



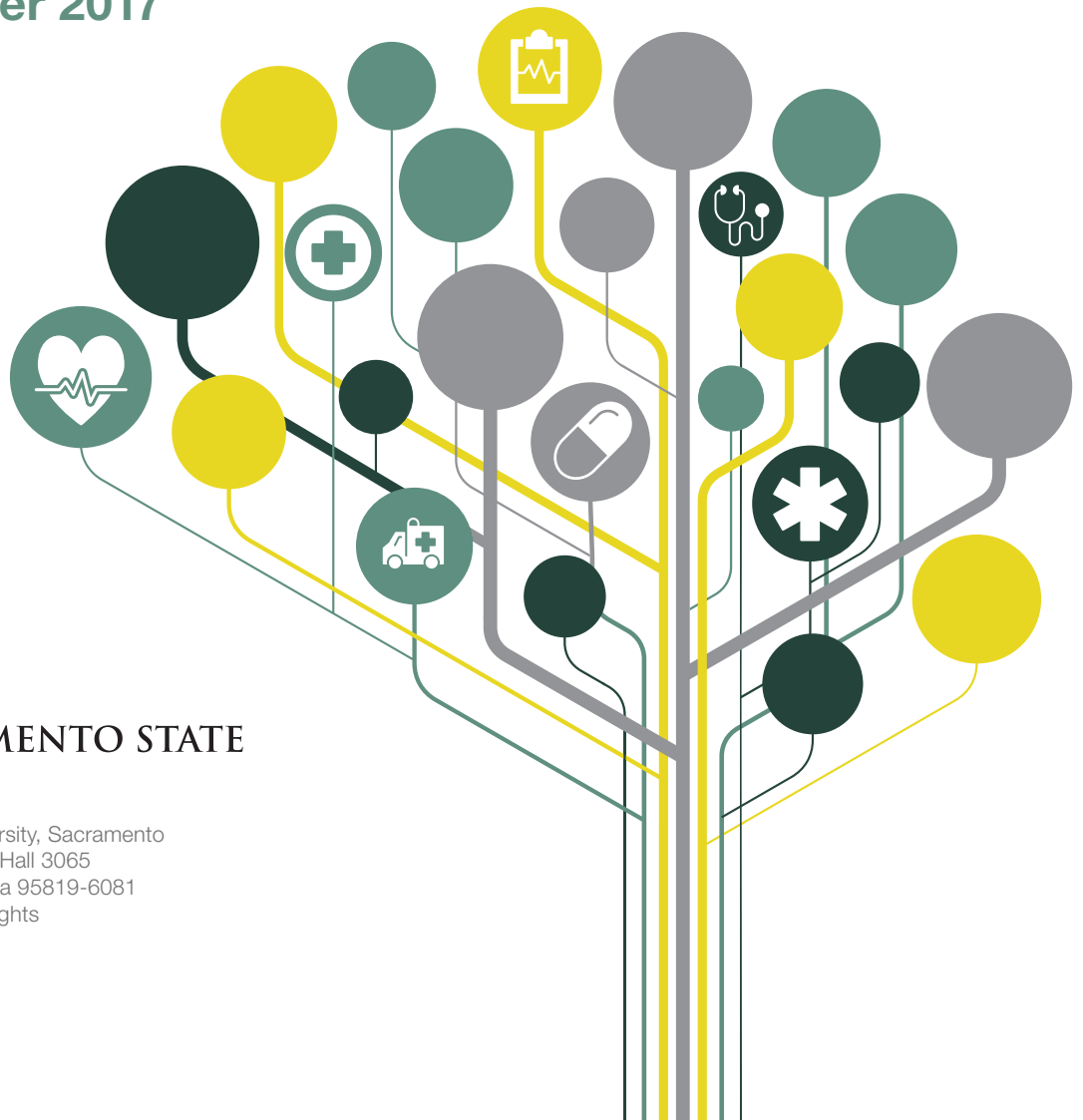
Education Insights Center

Advancing Research and Policy
for K-12 and Postsecondary Education

Developing Pathways for Careers in Health: The Los Angeles Healthcare Competencies to Careers Consortium

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Executive Summary

“The value I see with this type of grant-funded program is that students can gain entry-level skills and advance into a **health care career ladder** that will really get them a sustainable **living wage**.”

— *College administrator*

California’s community college system is well-positioned to provide much-needed workforce training for students throughout the state. Career and Technical Education (CTE) programs can provide opportunities for students to gain valuable skills and advance into meaningful careers. The Los Angeles Healthcare Competencies to Careers Consortium (LAH3C) received a Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant from the U.S. Department of Labor (DOL) to better structure pathways to health care careers and to promote student progress, completion, and employment. Eight colleges in the consortium implemented components of the Health Science Pathways for Academic, Career and Transfer Success (H-PACTS) model. This model sought to engage health care faculty across the colleges and major health care employers in Los Angeles County in order to: 1) redesign educational pipelines within the community colleges that lead to health care careers, 2) develop foundational core competencies for health care, and 3) expand opportunities for students to successfully earn credentials in high-demand health fields.

The original TAACCCT proposal called for all LAH3C colleges to implement a set of activities comprising the H-PACTS model. The intention was to move students through four competency tiers, starting with an orientation to health care pathways and foundational readiness competencies, leading to core competencies in health care and a Health Science Foundation Credential (HSFC), advancing from there into specialized certificate programs related to various health occupations, and culminating in the completion of an associate’s degree or transfer to a four-year institution. As the grant activities were being implemented, these ambitious plans were modified across the colleges. Each college adopted components of the H-PACTS model and adapted some of the grant activities to fit its interests and capacities. To meet grant targets, colleges counted the HSFC as the primary measure of completion for the grant, given the limited timeline for students to complete health care certificate or degree programs.

Due to the complexity of implementing large-scale change, the Education Insights Center (EdInsights) conducted a formative evaluation in 2014 and 2015 to assess the implementation of grant activities and a summative evaluation in 2016 and 2017 to understand the impact of grant activities on students’ academic and employment outcomes. This report summarizes the results of these two evaluations, and what follows are highlights of some of the key findings.

Formative Findings: Support for the Grant Despite Significant Challenges

- **Partners agreed on goals of grant.** There was shared consensus among college personnel and employer partners that the aim of the grant was to improve for students the educational pipeline to health care careers and to provide them with the necessary foundational knowledge and skills to thrive in the health care field.
- **Colleges began new collaborations.** LAH3C colleges formed new collaborative relationships with one another and within their institutions, relationships that were beneficial during the planning and implementation of grant activities.
- **Grant implementation varied from college to college.** There were variations in the depth and breadth of implementation across the colleges due to challenges with complicated grant approval processes and unclear grant reporting requirements. Variations also occurred because of colleges' differing levels of interest in adopting some of the approaches described in the grant proposal.
- **Reservations arose about value of stand-alone HSFC.** College personnel and employer partners were uncertain about the value of a stand-alone HSFC, a key component of the grant activities, to help students obtain employment in the health care field. But they were optimistic that the grant could help students succeed in specialized health care pathways.

Summative Findings: Early Evidence Shows Grant's Positive Effect on Students

- **Student academic outcomes improved.** Findings suggest evidence of improvements in LAH3C students' academic progress and outcomes. LAH3C students displayed higher retention, credit completion, and program completion than students in the comparison group.
- **Perceptions of grant were positive.** Students, college personnel, and employer partners had favorable perceptions of the grant activities and observed positive changes in students' preparation for the health care field.
- **Grant enhanced program pathways and employer connections.** The grant helped colleges better structure their health care program pathways and fostered stronger connections between the colleges and their employer partners.
- **Constructive lessons were learned.** College interviewees noted several lessons learned through the grant process, including the need to set realistic goals, streamline approval processes, garner engagement and collaboration, and build strong leadership.

The findings from these evaluations provide insight for other stakeholders and educators who want to adopt and scale similar program innovations at their institutions. It is imperative to set realistic goals and measurable objectives; understand institutional and system policies and processes; support relational-based change by developing long-term engagement strategies for all major stakeholder groups, which can lead to deep collaboration and support; and build strong and stable leadership to successfully design and implement change.

These findings also have broader implications for enhancing community college CTE and workforce training programs. A focus on regional collaborative efforts, alignment with industry needs, and structured program pathways are promising ways to improve the educational pipeline for students. Community college CTE programs play a crucial role in preparing students to be successful in the workforce. Stakeholders who are engaged in education reform can learn from LAH3C's efforts under the TAACCCT grant to support the needs of their communities.

Introduction

Purpose of the Grant

The Los Angeles Healthcare Competencies to Careers Consortium (LAH3C) received a four-year (2013-2017) Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant from the U.S. Department of Labor (DOL) to better structure pathways to health careers and to promote student progress, completion, and employment. LAH3C saw the need to provide training opportunities for its students to advance to the health care field. At the time the TAACCCT proposal was written, Los Angeles County had several regions designated as Health Professional Shortage Areas,¹ and health care occupations were projected to grow in Los Angeles (California Employment Development Department, 2012). Los Angeles Trade Technical College (LATTTC), the lead college for the grant, proposed using the Health Science Pathways for Academic, Career, and Transfer Success (H-PACTS) framework to develop program pathways across a consortium of colleges in the Los Angeles Community College District (LACCD). The goals of the grant were to engage health care faculty across the colleges, along with major health care employers in Los Angeles County, in an effort to: 1) redesign educational pipelines within the community colleges that lead to health care careers, 2) develop foundational core competencies for health care, and 3) expand opportunities for students to successfully earn credentials in high-demand health fields.

As part of the TAACCCT grant, DOL required a third-party evaluation to examine the impact of grant activities on student outcomes. The Education Insights Center, or EdInsights, (formerly known as the Institute for Higher Education Leadership & Policy, or IHELP) was selected as the evaluator. Our objectives were to conduct a formative evaluation to assess the progress in implementing grant activities in the funded programs and a summative evaluation to analyze student outcomes in those programs across the colleges in the consortium. This report summarizes findings from both evaluations and is organized into four sections:

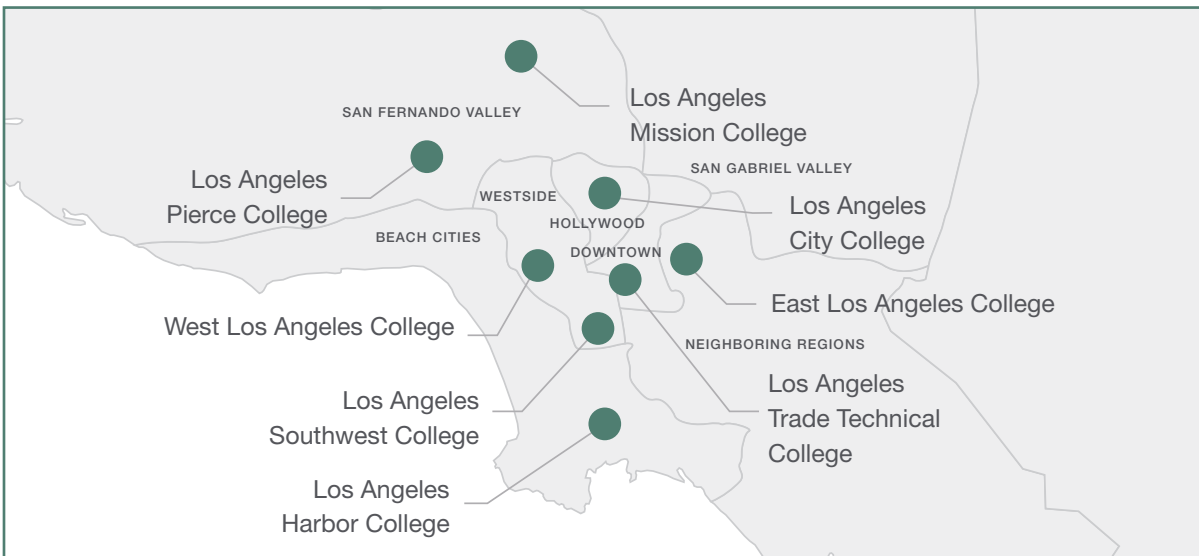
1. A description of the context for H-PACTS and the funded programs, along with a summary of the evaluation methods;
2. The formative evaluation findings;
3. The summative evaluation findings; and
4. A conclusion summarizing the overall impact of the grant-funded activities and highlighting lessons learned.

Los Angeles County and the LAH3C Colleges

Los Angeles County is a diverse region that accounts for over one-fourth of California's total population (U.S. Census Quick Facts, 2016). That growing population, coupled with an aging workforce, has led to an increased demand for trained health care professionals. The health care sector is projected to be one of the county's fastest growing industries (EDD, 2016), especially in the occupational clusters of community and social services, health care practitioners, and health care support (Sanchez, 2016). Therefore, job training programs in health care are critical to keep up with workforce needs. The largest community college district in the United States, LACCD serves students from over 40 communities and spans almost 900 square miles (LACCD, 2017), making the district well-positioned to provide training opportunities for the region's workforce.

Figure 1

LAH3C colleges span several regions in Los Angeles County.



The TAACCCT grant enabled eight LACCD colleges² to enhance and expand their health care programs in order to provide workforce training opportunities for the community. Those eight colleges, which comprise LAH3C, are: East Los Angeles College (ELAC), Los Angeles City College (LACC), Los Angeles Harbor College (LAHC), Los Angeles Mission College (LAMC), Los Angeles Pierce College (LAPC), Los Angeles Southwest College (LASW), LATTTC, and West Los Angeles College (WLAC). Figure 1 above shows how the colleges are spread across the vast Los Angeles region. Each one has somewhat different student populations and institutional needs. Appendix E provides additional information about the colleges.

Enrollment in these LAH3C colleges accounted for approximately 9 percent of the California Community Colleges' total enrollment in 2013-2014, when the grant was awarded, with some variation in enrollment size across the colleges. Approximately one-third of the colleges' full-time equivalent (FTE) students were enrolled in for-credit Career and Technical Education (CTE) courses. LATTTC has a much higher share of students in CTE courses than other colleges in the consortium, given that its specific mission is to provide academic, technical, and professional educational opportunities to advance students' career development. Students attending LAH3C colleges also reflect the county's growing sociodemographic diversity.

