are a global consulting and technology services firm comprised of more than 5,000 business analysts, policy specialists, technologists, researchers, digital strategists, social scientists, and creatives worldwide. We provide data, insights, and deep implementation expertise that businesses and governments need today to deliver results that matter to consumers, citizens, and communities tomorrow. Our clients are leaders in markets ranging from health to energy to transportation, as well as government agencies in the United States and Europe. From program management and project assessment to digital marketing and social media strategy, our work delivers deeper engagement, more confident decisions, and measurable impact.

Our markets include:

Government

- Climate
- Cybersecurity
- Energy
- Education
- Natural Disaster Recovery
- Digital & Marketing
- Health
- Transportation
- Environment
- Resilience
- Social Programs and Communities
- International Development

Commercial

- Aviation
- Cybersecurity
- Digital & Marketing
- Energy
- Health

With more than 40 years of consulting experience, ICF is a global, diversified firm that combines the entrepreneurship and dynamism of a new company with a solid reputation and expertise in the consulting industry—offering solutions that help clients