The H-PACTS Framework

The goals of the grant were to engage health care faculty across the LAH3C colleges and major health care employers to redesign educational pipelines within the community colleges that lead to health care careers; develop foundational core competencies; and expand opportunities for trade-affected workers, the unemployed, veterans, and other workers to successfully earn credentials in high-demand health fields. The hope was that the TAACCCT grant would build the capacity of LAH3C institutions to improve student success and to meet the regional health care industry's needs.

As described in LATTTC's TAACCCT grant proposal, H-PACTS was intended to offer students a seamless pathway toward college completion by enabling them to obtain various core competencies as they

advance through four tiers of the framework (see Figure 2). In Tier 1, students would begin with the Health Science Pathway Orientation, an introduction to various LAH3C programs and potential career pathways. LAH3C staff would assess students' college readiness, awareness of the health care industry, and strengths and areas for improvement through the SPHERit assessment. If students indicated an interest in pursuing a health care pathway, they would progress into Tier 2 and enroll in the Health Occupation (HOC) courses to learn foundational and core competencies in health care. There are four HOC courses:

1. Skill Set for the Healthcare Professional;
2. Basic Medical Terminology;
3. Cultural and Legal Topics; and
4. Fundamentals for the Healthcare Professional.

In the HOC courses, students would have the opportunity to receive digital badges certifying academic and career readiness competencies (Golioski, 2012) in areas including:

- Professionalism/ethics;
- Cultural awareness;
- Teamwork;
- Customer service;
- Safe practice/infection control;
- First aid;
- Medical terminology;
- Fire safety;
- Cardiopulmonary resuscitation (CPR);
- Health Insurance Portability and Accountability Act (HIPAA) rules; and
- Digital literacy.

Mastering the HOC competencies and digital badges would culminate in a Health Science Foundation Credential (HSFC) that is intended to be recognized by regional industry partners. The HOC courses would lay the foundation for students to advance into Tier 3 and pursue a certificate(s) in any one of the 11 defined health care programs of study. The certificates would be structured to be latticed and stackable, so that students would have the basic knowledge and skills to specialize in various pathways and accumulate credentials to progress up a career ladder in health care (Austin, Mellow, Rosin, & Seltzer, 2012). Achieving the Tier 3 competencies would lead students into Tier 4 to successfully complete an associate's degree and/or transfer to a four-year university. Student support services would encourage and monitor students' progress through the competency tiers towards completion, transfer, or employment. At various points throughout the health care pathway, students would be assessed and credited for prior learning experiences, have opportunities to take online basic skills refresher modules, and utilize adaptive learning and simulation models (Cant & Cooper, 2010; Klein-Collins, 2010; Newman, Stokes, & Gates, 2013; Offerman, 2013).

Figure 2

H-PACTS Model Competencies

Tier 4: Degree and Transfer Program of Study Competencies

Associate's Degrees and Transfer (Stacked)

Students demonstrate Tier 4 competencies to successfully complete an AA/AS degree and/or transfer to a four-year college or university well prepared to enter a program of study. These include the Tier 3 certificate competencies, coupled with the general education requirements needed to transfer.

Tier 3: Health Science Program of Study Competencies

Certificate(s) of Achievement (Latticed)

Tier 3 competencies lead to a certificate of achievement in one of 11 defined pathways. The certificates are latticed; as students progress through the program of study, they can add or shift to another program. Programs of study include:

- Athletic Training and Sports Medicine
- Community and Other Health Aides
- Dental Technician
- Emergency Medical Technician
- Health Information Technology
- Medical Assistant
- Medical and Clinical Lab Technician
- Pharmacy Technician
- Radiological Technician
- Registered Nursing
- Respiratory Therapy

Tier 2: Academic and Career Competencies and Common Core Foundation Competencies

Health Science Foundation Credential (Regional industry-recognized credential)

Tier 2 competencies are key academic competencies needed to succeed in health science programs of study. These include basic academic and career competencies unique to the health care sector such as English, computation/math, digital literacy and science, as well as common foundation competencies such as knowledge of the health care delivery system, health industry ethics (HIPPA), medical terminology, and industry fundamentals.

Tier 1: Foundational Competencies and Readiness for Success in College and Careers

Assessed, developed, and attained during the Health Science Pathway Passport

Tier 1 competencies include self-efficacy, social and emotional intelligence, self-regulation and time management, empathy, cultural competence, and awareness of career options in the health sciences. Prior Learning Assessments (PLA) occur at this point.

Source: LATTTC Grant Proposal

The H-PACTS framework was intended to guide improvements in student retention in health care programs, student preparation for college-level courses, improvements in and systematization of technology use for student learning and assessment, expansion of specialized industry-focused orientations, and alignment of programs of study with industry needs. Since H-PACTS was created by LATTTC, many of the colleges interpreted and adapted parts of the framework to fit their needs and institutional contexts. As implementation of the grant activities was underway, the colleges had to modify or scale back some of their plans.

Table 1

The majority of programs offered across the colleges were short-term certificate programs.

College	Type of Program
East Los Angeles College	4 Certificate ≤ 12 months 1 Certificate > 12 month 2 Degree program
Los Angeles City College	1 Certificate ≤ 12 months 2 Degree program
Los Angeles Harbor College	4 Certificate ≤ 12 months 1 Degree program
Los Angeles Mission College	5 Certificate ≤ 12 months 1 Certificate > 12 month 1 Degree program
Los Angeles Pierce College	1 Certificate ≤ 12 months 1 Degree program
Los Angeles Southwest College	1 Certificate ≤ 12 months
Los Angeles Trade Technical College	2 Certificate ≤ 12 months 2 Degree program
West Los Angeles College	11 Certificate ≤ 12 months 5 Degree program

The LAH3C programs were designed to prepare local students for the regional labor force. Table 2 displays the sociodemographic characteristics and educational backgrounds of students who enrolled in the LAH3C programs. There were more female than male students in the programs. Reflecting the diversity of Los Angeles County, students were predominately Hispanic/Latino, Black/African American, and Asian/Asian American, and over half the students were low-income.³ At the time of enrollment, almost 60 percent indicated that their main educational goal was to obtain a college certificate or degree.

Table 2

LAH3C students reflect the diversity of the Los Angeles region.

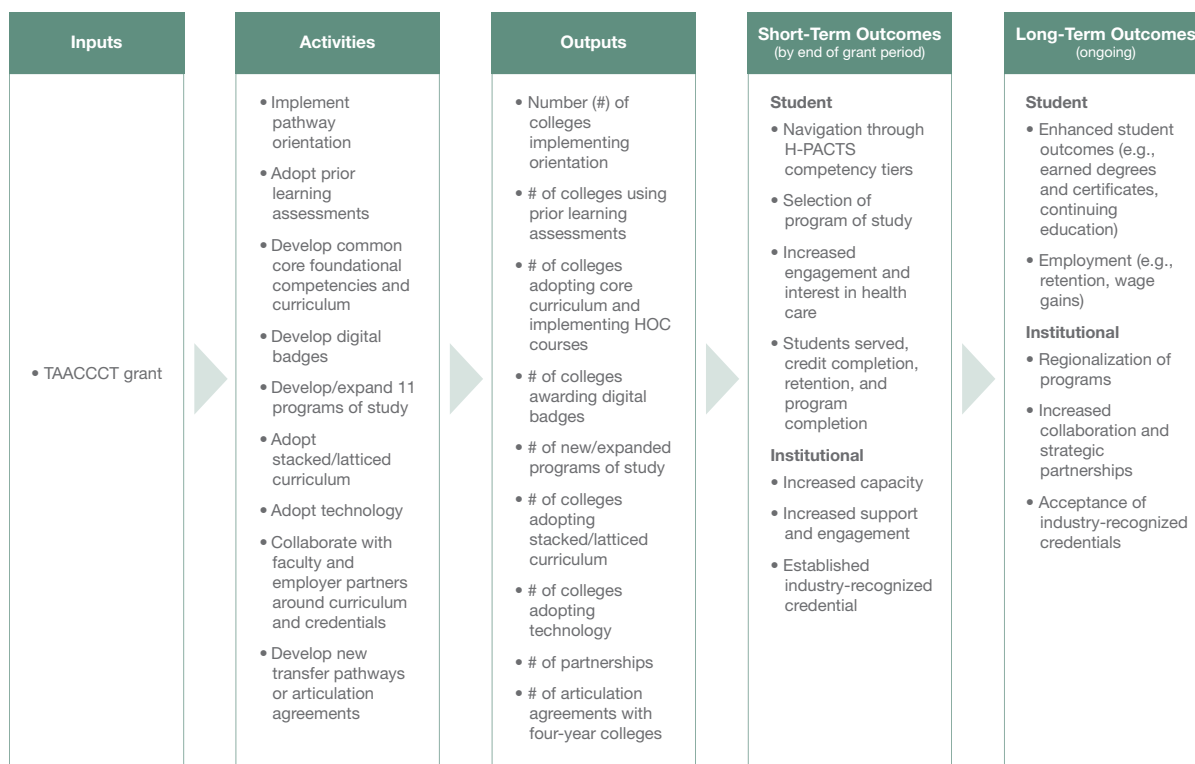
	LAH3C Students N=6,259
STUDENT CHARACTERISTICS	Mean or %
Gender (% female)	72%
Age	27.6
Race/ethnicity	
Asian	11%
Black/African American	22%
Hispanic/Latino	58%
White	7%
Other	3%
CA resident	96%
U.S. citizen	86%
Low-income	52%
EDUCATIONAL BACKGROUND	
Education status	
Not a high school graduate	15%
High school graduate without college degree	69%
College degree (associate's or higher)	16%
Enrollment status	
First-time enrollment at a college	59%
Continuing student from previous term	30%
Returning student enrolled after absence	11%
CAMPUS	
ELAC	28%
LACC	11%
LAHC	7%
LAMC	4%
LAPC	6%
LASW	19%
LATTC	15%
WLAC	10%
EDUCATIONAL GOAL	
Career development or advancement	30%
Obtain a certificate or degree	59%
Improve basic skills or other personal development	30%

Source: LACCD SIS data

Logic Model and Research Questions

We developed a logic model that served as the conceptual framework to guide the evaluation (see Figure 3). The H-PACTS logic model included inputs (resources), activities (actions that characterize the program), outputs (products of the activities), and outcomes (changes as a result of the activities). There was also a distinction between short-term (by the end of the grant period) and long-term (ongoing) outcomes. The inputs, activities, and outputs varied by college, depending on each college’s capacity and plans for implementation. The evaluation sought to understand to what extent the proposed activities and outputs were implemented and the outcomes achieved as a result of the grant.

Figure 3
H-PACTS Logic Model



We organized the research questions by the evaluation’s formative and summative phases.

The formative research questions include:

- How was the particular curriculum selected, used, and/or created?
- How were programs improved or expanded using grant funds?
- Was an in-depth assessment of participants’ abilities, skills, and interests conducted to select participants for the grant program? What assessment tools and processes were used?
- What contributions did each of the partners (e.g., employers, workforce systems, other training providers and educators, philanthropic organizations) make, in terms of grant activities?
- How well and how completely in each college has H-PACTS been implemented?
- What barriers did colleges face in implementing H-PACTS components?
- What was the level of understanding of and support for H-PACTS innovations among those parties critical to its successful implementation—and were there variations across colleges?

The summative research questions include:

- Did the H-PACTS innovations result in improved student and institutional outcomes?
- What aspects of the H-PACTS innovations appear to account for any observed outcomes?
- What are the implications for scaling and replicating the findings, with regard to implementation, participant outcomes, and the relationship between the two?

Evaluation Method: Mixed-Methods Approach

The evaluation utilized a mixed-methods approach, incorporating both qualitative and quantitative data. The formative evaluation relied on qualitative methods to examine the development and implementation of the grant activities across the eight colleges in the consortium. It included assessments of the feasibility of implementing the grant activities, the strengths and challenges of the implementation process, and the strategies used to overcome implementation barriers. We collected qualitative data from campus visits, semi-structured interviews, and student focus groups and then conducted content analyses to uncover dominant themes.

The summative evaluation involved collecting and analyzing both qualitative and quantitative data to examine whether the grant activities influenced such factors as program delivery, instructional methods, student achievement, and student employment outcomes. We collected qualitative data through semi-structured interviews with college personnel and employer partners, and through student focus groups. We conducted content analyses to assess the perceptions of college administrators, faculty, staff, and employers about the effectiveness of the grant activities, and to understand students' experiences in the programs. We collected quantitative data through student surveys, the student database maintained by LAH3C program staff, the administrative student information system (SIS) maintained by LACCD's Office of Institutional Research, and employment records held by California's Employment Development Department (EDD). Using the student-level data, we conducted analyses to track progress and success in reaching academic milestones along the path to program completion for the LAH3C students and for a comparison group. We also conducted propensity score matching (PSM) analyses to test for differences in outcomes between the LAH3C students and the comparison group. See Appendices A-D for more detailed descriptions of the data collection process, analyses, and protocols.

Summary of Data Sources

Qualitative Data

- College personnel (faculty, staff, and administrator) interviews
- Employer partner interviews
- Student focus groups

Quantitative Data

- Student survey
- LAH3C database
- LACCD SIS data
- EDD records

Formative Findings

This section summarizes the findings from the planning and implementation phases of the grant, based on the review of documents, interviews, and focus groups.

Planning Process

One of the main objectives of the planning process was to develop the core foundational competencies and curriculum for the HOC courses, with input from local employer partners and faculty and staff members across the LAH3C colleges. In addition, the planning process was an opportunity to build collaboration within the consortium and to garner engagement for the grant activities at each college. The length of the planning phase varied across the colleges, ranging from one to two years.

Consensus on Grant's Goals and Objectives

There was a shared consensus among LAH3C staff and administrators that the grant was intended to better structure health care pathways and to improve student outcomes. The hope was that the orientation and structured pathways would help improve the fit between students and their chosen programs. In general, interviewees thought the grant aimed to improve student success by helping students identify a program of study, enabling them to complete a program in a timely manner, and preparing them for health care careers.

Interviewees also thought that the grant aimed to strengthen the health care program pathways across the district by improving and standardizing student orientation processes, implementing a competency-based common core curriculum across the colleges, and collaborating with workforce and industry partners in the region. The majority of LAH3C staff and administrators believed that the grant would help bridge silos on campuses and create more uniformity across the colleges in the district.

When asked if interviewees noticed any differences between the H-PACTS model and past approaches in their health care programs, LAH3C staff and administrators noted that the new approach provided a more linear and streamlined path for students (e.g., tiered pathway model encompassing orientation and assessment). LAH3C colleges appeared to be more willing to embrace innovation through competency-based education and to align a common curriculum across the colleges, neither of which had been done prior to the grant. Interviewees also noted a stronger emphasis in the current approach, in comparison to past approaches, on collaborating with industry partners to improve health care programs.

It appeared there was wide consensus about the goals and objectives of the TAACCCT grant during the planning phase. This shared mission to improve student outcomes and program pathways appeared promising for implementation efforts that involved continued planning and coordination across multiple colleges.

“It’s **tragic** to see students put themselves through all the **stress** of almost two years to get through prerequisites, to get into the nursing program, and realize that this **isn’t their calling.**”

—College project director

Shared Expectations for Student Success and Program Improvement

Interviewees' awareness of the grant objectives aligned with their expected outcomes for the grant. They expected "higher quality" students than the graduates of the former programs, believing there would be increased commitment from these students to their health care programs; improved student success (e.g., retention, program completion, transfer); improved job preparation and career readiness (e.g., soft skills, social skills, professionalism); and increased numbers of them entering the workforce with marketable skills. Interviewees expected overall improvements to all the health care program pathways across the district's colleges, as well as better alignment and more streamlined transitions from high school to college. LAH3C staff and administrators also expected the grant to impact their institutions by increasing the capacity across the district to deliver a common health care curriculum that caters to student and industry needs.

Interviewees collectively highlighted four H-PACTS components that would have the most significant impact on their students and programs across the district: 1) a common competency-based health care curriculum, 2) a health science pathway orientation, 3) digital badges, and 4) new assessments (focused on both academic and non-academic knowledge and skills). Although not a specific strategy of H-PACTS, LAH3C staff and administrators noted that the focus on health care pathways was important for student success because health care was currently a high-demand field in the Los Angeles region that would offer meaningful careers for students.

Overall, interviewees expected to see improvements in their programs and institutions and thought that the H-PACTS model would have a positive impact on student outcomes. LAH3C staff had favorable perceptions of the H-PACTS model, found utility in it, and looked forward to seeing how H-PACTS strategies influenced student success and program delivery across the district.

"The grant is meant to **maximize** each college's existing **infrastructure**, helping it to be **responsive** to the community's needs."

—College project director

"HOC is a **wonderful opportunity** for students who have little to no skills in health care, so that they can get their foot in the door and then they can **expand their knowledge** and go into **different health care pathways**."

—LAH3C faculty member

Positive Planning Experience, But Not Without Early Challenges

As a consortium, interviewees recalled positive experiences building a core team across the district to discuss the orientation process, create a common curriculum, and develop a system for digital badges. Interviewees thought that working as a consortium was as important as collaborating within their respective colleges, because the weekly group meetings helped build consensus for the grant, provided a space to share knowledge and experiences, and increased the awareness of the district's health care programs.

For most of the LAH3C colleges, the grant was well-received, as project directors had amassed support from their CTE deans, department chairs, faculty members, and staff. It was crucial for project directors to educate their colleagues about the grant's potential to impact students and to involve faculty members in planning the curriculum and identifying content knowledge and skills to include in the health care

programs. Interviewees speculated that college faculty and staff already familiar with the H-PACTS model had an easier time designing grant activities. As the lead college and expert on the new model, it was important for LATTC to train and educate the rest of the consortium about H-PACTS while also providing flexibility for the colleges to adapt the model to fit their individual needs. In addition, most of the interviewees thought that some of the TAACCCT-sponsored trainings were encouraging and helpful, and that staff were less anxious about undertaking a major project after hearing representatives from colleges in other states share how they developed and implemented similar strategies.

Planning Phase Complicated by Limited Lead Time and Unfamiliarity With Grant Activities

Although there was significant momentum to create H-PACTS strategies, interviewees noted several challenges encountered during the planning process. Their biggest concern was not having enough lead time to plan activities due to delays both in contract processes and the availability of DOL funds. Some interviewees were also concerned that their limited grant budgets would not make it viable to establish new health care programs at their colleges.

LAH3C staff and administrators expressed that, given limited lead time to ramp up efforts, it would be challenging to create a common program structure across the colleges and build uniformity in terms of program curriculum and assessment. They expressed the importance of clarity in the consortium's efforts to operationalize grant activities, metrics, expectations, goals, and performance indicators, since each college might have different interpretations of how health care programs for students should be structured. They added that it was critical for project directors to ensure that information and training were delivered to key players at each college as they moved toward the implementation phase.

Because the idea of competency-based education and the H-PACTS model was new for many colleges, interviewees noted that changing the existing culture of teaching and learning was another major challenge, and that progress would take time. Some faculty members expressed concern that the new instructional strategies were not aligned well with the teaching philosophies of their health care departments. Some of them also were skeptical about the value-add of the HOC courses because they thought that most of the course content and competencies were already covered in their colleges' existing health care programs. In addition, many interviewees were concerned whether there would be industry-wide acceptance of the new health care credentials in practice once program graduates were in the job market, even though employers had been involved in the design process to identify competencies and skills needed for the workforce.

Implementation Process

The main objectives of the implementation phase were to begin the HOC courses and digital badges and to enroll students in the grant-funded health care programs. The implementation phase was an opportunity to increase the colleges' collaboration efforts as well as their capacity to serve more students by enhancing and creating new health care programs. However, some of the challenges from the planning phase carried over to the implementation process, which contributed to variations in how grant activities played out at each college. The timing of implementation varied, depending on the readiness of each college, and ranged from the end of the second year (spring 2015) to the third year of the grant period (fall 2015).

Increased Collaboration, Especially Within Colleges

Implementation of the grant activities provided opportunities to increase collaboration across the district's colleges, through the work to adopt a common core curriculum and through other efforts to share curriculum and strategies. The grant fostered a higher level of coordination and collaboration across the consortium. College personnel were able to work together, leverage resources, and learn from one another. They also encouraged students to enroll in their district's sister colleges if they sought a program not offered on their own campuses.

A strong level of collaboration appeared more pronounced within each college, as administrators, faculty, and staff members worked closely together to implement the grant activities. Most of the cross-college coordination was at the project director level, but some faculty members wanted more opportunities to learn from their colleagues across the consortium.

“This is my first experience working as part of a **collaborative**, on a consortium grant through LACCD, but I feel it's been a **positive** experience. I do feel that, in many other grants, whether it's stated as a collaborative or not, we're very competitive or we have completely different ideas of what we want to do, and I think that this is one of the first where I think the **communication** is very good.”

–College project director

Implementation Posed Significant Challenges in Varying Degrees Across Colleges

College personnel noted frustration with gaining approvals for new courses and programs due to multiple layers of institutional, district, regional, and state-level policies and procedures. For example, project directors hoped that if the HOC curriculum was created by a consortium, then it would be easily approved district-wide. However, each college still had to gain approval through its own institution-level processes. Some colleges could not approve the HOC courses as stand-alone courses because all courses were required to be part of an approved program. To reduce the time for gaining approval, many colleges opted to attach the HOC courses to existing health care programs or to use existing courses with similar curricula, rather than adopting the HOC courses or creating new programs.

“The **bureaucracy** in the district is **bone-crushing**.”

–College project director

Interviewees at all eight colleges were also frustrated with the lack of clarity and the amount of paperwork associated with the grant's reporting requirements. For example, some reported that it was very difficult to complete and gain approval for budget modification requests because DOL was slow to respond to questions or required additional justification for submitted requests. Interviewees thought this prevented them from purchasing much-needed supplies and materials in time to serve students.

Many interviewees reported problems with grant management, noting that their colleges lacked the organizational structure and personnel to adequately manage the grant. It was challenging for college personnel to balance a workload that included implementing grant activities and other institutional commitments. College efforts to hire additional personnel to work on the grant were impeded by strict

hiring policies and procedures that did not accommodate the grant's short timeline. Although college personnel highlighted significant challenges, they appeared to be committed to implementing grant activities to the greatest extent possible within the context of their colleges.

Variations in Leadership and Prior Grant Experience

Colleges with stronger leadership, more experience with grant management, and higher levels of support from college personnel (especially faculty and staff members) were better equipped to overcome challenges and to achieve their implementation goals. Faculty and staff from five of the eight colleges thought their plans for the TAACCCT grant were carried out as expected. College personnel thought they were most successful in creating a common core curriculum to introduce students to the health care field, expand existing health care programs, and standardize the health science pathway orientation. On the other hand, colleges that experienced changes in leadership, or had less clarity about grant goals and the colleges' related roles and responsibilities, struggled to gain traction to fully implement the grant activities as outlined by the consortium. While over half the colleges were well underway to offering the HOC courses, a few colleges were still awaiting curriculum approval, even in the last years of the grant. Some colleges had to build completely new health care programs from scratch because they were not offered prior to the grant, while other colleges were able to make alterations to existing health care programs.

Widespread Perception That Target Outcomes Were Too Ambitious

At the colleges implementing grant activities on a smaller scale, or just beginning to offer health care programs, college personnel felt pressure to keep up with the target enrollment, program completion, and employment numbers proposed in the grant. The project directors thought the completion numbers appeared lower than expected and might not accurately reflect the amount of work achieved during the grant. There was no formalized way to track students' employment outcomes, and the colleges were heavily dependent on students' self-reporting of employment, making it difficult for colleges to produce the required data on student employment. In addition, many students were still in the LAH3C programs at the end of the grant period, so measuring employment outcomes was unrealistic. Most colleges also lacked the time and capacity to keep track of their students after program completion. Most project directors noted that they quickly lose contact with students after program completion because students change their contact information and/or they don't respond to follow-up surveys. Although DOL required colleges to provide documentation of students' employment (such as pay stubs or a signed letter from employers), that process was extremely laborious, cumbersome, and time-intensive for project staff and students.

Concerns that Variation in Implementation Could Limit Grant Benefits

The H-PACTS model was not executed at the same level at each college. Each college adapted parts of the H-PACTS model according to its capacity and the perceived needs of its student population. Each college made different choices about which and how components of the grant activities were implemented. In the original proposal, all nine colleges in LACCD were part of the TAACCCT grant, but only eight colleges actually participated in the planning and implementation of the grant activities (the ninth college ended up as a "learning partner" with the consortium). The HSFC was intended to lead into one or more of 11 defined health care programs that lead to a certificate of achievement, an associate's degree, and/or transfer to a four-year university. Given the significant delay in implementation and program/course approval challenges, LAH3C project directors sought approval from DOL to count the HSFC as a completion, for grant reporting purposes. In addition, completion of HOC courses did not

guarantee students admission into high-demand programs such as Nursing or Radiological Technology, due to long-standing waiting lists at the colleges. Transitioning to various health care pathways was not as smooth for students as envisioned in the proposal. There was also less emphasis on developing transfer pathways and articulation agreements for students who wanted to pursue further education at a four-year university. This was not a priority, given that many colleges put most of their efforts into implementing the HOC courses and specific health care certificate and degree programs. In addition, the colleges may have had long-standing transfer pathways and agreements in place prior to the grant.

The use of assessments, such as SPHERit, did not play out as intended in the proposal because some colleges lacked designated program counselors or student support staff to administer the assessment to students and to interpret the results with them. Some support staff also questioned the utility of the assessments in helping students advance along their health care pathways. PLAs were not executed as proposed because project directors cited low demand from students. It could also be the case that students were unaware they could be tested and credited for prior learning because that information was not heavily advertised at their colleges.

Uncertainty About Value of Health Science Foundation Credential

Although the HSFC was a main focal point for LAH3C's grant, many college personnel had mixed beliefs about the value of the credential. Across colleges, grantees agreed that the content of the HOC courses helped introduce students to the health care industry, provided them with a standard set of skills for entry-level positions (such as a front office job in a medical facility), and offered foundational knowledge for them to pursue various health care pathways. However, many college personnel felt the courses were not sufficient to substantiate a stand-alone credential, given the limited employment opportunities for students who obtain an HSFC. The interviewees envisioned students exploring their interests while in the HOC courses and then continuing to a more specialized health care pathway. They thought that students would likely need additional training to acquire employment opportunities at a living wage in the health care industry.

Although college personnel acknowledged that LATTTC was working with the Los Angeles Area Chamber of Commerce to review the health care competencies embedded in the courses and to educate employers about the credential, some were skeptical whether it would be recognized by industry once students completed the program. Other interviewees were cautiously optimistic that employers would see the value in the credential and thought that more evidence was needed to show the effectiveness of the HOC courses for student job outcomes. Likewise, employer partners had generally positive perceptions of the HOC courses, but were apprehensive about the value of the credential, since it was so new. They were largely reserving judgment about the credential's value until they could hire graduates at their facilities.

Summative Findings

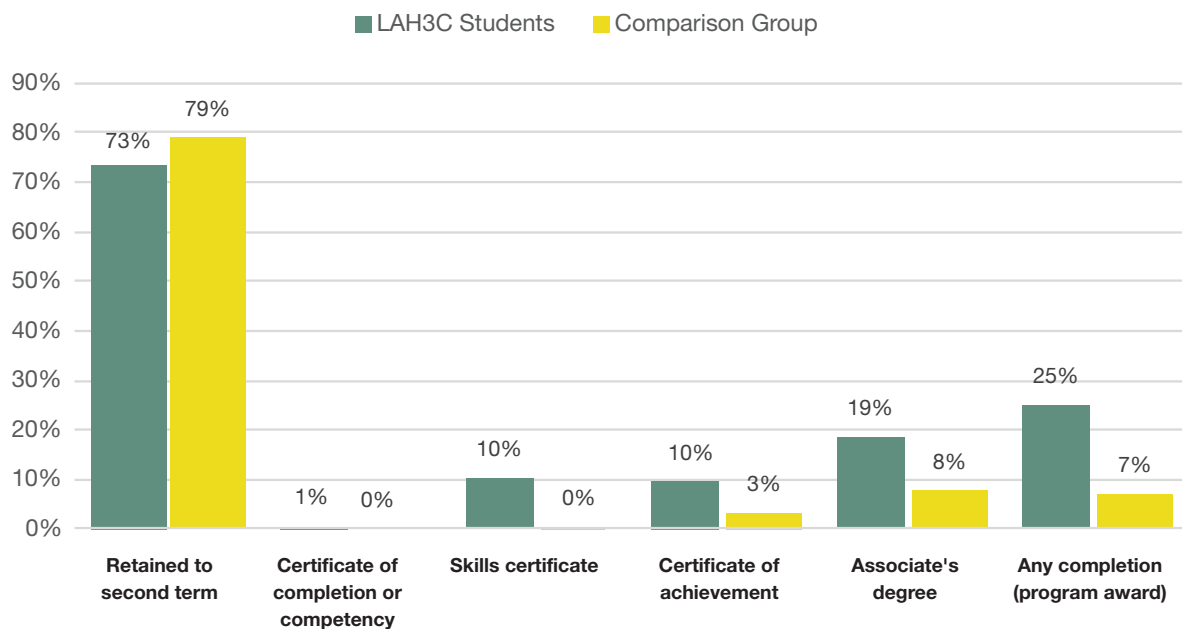
This section summarizes findings about the impact of the grant activities on student and institutional outcomes, based on analyses of interviews, focus groups and of student-level data.

Improvements in Student Outcomes

There is some evidence of improvements in LAH3C students' academic progress and outcomes. In order to understand the path that students took toward program completion, it was important to examine factors such as educational achievement, academic behavior, and enrollment patterns. As a first step, we analyzed students' progress in attaining milestones and academic patterns associated with the likelihood of completion (Moore, Shulock, and Offenstein, 2009). Figure 4 summarizes educational milestones for both the LAH3C students and the comparison group using the LACCD SIS data. It appeared that LAH3C students completed certificates or degrees at a higher rate than the comparison group.

Figure 4

Both groups had high retention, but LAH3C students appeared to have higher rates of completion.

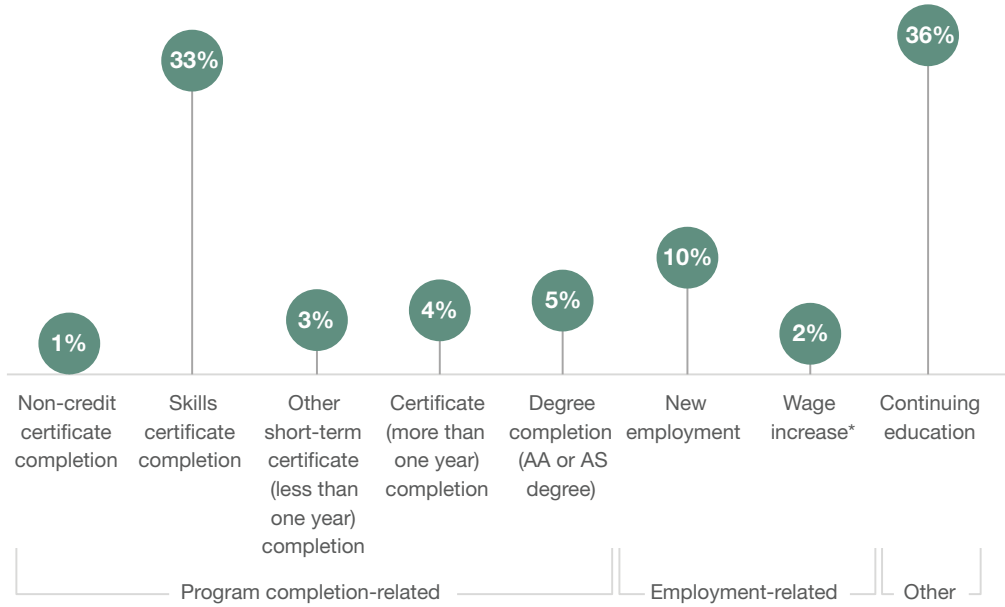


Source: LACCD SIS data

Based on the LAH3C database, over one-third of “enrolled”⁴ students were LAH3C program completers. Of these students, most of them earned a skills certificate,⁵ and the HSFC accounted for over half of the skills certificates (see Figure 5). Students also continued to pursue further education, either in a specific health care pathway within LACCD or after transferring to a four-year university. This outcome was also supported in the student survey, in which over half the students wanted to obtain a bachelor’s degree as their main educational goal (see Figure 6).

Figure 5

Most LAH3C students earned a skills certificate and continued to pursue their education.



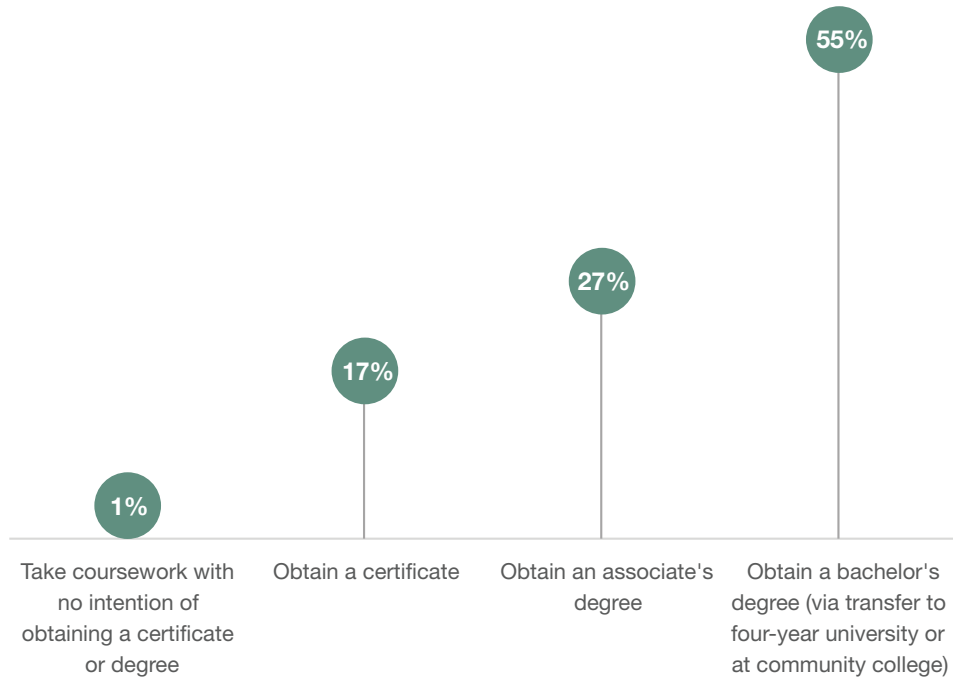
Source: LAH3C database

Note. Students can be counted in multiple categories.

*The wage increase was largely attributed to a company-wide wage increase by a particular employer.

Figure 6

Survey data revealed that over half of LAH3C students hoped to obtain a bachelor's degree.

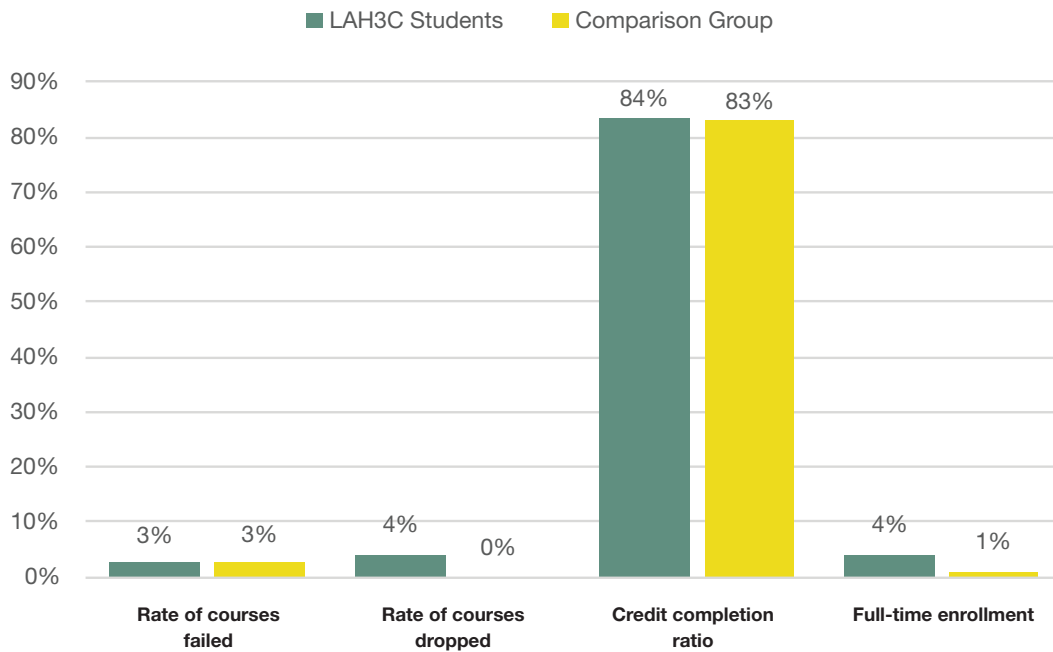


Source: Student survey

Success indicators are academic patterns that students follow that predict the likelihood of them making progress toward educational milestones and program completion. Figure 7 summarizes academic patterns and behaviors of LAH3C students and of the comparison group using the LACCD SIS data. Both groups had low rates of failed and dropped courses and maintained a high credit completion ratio. Both groups also exhibited adequate academic performance, with LAH3C students earning an average GPA of 2.82 and the comparison group earning an average GPA of 2.70.

Figure 7

Both groups attended part time, but were successfully completing most of their courses.



Source: LACCD SIS data

Quasi-Experimental Methods Provide Early Indication of Grant’s Positive Influence on Student Success

Since students were not randomly assigned to the grant-funded programs, we could not isolate the effect of and make casual inferences about the grant activities on students’ outcomes. Therefore, we utilized a quasi-experimental design in the form of PSM to create comparable groups and tested for differences between the LAH3C students and the comparison group.

The purpose of PSM is to create a dataset that resembles an experimental design that includes a treatment and a control group. We used PSM to create a treatment group (i.e., LAH3C students) and a control group (i.e., historical LACCD health care comparison group) by matching the groups on a set of sociodemographic and educational background variables. The data are weighted (via inverse propensity weights) so that the treatment and control groups look similar (Porter, 2017). Prior to matching the groups, there were several differences between the LAH3C students and the comparison group in terms of gender, race/ethnicity, educational status, enrollment status, and educational goals. The differences in sociodemographic and educational background characteristics were less apparent, and the groups appeared more comparable, after we conducted PSM (see Appendices G and H for more details).

We conducted t-tests and chi-square tests of significance to test for differences in the academic outcomes of the LAH3C students and the comparison group. The differences in student outcomes were more pronounced after they were matched. Using the LACCD SIS data, Table 3 and Figure 8 show that LAH3C students were more successful in a host of academic outcomes than the comparison group. LAH3C students were more likely to have a higher GPA, retention to the second term, credit completion, and program completion than the comparison group.

Table 3

When both groups were made comparable, LAH3C students had a higher GPA and attempted more units than the comparison group.

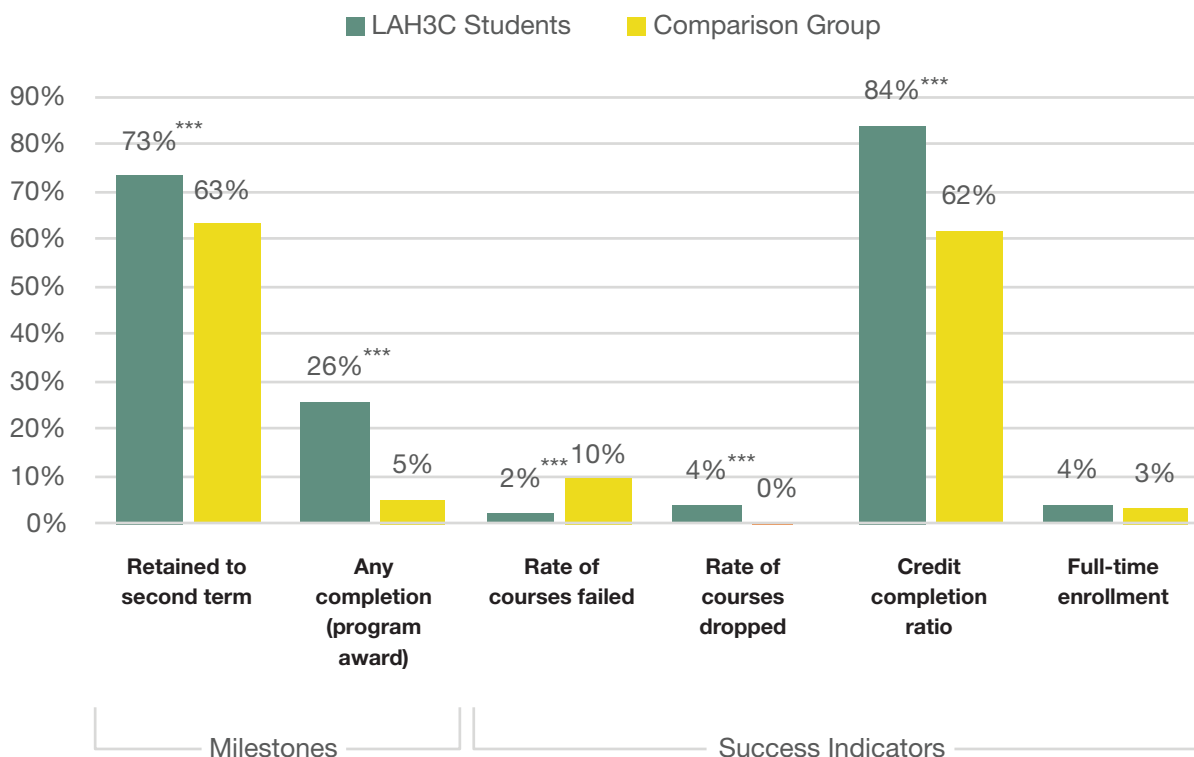
	LAH3C Students N= 6,056	Comparison Group N=13,190
	Mean	Mean
Average GPA	2.81***	2.66
Average units attempted per term	6.1***	5.3

Source: LACCD SIS data

Note. ***= $p < .001$

Figure 8

When both groups were made comparable, LAH3C students were more likely to achieve milestones and success indicators than the comparison group.



Source: LACCD SIS data

Note. ***= $p < .001$

As a follow-up to the t-tests and chi-square tests, we conducted regression analyses to examine the relationship between grant participation and a selected subset of achievement outcomes (i.e., GPA, retention, program completion) that were of particular interest to DOL. After accounting for various control variables, results revealed that grant participation was associated with increases in GPA. In addition, grant participants were nearly twice as likely to be retained to the second term and seven times more likely to earn a certificate or degree than the comparison group (see Appendix H for more details).

Although completion was higher for the LAH3C students, there were no comparable programs similar to the HSFC offered to the comparison group. In addition, some colleges created completely new health care programs and departments under the grant. These factors may likely explain, in part, why program completion was much higher for the LAH3C students than for the comparison group. We were also unable to identify which grant-funded activities were more or less likely associated with student success because the nature of the data did not allow us to conduct such analyses. Since the colleges implemented several grant components at the same time and at varying degrees across the consortium, it is difficult to isolate the influence of each of the grant activities on student outcomes. Nonetheless, there is some early indication that the grant activities as a whole were positively associated with improved student outcomes, even after accounting for various control variables.

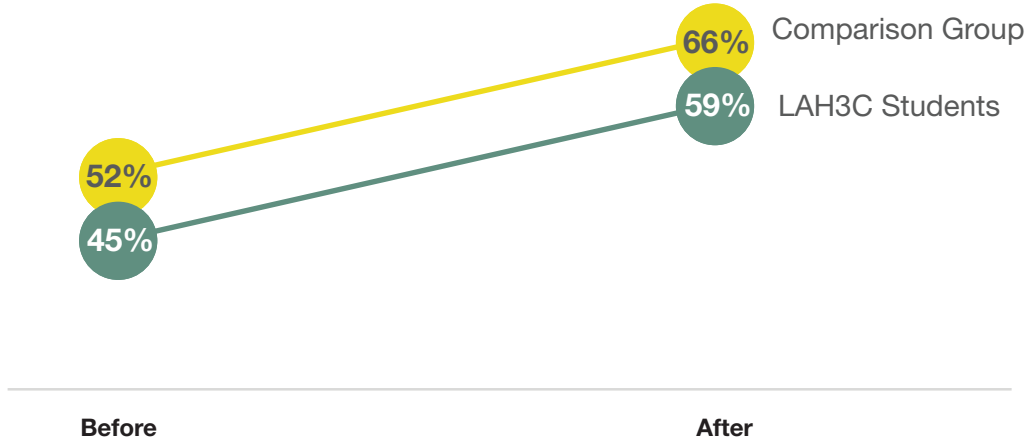
EDD Data Limitations Restrict Interpretations of Employment Outcomes

One of the main foci of the TAACCCT grant was to improve students' employment prospects in high-need industry areas. However, the limitations of the EDD data inhibit our ability to make clear interpretations about the employment outcomes of the LAH3C students and the comparison group. We only had access to aggregated data, so comparisons between the two groups are rather limited.

Figures 9 and 10 show the percentage of students employed and the average monthly wages for the LAH3C students and for the comparison group before and after a designated time period. Employment rates and average monthly wages appeared to increase for the LAH3C students after enrollment in the grant-funded programs. Of the students employed, approximately 6 percent of their employment was in the health care industry. It is important to note that most students who completed the HOC courses continued to pursue additional education in specific health care pathways. If students decided to enter the job market after the HOC courses, employment opportunities were limited to entry-level front office jobs. Higher-wage health care positions required additional training and licensures. The data may not accurately reflect the employment outcomes of the LAH3C students because many students were still enrolled in the grant-funded programs or chose to continue their education. Given a few more years, these employment and wage numbers could look more positive. A similar pattern of findings emerged for the comparison group. Students appeared to have higher rates of employment and average monthly wages a few years after their enrollment in 2011-2012. Of the students employed, approximately 7 percent of their employment was in the health care industry. The comparison group includes students who indicated a major in health care—which may suggest more of a commitment to pursuing a health care career—whereas LAH3C students were still exploring the wide array of health care career options in their HOC courses. This might explain why employment rate and wages appeared slightly higher for the comparison group than for the LAH3C students.

Figure 9

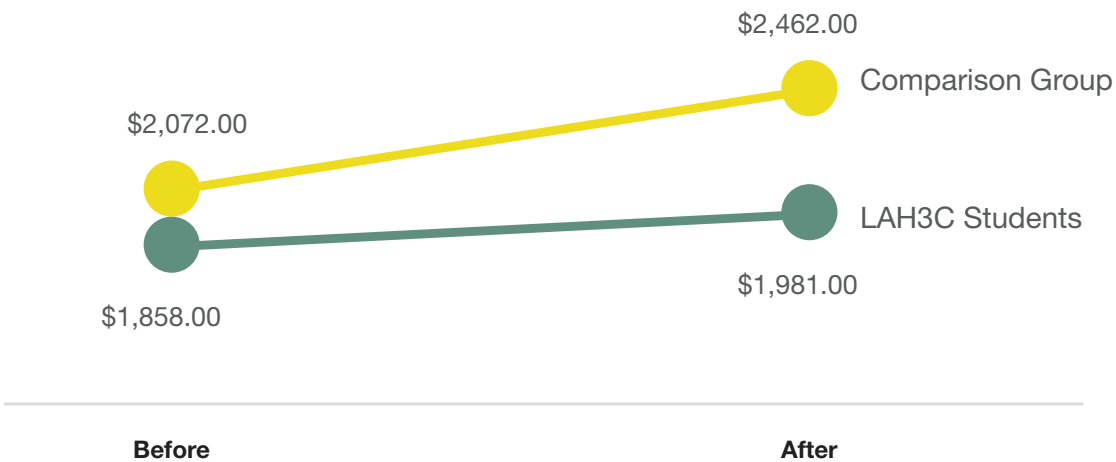
Employment rates appeared to increase for both groups.



Source: EDD records

Figure 10

Average monthly wages appeared to increase for both groups.



Source: EDD records

Note. Average monthly earnings adjusted for inflation to 2016 dollars.

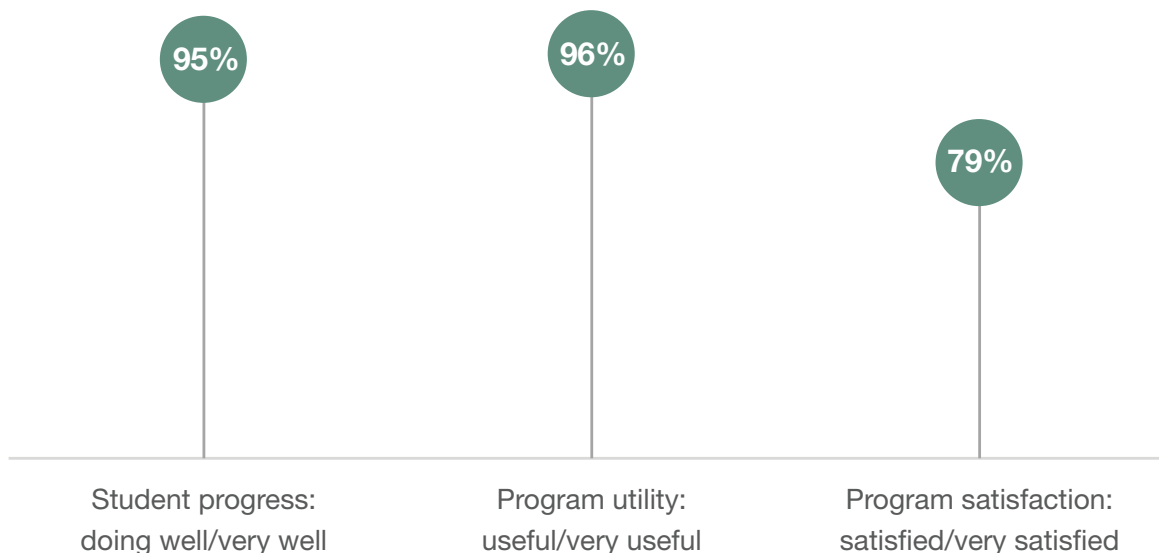
Despite the limited quantitative evidence on how the grant impacted students' employment outcomes, college personnel observed that students were receiving job offers after completing the grant-funded programs. They thought that students who had experience in the HOC courses and training in a specialized health care program were more successful at finding jobs in the health care field and better prepared for the workplace than students who did not complete the HOC courses. Employers also expressed their interest in hiring students with the skill sets and competencies that the HOC courses and grant-funded programs provided.

Positive Feedback From Students Regarding HOC Courses and Grant-Funded Programs

Student voices provided insight into what aspects of the grant-funded activities they found to be most helpful. Across focus groups, students provided positive feedback about their experiences in the HOC courses and grant-funded health care programs. As shown in Figure 11, survey results showed that students thought they were making good progress, found their programs useful, and were satisfied with them.

Figure 11

LAH3C students had very positive feedback about the grant-funded programs.



Source: Student survey

Students thought the HOC courses provided a comprehensive introduction to the health care field and basic patient care skills, and they were optimistic that the courses would prepare them for employment because of the alignment of the curriculum with industry needs. Students thought they were learning skills valued by employers and appreciated the exposure to various career options in the health care field. Students especially liked digital badges as a means of showcasing their mastery of health care competencies, believing the badges would be advantageous in the job market. Students who exercised the option to take HOC courses before entering a health care program felt they were better prepared than students who did not take them. As an added bonus, students liked that the HOC courses were free. Students also praised their instructors for their dedication to student success and valued their expertise as current practitioners in the health care field.

“I’m glad this program came along, because I think there’s a difference between **studying** medicine from a **book** and being able to **practice** it with people in a **real-life situation**. It does take a brainiac to be able to assess a human body and take care of it in that aspect, but it takes a bigger person to be able to **sympathize emotionally** with a human being. So being **hands-on** and **doing classwork**—it’s the **best of both worlds**.”

—LAH3C student

Perceived Improvements in Students' Skills

College personnel and employer partners thought that the HOC courses and the grant-funded health care programs provided skills students needed in the health care field. Interviewees noted that the HOC courses prepared students to succeed in a health care program and in health care careers. Similar to students' observations, some college personnel also noticed that students who took the HOC courses were better prepared to enter a health care program than students who did not.

The clinical placements and internships offered by colleges as part of their health care programs appear to hone and improve students' skills in the workplace. Employer partners expressed that these opportunities were helpful because they allow students to showcase their skills and competencies and also provide a trial period to test out potential employees. Employer partners noticed that students in these placements and internships appeared to require less training on the job because they understood the fundamentals of health care and the importance of customer service. Based on their knowledge and understanding of the grant activities, some employers noted that they would likely hire students with HOC experience over applicants without that introductory health care experience. Other employers noted that they would hire students from the local colleges regardless of whether or not they had exposure to the HOC courses because of the long-standing positive reputation of the colleges' health care programs in the community. Employer partners were confident that the community college district was creating quality candidates for the local labor force.

Based on mock interviews with students, college personnel and employer partners agreed that students need improvement in their résumé writing and interviewing skills. College personnel expressed that they must do a better job preparing students to "sell" their qualifications and to showcase their knowledge, especially around the digital badges. It was not enough for students to indicate on their résumés that they received digital badges, because most employers are unfamiliar with the digital badging system. Students could improve upon their explanations of what skills they learned through obtaining the digital badges, how their skills can be applied to the workplace, and how they are better prepared for jobs than other candidates. Likewise, project directors and staff members acknowledged that they need to continue to educate their local employer partners about the utility and value of the HOC courses and digital badges.

"I liked that the **instructors** were **from the field**, and so they gave you the most **updated, hands-on** version of what really goes on. One particular instructor made it a point to know our names, to see where we were struggling, and to know that we grasped all aspects of the course. That instructor made you love the course and made you **love being there** so you wanted to **do better for yourself.**"

—LAH3C student

"I have been teaching nursing fundamentals for over 20 years, and I personally can see the **difference in the students** just coming straight into the classroom from other jobs or other career paths. Students who have had those **HOC classes ahead of time** have a leg up."

—LAH3C faculty member

Heightened Interest in Improving Program Pathways

Many interviewees noted that the health care programs are better structured today into pathways for students, with more standardization across the district to facilitate student mobility. Faculty members enjoy the applied nature of the HOC curriculum, share students' enthusiasm for the health care field, and appreciate the opportunity to learn new instructional programs such as Canvas and Portfolium, and about digital badges. As a result of the grant, college personnel noticed that there are now more conversations on campuses about strategies to move students quickly through a pathway and how to incorporate technology and learning management systems into different programs. For colleges persistent in pushing through institutional barriers, the grant enabled them to build capacity by hiring new faculty and staff members to carry out and sustain grant activities.

Improved Connections With Employer Partners

Employer partners were deeply involved in developing the core curriculum for health care and ensuring that skills aligned with industry needs. The employer partnerships spanned the range of health care facilities, from adult day care centers to large hospital systems. Employers also served on the colleges' advisory boards, participated in mock interviews, attended job fairs, provided clinical placements and internships for students, and served as guest speakers in the HOC courses. The consortium also enlisted the help of the Los Angeles Area Chamber of Commerce to promote the HOC courses and digital badges. Some colleges incentivized employers for their participation or utilized grant funds to hire a professional expert to serve as a liaison between the college and its local employer partners. This helped bring in more opportunities for clinical placements for students so they could gain hands-on training in the workplace and apply the skills they learned in their programs. In turn, employer partners expressed that they were more likely to advertise to and recruit LAH3C students for future openings at their facilities. The grant provided an opportunity to improve employer engagement, helping to make curricula more responsive to workforce needs and connecting students with employer partners in health care settings.

Favorable Perceptions of the Grant, but Suggestions for Improvement

Although LAH3C staff and administrators reflected positively on the entire grant process and expressed optimism about the potential of the grant, they noted areas for improvement in order to maximize the grant's benefits.

Support for the grant activities was essential to ensure that the orientation process and core curriculum would be accepted and implemented by the colleges. Interviewees noted that it was particularly important to include staff and faculty members in the design of grant activities because they would be the ones working directly with H-PACTS strategies and with students.

LAH3C staff and administrators also recommended that ongoing conversations, through monthly consortium calls, would be useful as they planned for program sustainability. In order to coordinate such conversations among the colleges, interviewees expressed the need for stable leadership (at each institution and at the consortium level) to pull all the colleges together and facilitate collaboration efforts. For future projects and grants, interviewees noted that leadership, with advisement from key stakeholders (i.e., faculty, staff members, administrators, employer partners), must provide guidance on how to adapt, implement, and sustain proposed grant activities across the colleges. Interviewees also thought that garnering more engagement from various stakeholders (e.g., faculty, staff members, employer partners)

would create champions for the grant and strengthen the collaborative efforts required to work through challenges.

Many interviewees also noted a desire for additional training about the grant activities and reporting requirements, and some suggested holding information sessions for new faculty and staff members to educate them about the grant's goals and activities. Interviewees were particularly interested in training workshops related to program design and implementation, instructional methods, and fiscal management (e.g., allowable expenses for the grant). By understanding the challenges of executing a grant project and incorporating suggestions for improvement, LAH3C can better plan and prepare for potential barriers as it transitions into sustaining the grant activities.

"I am forever **grateful** that we did get the funding, because I can see this moving **forward**. I can see it **building up** to something much **better** than where it was."

—College project director

Conclusion

Through the TAACCCT grant, LAH3C hoped to improve health care pathways so that students can earn credentials in a timely manner and gain employment skills in a thriving industry. Despite the ongoing challenges of changing grant reporting requirements and bureaucratic processes for hiring and curriculum approval, the grant helped the colleges build capacity to enhance program delivery for students. The HOC courses were the catalyst for changing health care pathways across the district and led the LAH3C colleges to work closely together alongside employer partners to create a common core foundational curriculum for health care. It appears that the grant strengthened employer involvement, and it is important that colleges plan to sustain these relationships long after obtaining the grant.

While there were significant limitations with the data, findings suggest that students were doing better in the LAH3C programs, in terms of retention and completion, than students in the comparison group. College personnel and employer partners also noticed improvement in students' skills and competencies, compared to previous cohorts of students. The findings signal positive changes, but it is still too early to tell the impact of the grant activities on student, program, and institutional outcomes. As the grant is ending, the district's colleges are just hitting their stride with running the LAH3C programs. Nonetheless, the grant helped lay the foundation and create pathways for students to obtain health care careers.

Main points from the evaluation findings are highlighted below.

Formative Findings: Support for the Grant Despite Significant Challenges

- **Partners agreed on goals of grant.** There was shared consensus among college personnel and employer partners that the aim of the grant was to improve for students the educational pipeline to health care careers and to provide them with the necessary foundational knowledge and skills to thrive in the health care field.
- **Colleges began new collaborations.** LAH3C colleges formed new collaborative relationships with one another and within their institutions, relationships that were beneficial during the planning and implementation of grant activities.
- **Grant implementation varied from college to college.** There were variations in the depth and breadth of implementation across the colleges due to challenges with complicated grant approval processes and unclear grant reporting requirements. Variations also occurred because of colleges' differing levels of interest in adopting some of the approaches described in the grant proposal.
- **Reservations arose about value of stand-alone HSFC.** College personnel and employer partners were uncertain about the value of a stand-alone HSFC, a key component of the grant activities, to help students obtain employment in the health care field. But they were optimistic that the grant could help students succeed in specialized health care pathways.

Summative Findings: Early Evidence Shows Grant's Positive Effect on Students

- **Student academic outcomes improved.** Findings suggest evidence of improvements in LAH3C students' academic progress and outcomes. LAH3C students displayed higher retention, credit completion, and program completion than students in the comparison group.
- **Perceptions of grant were positive.** Students, college personnel, and employer partners had favorable perceptions of the grant activities and observed positive changes in students' preparation for the health care field.
- **Grant enhanced program pathways and employer connections.** The grant helped colleges better structure their health care program pathways and fostered stronger connections between the colleges and their employer partners.
- **Constructive lessons were learned from grant.** College interviewees noted several lessons learned through the grant process, including the need to set realistic goals, streamline approval processes, garner engagement and collaboration, and build strong leadership.

Lessons Learned: Realistic Goals, Streamlined Processes, Collaboration, and Leadership

College personnel highlighted several lessons learned from their experiences with the grant process.

Set Realistic Goals

The TAACCCT grant provided substantial resources to LAH3C to increase its capacity to improve health care program pathways for students. Given the competitive nature of federal grants, the consortium proposed ambitious enrollment, completion, and employment targets. The majority of interviewees felt a significant amount of pressure to keep up with the proposed targets and worried that the results would not reflect the positive changes and progress made in the health care programs across the colleges. Project directors encountered unanticipated challenges, such as delayed grant timelines and issues with bureaucratic processes, which limited the feasibility of achieving all of the grant's goals. As they reflected on the grant process, interviewees said they would have revised some of their goals by accounting for more attrition when setting completion targets and by accounting for students who chose to continue their education rather than seek employment after receiving an HSFC. This highlights the importance of setting realistic goals to ensure they are achievable, given the context and capacity of each college.

Streamline Approval Processes

An ongoing challenge for LAH3C was the bureaucratic process for gaining approvals for new curriculum, programs, and faculty and staff members. These processes significantly delayed the implementation of the grant activities and limited LAH3C's ability to carry out the goals as intended. Not only were project directors navigating through the approval processes within their institutions, but they also had to traverse through DOL's ever-changing budget modification justifications and grant reporting requirements. It was difficult for project directors and support staff to concentrate on planning and implementing the grant activities effectively when their time was consumed by complicated policies and procedures that did not accommodate rapid grant timelines. College personnel stressed the need to streamline and improve the approval processes within their institutions, at the district level, and systemwide. Although it will take time to move the needle in these areas, interviewees learned that they will need to budget extra time and resources to go through the appropriate approval processes, better understand the systems in which they have to work, and start with program enhancements or non-credit courses (which have easier approval processes) before building new programs for future grants.

Collaborative Efforts to Garner Engagement and Support

A core lesson that college personnel learned through the grant process was the importance of collaboration within and across the colleges. In order to garner support and engagement from administrators, faculty, and staff members, it was imperative that project directors included input from their colleagues to inform the planning and implementation of the grant activities. Project directors needed to educate their colleagues about the goals of the grant and collectively build a shared mission to improve student success. Conversations about the grant and shared goals helped break down silos on campus and better integrate academic and student affairs. The grant also provided a first-ever opportunity for the district's colleges to work closely together on a common curriculum.

The collaboration efforts also extended to employer partners. A key component in building the grant-funded programs was the input of employer partners to ensure that the content was well-aligned with workforce needs. To garner more employer involvement and improve the effectiveness of employer partnerships, interviewees suggested organizing the colleges, arranged by geographic regions, into “collaborative or learning hubs.” For example, colleges located in the San Fernando Valley could work together and leverage resources to host job fairs and attract local employers. This may benefit more students in the community, since they would not have to travel long distances to a job fair, interview, or internship. Since the colleges are so spread out in Los Angeles County, it may be more effective for the colleges to work together in small regional clusters. As a result, they could better address the unique needs of their communities.

Strong Leadership to Carry out Shared Goals

Strong leadership and support from administrators, faculty, and staff members were key components to implementing and sustaining the grant activities. A designated project director at each college played an integral role during the implementation phase by managing that college's grant and representing the college at consortium meetings. Project directors educated faculty and staff members about the grant's goals and DOL's rules and regulations and worked closely with college personnel to carry out the grant activities. Project directors also provided updates to college administrators about the progress of the grant activities. Interviewees noted that strong leadership and persistence helped them overcome challenges related to curriculum and hiring approvals. It was especially important that the whole consortium have a grant director to organize the grant activities, monitor the grant process, and facilitate conversations across the colleges. Interviewees stressed the importance of having the right leadership in place before pursuing new grant activities, stabilizing the foundation of stakeholders with core staff before bringing in new collaborators, and having clear plans for leadership changes and how to onboard new staff.

“We are going to need some **champions** in a couple of areas, but I think that we continue to need **advocates** and people who are willing to pilot and share this work, continue to be enthusiastic, and not only **lead a coalition of the willing**, but also to try to convert the naysayers.”

–College project director

It appears that success in implementing any grant activity or new program can be attributed, in part, to leaders who recognize the need for change and are willing to try new methods to promote student success. These leaders are able to break down silos across their colleges, bring together a “coalition of the willing,” and facilitate institutional change through innovation and experimentation.

Suggestions for the DOL: Provide Ongoing Support and Clearly Communicate Expectations

To maximize the potential benefits of programs like the TAACCCT grant program, it is important for DOL to provide adequate support for its grantees so they can successfully carry out their vision to provide workforce training for students. LAH3C interviewees wanted more training and professional development activities from DOL so they could learn from other TAACCCT grantees. They also wanted more opportunities to discuss with other grantees the strategies and challenges of building capacity and restructuring program pathways.

To prevent planning and implementation delays, DOL can be clearer in outlining its expectations, grant reporting requirements, and what constitutes an allowable expense. Since DOL's main focus is employment outcomes, it should help grantees gain access to necessary data so they can better track their progress. For example, DOL can lessen the burden for grantees and students to show proof of employment by creating a data-sharing agreement with EDD so grantees can gain access to individual-level employment and wage information. The TAACCCT grant has great potential for helping colleges build their capacity to transform educational pathways for students, but DOL must respond to the needs of its grantees and provide ongoing support for them in order to maximize the benefits of the grant.

Implications for Improving Workforce Training Programs: Regional Collaborative Efforts, Alignment With Industry Needs, and Structured Program Pathways

California's community college system is well-positioned to narrow postsecondary completion gaps and support workforce needs. Lessons from the TAACCCT grant have important implications for improving CTE and workforce development programs in the community colleges.

Findings from the evaluation reinforce the importance of regional collaboration. The grant supported the development of a regional consortium, which helped the colleges break down silos within their institutions, collaborate across the district, and engage employer partners to improve health care pathways for students. As highlighted in an EdInsights report on education partnerships, effective regional collaborative efforts can provide support for stakeholders to set goals, provide training, build capacity, monitor progress, and connect systems to help students along the path toward educational and economic success (Moore, Venezia, Lewis, & Lefkovitz, 2015). The TAACCCT grant provided LAH3C with the resources to build the colleges' capacity to improve their health care programs, strengthen employer involvement, and work together to meet the region's workforce needs.

LAH3C used grant funds to build foundational courses for health care and to expand various health care programs because the grant activities directly met labor market needs. Employer partners were instrumental in helping the consortium create the HOC courses to ensure that the competencies aligned with industry needs. CTE programs can be strengthened when they are responsive to employer input and changing labor market demands (Shulock & Moore, 2013). The California Community Colleges Chancellor's Office (CCCCO) recognized the system's important role in training California's workforce and launched a new campaign focused on career education programs⁶ and the "Doing What Matter for Jobs and the Economy" initiative. The goals of that initiative are to bring various stakeholders (e.g., community colleges, businesses, community leaders) together to strengthen the workforce skills of California, to form better relationships between community colleges and industry sectors, and to improve CTE programs

so they can be more responsive to regional demands. The initiative also has overwhelming support from the California governor and legislature, as they recently approved an annual recurring investment of \$200 million to support the Strong Workforce Program.⁷ Acknowledging that the complicated approval processes limit the ability of CTE programs to quickly respond to labor market demands, the CCCCO is currently making plans to streamline the curriculum approval process by tightening timelines and revising regulations. Noteworthy changes include granting local community college districts more approval authority and allowing local districts to approve and offer stand-alone courses (CCCO, 2017). This would have alleviated some of LAH3C's challenges related to planning and implementing grant activities.

The evaluation also revealed the importance of having structured program pathways so that students have clear road maps to college completion. Research shows that students are more likely to succeed when there are streamlined pathways and support systems along their educational paths (Bailey, Jaggars, & Jenkins, 2015). The grant supported LAH3C's mission to improve educational pipelines within the community colleges that lead to health care careers. The HOC courses helped students explore health care career options and provided them with foundational health care skills and knowledge. College personnel observed that students who took the HOC courses prior to entering a specific health care pathway were more prepared than students who did not take the HOC courses. In addition, some colleges used grant funds to hire designated counselors for LAH3C students to monitor their progress. Understanding that structured program pathways are important for students, 20 California community colleges are now part of the California Guided Pathways Project. The California Guided Pathways model is an institution-wide approach that aims to help students choose a career pathway, understand program requirements, stay on track, and learn applicable material in their chosen fields (California Guided Pathways, n.d.). Clear program requirements and support systems are important components for helping students achieve their academic goals and prepare for meaningful careers.

“We can see **progress**, but that progress is not going to be reflected when the grant is over. It's like we **planted the seeds**, and they won't **flower** until a little ways **down the road**.”

—College project director

LAH3C made substantial progress in creating clear pathways to health care careers, breaking down silos within college departments, and increasing collaboration across the district and with employer partners in the region. The TAACCCT grant helped build the colleges' capacity and lay the foundation to transform their program pathways. Although the grant has ended, observations of changes are just beginning, and the outlook appears to be positive for students and the regional economy.

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Appendix A

Data Sources and Analytical Methods

Qualitative Data Collection

Campus visits

We visited all the LAH3C colleges in 2015-2016 and 2016-2017 to observe the grant activities in action. During these campus visits, we conducted interviews with college personnel, held student focus groups, administered student surveys, collected LAH3C-related fliers and documents, observed classroom practices, and toured college facilities.

College personnel interviews

To inform the formative evaluation, we conducted semi-structured interviews with faculty, staff, and administrators (N=64) across the eight colleges in the consortium. In fall 2014, phone interviews assessed participants' experiences with planning the grant activities. In fall 2015, we conducted phone and in-person interviews to assess the implementation phase of the grant activities. We asked each college's project director and support staff to identify college personnel who were involved in the grant activities to participate in the interviews. The interviews took approximately 30 to 45 minutes to complete. We asked interviewees about their:

- awareness of the TAACCCT grant and its innovations, including new instructional strategies and differences with prior program approaches;
- experiences with the design and development of the LAH3C programs on their campuses;
- reflections on the status of the implementation process, including how well communication, coordination, and training processes were working; and
- early perceptions of the effectiveness of the grant activities, including opinions about the new strategies and teaching practices and about suggestions for improvement.

For the summative evaluation, we conducted interviews with most of the same college personnel (N=59) across the eight colleges in spring 2016, fall 2016, and spring 2017 to examine their overall experiences with the LAH3C programs as the grant period neared its end. The interviews included questions about interviewees':

- overall reflections on the LAH3C programs, including their design, implementation, and effectiveness;
- plans to sustain the programs; and
- perceptions about lessons learned from the TAACCCT grant and advice they would offer others participating in similar activities.

Employer partner interviews

We conducted semi-structured interviews with local employer partners (N=7) across Los Angeles County in spring 2016 and fall 2016 to examine their awareness of and thoughts about the LAH3C programs. The project directors and support staff referred us to representatives from the business community and local health care facilities who would be appropriate to interview. We conducted all interviews in person or by phone; each interview took 30 minutes to complete. We asked employers about their:

- awareness of the LAH3C programs and any differences with prior program approaches;
- knowledge of and level of involvement in the development and implementation process; and
- perceptions of the effectiveness of program innovations on student outcomes, including students' preparation for employment and the likelihood these employers would be interested in hiring LAH3C program graduates.

Student focus groups

We conducted focus groups with students (20 focus groups with five to 10 students per group) from various health care programs across the eight colleges in 2015-2016 and 2016-2017 to examine their experiences in the LAH3C programs. The project directors and support staff helped us recruit students to participate in the focus groups. We conducted the focus groups in person, with each taking an hour to complete. We asked students about their:

- knowledge of program requirements, structure, and schedule;
- awareness of student support services and resources;
- opinions about their employment prospects after completing their programs; and
- overall satisfaction with their programs and suggestions for improvement.

Quantitative Data Collection and Analyses

Student survey

We administered in-person surveys to students (N=240) from different health care programs across the eight colleges in 2015-2016 and 2016-2017 to examine their perceptions of the LAH3C programs. Students were in various stages of progression in and completion of their health care programs. The project directors and support staff helped us recruit students to participate in the surveys. We administered the surveys during the first 15 to 20 minutes of class time. The surveys included questions about students':

- classroom experiences and engagement, such as asking questions in class and participating in study groups;
- obligations outside of class time, including work and family responsibilities;
- educational goals, such as obtaining a certificate or transferring to a four-year university;
- employment goals, such as improving their job skills or obtaining a better paying job;
- assessment of their performance and progress in their programs; and
- perceptions about the value of their educational programs.

LAH3C database

LAH3C created a database to document and track the students enrolled in the LAH3C programs across the colleges (N=9,307 served,⁸ N= 5,140 enrolled). Each college monitored its students, tracking completion of certificates and degrees and contacting students after graduation to collect information about their employment and wages. Each college was responsible for entering up-to-date information on each student in the LAH3C database (this report uses data available as of July 2017). The LAH3C database included information about:

- the type of program students were enrolled in;
- students' academic behaviors and outcomes; and
- students' post-program employment and wages.

LACCD student information system data

The LACCD's SIS includes term and annual student-level data collected from all the colleges in the district. LAH3C project staff provided student-level data for the LAH3C students (N=6,259) and a comparison group (N=13,372). The data included information about students' sociodemographic characteristics, attendance patterns, course enrollments, financial aid, and program awards (see Appendix G for descriptives). LAH3C students comprise those enrolled in the grant-funded programs between 2013 and 2017.

LAH3C project staff did not establish a comparison group prior to implementing the grant activities. Therefore, we selected the comparison group in collaboration with LAH3C project staff and included a historical cohort of students who indicated a major in the Taxonomy of Programs⁹ (TOP) code 12 (health) during the 2011-2012 academic year. Students in both the LAH3C programs and the comparison group may have enrolled in the community college system prior to the target years, but we concentrated the analyses on LAH3C students who coincided with the grant period and, by comparison, students enrolled in health care programs as of the 2011-2012 academic year.

We used SIS data to examine students' progress in attaining particular milestones, including retention to a second term¹⁰ and completion of a certificate or associate's degree. We also analyzed data to examine students' enrollment patterns for particular "success indicators," or academic patterns and behaviors associated with a greater likelihood of degree completion (Moore, Shulock, & Offenstein, 2009). The success indicators included a high course completion ratio (successful completion of at least 80 percent of units attempted), rate of courses dropped and failed, full-time enrollment, and adequate academic performance (GPA).

We also conducted PSM analyses to examine differences in academic behaviors and outcomes between the LAH3C students and the comparison group. PSM is a form of quasi-experimental design that allows for estimating causal inferences about the influence of the grant activities on student outcomes. It requires matching the treatment group (LAH3C students) to the comparison group (historical cohort of students who indicated a major in health care during the 2011-2012 academic year) on key sociodemographic and educational background characteristics. After the two groups are matched, t-tests and chi-square tests of significance are conducted to examine whether or not there are any differences in students' academic outcomes. Regression analyses are also used to understand how participation in the grant activities influences a selected subset of outcomes, holding other control variables constant (see Appendix H for more details). However, data limitations restrict the ability to make causal interpretations about the impact of the grant activities on student outcomes (see section on data limitations below).

Employment Development Department records

We asked the California EDD to match student records included in the SIS data to the state's Unemployment Insurance database in order to obtain employment and wage information for the LAH3C students and the comparison group. LAH3C project staff provided us with Social Security numbers for the LAH3C students and for the comparison group. Per EDD's policy, the agency was not willing to provide individual records, but it gave aggregated data for each group. We calculated the average share of students employed, the average share employed in the health care industry¹¹, and the average monthly earnings¹² for the LAH3C students and the comparison group, both before and after a period relevant for each group. For the LAH3C students, we chose 2013 (first through fourth quarters) as the "before" period, because it was the planning phase for the consortium, and students were not yet enrolled in the grant-funded programs. The "after" period for the LAH3C students included the first through fourth quarters of 2016. EDD did not have data for the current year at the time of the request. For the comparison group, the "before" period included the first through fourth quarters of 2010 and the first and second quarters of 2011. The "after" period included the third and fourth quarters of 2013 and all of 2014, allowing students at least two years, starting at the time they indicated a major in health care in 2011-2012, to complete their programs.

Data limitations

Several issues with the quantitative data limited our ability to make causal inferences about the impact of the grant-funded activities on student outcomes. Although we applied PSM techniques to estimate the effect of the grant activities, the utility of PSM depends upon the availability of a diverse set of variables to match the treatment and comparison groups. The SIS data lacked relevant variables that may influence how students are selected for the treatment group or the comparison group (e.g., parental education, academic motivation, prior academic achievement). The SIS data files also had a lot of missing data and lacked outcome variables such as transfer to another institution or, for the comparison group, a comparable outcome for completion of the HOC courses.

Although the LAH3C database included more detailed information about completions and outcomes, there was no comparable database for the comparison group. In addition, the LAH3C database may not have had the most updated, real-time information because it required eight different colleges to constantly monitor, update, and enter student data. Many colleges had difficulty tracking students' employment outcomes after program completion. The database also lacked consistency in the way data were entered and coded. Data were sometimes coded incorrectly, or there were duplicative records (e.g., the same program award was entered twice for a particular student). We recoded the records for each student to the extent possible, but lacked confidence in the overall reliability of the data from the LAH3C database. Interpretations of data from that database should be made with caution. The underlying structure of a consortium-wide database was developed and achieved for the grant, but the colleges varied in the timing and accuracy of data entry, limiting the usability of the database to assess students' academic progress and completion.

There are also data limitations with EDD records. EDD would only provide wage and employment information in aggregate form for the LAH3C students and the comparison group. Without the variability of individual student-level wage and employment data, we could not conduct analyses to test for differences between the LAH3C students and the comparison group. We also had to make best estimates about the "before" and "after" periods for both groups. Given that the HOC and other health care programs began and ended within different time frames at each college, we chose time frames that would include the most participants. However, the varying program lengths, as well as students' start and end dates for both groups, complicated the analyses that could be done. Due to such data limitations, we cannot draw clear conclusions about differences in employment outcomes between the two groups.

Appendix B

Interview Protocols

College Personnel Interview Protocol (Planning Phase)

Background and context

Please describe how you are involved with the current efforts that are a part of the Department of Labor TAACCCT grant (the H-PACTS model) – what is/are your role(s)?

Awareness of H-PACTS and its innovations:

1. What is your understanding of the broad goals and objectives of the TAACCCT grant? How are people talking about it at LATTTC? How are people talking about it at your college? What is your understanding of the new innovations that are being developed in the health care programs across the LACCD as part of the TAACCCT grant? (Probe: Familiar with H-PACTS term and the components? Purpose/intent? Difference from current approaches? Significance?)
2. How did you learn about the goals/objectives of the TAACCCT grant? Were you involved in writing the proposal, or did you review the proposal? Attend a planning meeting?

Expectations and goals:

1. What has your college committed to do as part of the TAACCCT grant? (Probe: Ask about current commitments vs. commitments in later years of the grant. What are your college's plans/goals for carrying out these innovations in your health care program(s) in upcoming years?)
2. Which health care programs will be part of the TAACCCT grant at your college?
3. Can you explain the motivation behind your college's decisions about how extensively to develop and implement the innovations?
4. What changes does your college expect to see as a result of this grant? (Probe: Institutional changes and/or changes to student outcomes?)
5. What do you see as potentially the most significant components of this grant? (Probe: How is this different from past instructional approaches—why is it so significant?)

Planning/early implementation stage:

1. Can you describe how the planning/early implementation process for the grant is going at your college?
2. Are there any component(s) of the grant in place right now at your college? What is next?
3. What kind of guidance is your college getting in planning and implementing these grant-related activities? (Probe: Are you working with the lead college—LATTTC or other consortium colleges? Has it been helpful? What kind of assistance would you like for the implementation process going forward?)
4. Have there been any obstacles that your college has encountered during this planning/early implementation stage? (Probe: What challenges do you anticipate moving forward? For example, do you have the capacity you need to implement this?)
5. Are there, or will there be, opportunities for the colleges to learn from each other during the implementation phase of the grant? If so, please describe. If not, do you think that would be useful?
6. How are employers and industry partners currently involved in the grant-related activities? How do you envision employers and industry partners being involved as the grant moves along?
7. Do you have any recommendations about other staff, administrators, and/or employer partners we should interview? If so, can you provide us with contact information?

College Personnel Interview Protocol (Implementation Phase)

Background and context

Please describe how you are involved with the current reforms that are a part of the Department of Labor TAACCCT grant—what is/are your role(s)?

Can you describe your college's role and capacity as it relates to the development and implementation of the grant-funded activities in your health care program(s)? (Probe: Staffing plan and organizational structure)

Awareness of program design:

1. Please explain how the health care curriculum (or core curriculum) was selected and created. How is it different from past health care curricula? (If applicable: How are students selected for the grant-funded health care programs? Are assessments used to determine students' program pathways, are these assessments useful, and is career guidance provided?)
2. Did your college pilot or test some of the grant-funded activities this past summer? If so, what was the process like? (Probe: What did you do? How did it go? What did you learn from the pilot? Was it helpful?)

Implementation progress:

1. How were programs and program designs improved or expanded using grant funds? (Probe: What is the program delivery like? What is the program administrative structure like? What support services and other services are offered?)
2. Can you tell me where you are in the process of implementing the grant-funded activities? Probe for the following:
 - a. Has the Health Science Foundation Credential been approved at your college? Has it been integrated into any of your health programs?
 - b. Which of your programs, if any, are going to have students who will be considered "enrolled," for purposes of the grant? Which will have students "served?"
 - c. Are there specific expectations about how many students will be "enrolled" and "served" at your college? Are those expectations reasonable?
 - d. Will your program(s) be awarding digital badges? (Probe: Number? Which ones?)
3. Besides the foundation credential and digital badges, what other components of the proposed grant activities are in place in your program(s)? When were they implemented? What components have yet to be implemented? (Probe: What are plans/next steps for implementation? Do you know how other colleges are doing?) Probe these specific activities:
 - a. Health Science Pathway orientation
 - b. Use of prior learning assessments
 - c. Use of innovative technology
 - d. Industry-focused programs of study aligned with industry
 - e. Collaboration with workforce and industry partners
4. Are there components of the grant-funded activities that are easier to implement than others? Which ones? Are there components of the grant-funded activities that are more difficult to implement than others? Which ones? How are any difficulties being resolved?
5. Have there been challenges/barriers to implementing the grant activities? How have the challenges/barriers been addressed? How do you ensure successful implementation? (Probe: Are there challenges/barriers related to particular circumstances or conditions?)

6. Is the implementation being coordinated within your college and across the different colleges involved? How important is such coordination? (Probe about role of LATTTC)
7. Have faculty and staff received any training with regard to implementation? What kind? Has it been sufficient for:
 - a. Grant-funded activities?
 - b. Technology and assessments?
 - c. Teaching methods?
8. What is the level of understanding and support for the grant-funded activities among individuals involved in the implementation efforts? (Probe: Are there variations within your college or across the colleges?)
9. Do you have any suggestions for improvement in the implementation of the grant-funded activities? Is there any additional training or support that would be helpful during the implementation phase?

Employer involvement:

1. What is the current role of employer partners? (Probe: Involvement in program design, curriculum development, recruitment, training, placement, program management, leveraging resources, commitment to sustainability?) How does your college plan to work with local employers and/or industry partners to implement the grant-funded activities in your health care program(s)?
2. How does your college garner support from and involvement with employer partners? What contributions from employer partners do you think will be most critical to program success?

Perception of grant-funded activities:

1. What do you think of the new grant-funded activities? What do you see, so far, as the biggest differences in your program compared to the way it was run in the past? What are its strengths and weaknesses so far? (Probe for perceived value of the foundation credential, whether it is “industry-recognized,” if that didn’t already come up)
2. Do you think the new grant-funded activities will change teaching methods and program delivery within the health care pathways? If so, how?
3. How effective do you think the new grant-funded activities will be in helping students complete their programs and gain job-related skills? Which component(s) of the grant-funded activities are the most promising for student success?
4. How is your college thinking about sustainability as these innovations are being implemented in your health care program(s)? How are you and your colleagues ensuring that the work will last after the grant runs out?

College Personnel Interview Protocol (Summative Phase)

Reflections on overall TAACCCT grant:

1. To what extent do you think the TAACCCT-funded programs were successful and met the intended goals of the grant? (Probe for what they think the overall goals of the grant were and whether they think they met those goals) What do you think is the most positive outcome of the TAACCCT-funded program? Can you provide some evidence/examples?
2. With regard to the design or implementation of the TAACCCT-funded activities, is there anything you would change or do differently? What would you keep? (FOR DIRECTORS/ RELEVANT ADMINISTRATORS: Probe for whether or not they were aware of the original design of the grant—i.e., LATTC's HPACTS model—by asking how the HPACTS model played out during its implementation at their colleges and what the challenges were to implement the HPACTS model at their college/across the consortium)
3. What kinds of technical assistance and training did you have because of the TAACCCT grant? Were they useful? If so, what did you learn? Were there other types of training that would have been helpful while designing or implementing the TAACCCT-funded programs?
4. Did employer partnerships and involvement change as a result of the TAACCCT-funded activities? What aspects of the employer partnership do you like or have you found useful? What aspects of the employer partnerships would you change?
5. What do you think are the employment prospects for students graduating/students who have graduated from the TAACCCT-funded programs? (Probe for students who just finished the HOC courses—without moving on to a specific health care pathway—about their employment prospects) How successful have students in these programs been in finding jobs? (NOTE: If it's too early in the program, then ask: How successful do you think students will be in finding jobs?) Is this better than before the TAACCCT grant? (NOTE: If it's too early in the program, then ask: Do you think it will be better than before the TAACCCT grant?)
6. What strategies are in place at your college to help students in the TAACCCT-funded programs find jobs? Are these new strategies compared to before the TAACCCT grant?

Reflections on HOC/health care pathways model:

1. Do you think the TAACCCT-funded programs are successful (or will be successful) in helping students complete their programs and gain job-related skills? How so? What part(s) of the TAACCCT-funded programs were most significant for student success? (Probe for perceived value of HOC, digital badges, industry recognition)
2. Do you think the activities under the TAACCCT grant have resulted in any changes in teaching methods and program delivery within the health care programs? If so, how?
3. Was there buy-in from college leaders, faculty, and/or staff with regard to the TAACCCT grant? Did the level of buy-in vary by program?
4. How important was it to have the core curriculum/core competencies as a guiding framework as your college worked on this grant?

Sustainability and scale:

1. What is your college's sustainability plan for the TAACCCT-funded programs? (NOTE: If still in the implementation stage, then ask: Do you think your college is thinking or talking about sustainability?)
2. Have the TAACCCT-funded activities been scaled or applied to other programs on campus?
(NOTE: If still in the implementation stage, then ask: Have there been discussions about scaling the TAACCCT-funded activities or applying them to other programs on campus?) If so, how are those processes going? Any particular problems or noteworthy successes to report about these efforts to scale up the principles? If no efforts are underway to scale up the principles, why not?
3. Are there systems in place to track the progress (e.g., completion, employment) of students in the TAACCCT-funded programs, even after the grant ends? If so, what are those strategies? If not, are there plans to do so?
4. When you look forward five years, what do you see in terms of the changes/innovations implemented because of the TAACCCT grant?

Lessons learned and advice:

1. At this point, what things have you learned so far from participating in this grant?

Employer Partner Interview Protocol

Background and context

Please describe how you are involved with the current efforts that are a part of the Department of Labor TAACCCT grant—what is/are your role(s)?

Awareness of grant and its innovations:

1. What is your understanding of the broad goals and objectives of the TAACCCT grant? What is your understanding of the new innovations being developed in health care programs across the LACCD as part of the TAACCCT grant? (Probe: Familiar with grant-funded activities and the components?)
2. How did you learn about the goals/objectives of the TAACCCT grant?
3. How often do you meet or talk with someone from the college(s)? What are the kinds of issues that you usually discuss? (Ask for examples)

Implementation stage:

1. Can you describe how the implementation process for the grant is going at the colleges?
2. How are you currently involved in the grant-related activities? (Clarify if they have always been involved with the college(s) and how) How do you envision being involved as the grant moves along? (Clarify if involvement is something new created by the grant or something to get colleges more involved or involved in different ways as compared to before the grant)
3. Do you have a sense of how well the strategies or reforms are working at the college(s)? If so, where do you get this information, and how often do you receive this information?

Expectations and goals:

1. What are you looking for in the way of improved student outcomes from the colleges that are part of the grant? Do you think the new grant-funded activities will help? Which aspects? (The interviewer might need to list the strategies here)
2. How are the new grant-funded activities different from traditional community college career-technical/vocational programs?

Perceptions/attitudes of the effectiveness of innovations, likelihood of influencing student outcomes, and suggestions for improvement:

1. What do you think of the new strategies overall? (Probe for perceived value of digital badges, HOC courses, HSFC)
2. Do you think the health care programs are doing a better job now compared to before the colleges received the TAACCCT grant, in terms of preparing students to work in your field? Explain.
3. Are there still more changes you'd like to see that would better prepare students to succeed on the job once you hire them?
4. Do you think you now will be more likely to hire graduates coming out of these programs? Explain.

Appendix C

Student Focus Group Protocol

Icebreaker

1. To get started, let's go around the group and quickly learn a little bit about what drew you to (name of college)—What was the main reason you decided to come here? I'd like each of you to spend less than a minute on this so that we have time to discuss other issues. (Note to facilitator: Make sure this lasts five minutes or so. Prompts: Location, cost, proximity to family, reputation, program offerings). Just to check—you're all in the same program, right?

Program Expectations

We've been learning a lot about some of the changes (name of college) is making in your program. Some of these have to do with the way your program is structured. I'd like to start with some questions about that:

1. Why did you decide to pursue this health care program? (Note: This could be a specific health care program, HOC courses, or patient care skills courses. Probe for which program they are discussing) Did your college help you decide on the health care pathway? (If yes, how so? Did you find the help useful?)
2. Do you think that the requirements to complete this program are clear? (Where did you learn about this information?) For those who have taken community college courses before, do you think that this program is different from what you experienced before? (What are some of the differences?)
3. What do you think this program so far? What do you think is expected of you to be successful in this program?
4. What do you hope to gain from this program?

Educational and Career Goals

Another area we want to learn about has to do with your educational and career plans, related to what you're studying here.

1. What is your main educational goal? (For example, obtain a certificate, obtain a degree, transfer, etc.) How do you think this program will help you achieve your educational goal?
2. What kinds of jobs are you interested in getting after you graduate? Do you think there will be jobs available for you when you finish? Are there people at the college who help you think about these things? Can you describe how they help?
3. Do you think your program is helping you prepare for your future job? (Try to see if they can provide specific examples or ideas about why or why not) Do you think you're learning things that employers look for when they hire?

External Obligations, Barriers to Success

We also want to learn about what obligations you might have outside of school, and if there are any challenges or barriers that may prevent you from being successful in your program.

1. Do any of you have other obligations outside of school (for example, taking care of family, work)? How do you manage school and these additional obligations? How do you think these obligations affect you as a student?
2. Are there barriers or challenges that you have encountered or anticipate you will encounter that may prevent you from being successful in your program? How did you or would you overcome these challenges?
3. Have the support services in your program been helpful? (Probe for the types of support services, such as counseling, advising, tutoring) How so? Are there things that your school can do to help you overcome these challenges? (What are some suggestions? How can your school help?) What other kinds of support services would you like your college to provide?

Overall Satisfaction

I'd like to end with some overall thoughts about your experiences here at college.

1. How satisfied are you with the HOC courses/patient care skills courses? (Ask, if not answered in previous section)
2. How satisfied are you that your program is doing the following:
 - a. Providing on-the-job/workplace experiences? (For example, if they have job shadowing opportunities, internships)
 - b. Helping you find a job? Connecting you to employers?
 - c. Providing useful support services (such as counseling, advising, tutoring)? (Ask, if not answered in previous section)
 - d. Giving you the opportunity to use up-to-date equipment/technology in your classes?
3. Are there things that you really like about your program? (Ask why and for examples) Are there any things that you dislike? (Ask why; for examples; and if there are things they dislike, if they have suggestions about how to change them) Overall, what do you think of your program so far? (How satisfied are you with your current program?)
4. Is there anything else you would like to mention—anything that could help the college improve its courses, teaching, or support services, for example?

Appendix D

Student Survey Protocol

1. Which community college do you currently attend?

- LA Trade Tech
- West LA College
- East LA College
- LA Mission College
- LA Harbor College
- Pierce College
- LA City College
- LA Southwest College

2. In your classes during the current school year, about how often have you done each of the following?
Please circle the best answer: 1 (never); 2 (sometimes); 3 (often)

Asked questions in class and/or contributed to class discussions	1	2	3
Spoken with an instructor outside of class (e.g., in office hours, during a break)	1	2	3
Talked about career plans with an advisor or counselor	1	2	3
Participated in study groups	1	2	3
Skipped class	1	2	3
Stayed up late to finish an assignment or study for an exam	1	2	3
Turned in an assignment late	1	2	3

3. About how many hours do you spend in a typical 7-day week doing each of the following?
Please circle the best answer: A (0); B (1-5 hrs); C (6-10 hrs); D (11-20 hrs); E (21-30 hrs); F (30+ hrs)

Preparing for class (studying, reading, writing, homework)	A	B	C	D	E	F
Being in class	A	B	C	D	E	F
Commuting to and from classes	A	B	C	D	E	F
Working for pay	A	B	C	D	E	F
Volunteering/unpaid internship	A	B	C	D	E	F
Participating in college-sponsored activities (like campus clubs, sports, tutoring, advising)	A	B	C	D	E	F
Providing care for family (parents, children, spouse)	A	B	C	D	E	F

4. Please indicate your main educational goal. (Please choose only one)

- Obtain a certificate
- Obtain an associate's degree
- Transfer to a four-year university (such as CSU or UC)
- Take coursework with no intention of obtaining a certificate or degree
- Other: _____

5. Please indicate your main employment goal. (Please choose only one)

- Start career
- Obtain or update skills related to current job
- Change careers
- Other: _____

6. What is expected of you to be successful in your program?

7. To the best of your knowledge, how do you think you are doing in your program?

- Very poorly
- Somewhat poorly
- Somewhat well
- Very well

8. Did you receive or do you plan to receive a digital badge for the following?

Professionalism, Ethics, Integrity	YES	NO	Not offered at my college
Diversity and Cultural Awareness	YES	NO	Not offered at my college
Teamwork, Collaboration, Conflict Resolution	YES	NO	Not offered at my college
Customer Service, Compassion, Empathy	YES	NO	Not offered at my college
Safe Practice/Infection Control	YES	NO	Not offered at my college
Assessment Skills/First Aid	YES	NO	Not offered at my college
Basic Medical Terminology	YES	NO	Not offered at my college
Fire Safety	YES	NO	Not offered at my college
Cardiopulmonary Resuscitation (CPR)	YES	NO	Not offered at my college
Health Insurance Portability and Accountability (HIPAA) Privacy Rule	YES	NO	Not offered at my college
Digital Literacy	YES	NO	Not offered at my college

9. Have you ever been employed in the same field as your program of study?
- Yes
 - No
10. How much is your current or prior work experience related to your current program?
- Not at all related
 - Somewhat related
 - Related
 - Very related
11. How much do you think your current or prior work experience helps you in your current program?
- Not at all helpful
 - Somewhat helpful
 - Helpful
 - Very helpful
12. How useful do you think this program will be for what you want to do after you graduate?
- Not very useful
 - Somewhat useful
 - Useful
 - Very useful
13. Do you intend to stay in this field for your career?
- Yes
 - No
14. How confident are you in finding a job related to your program?
- Not at all confident
 - Somewhat confident
 - Confident
 - Very confident
15. What do you think employers in your field of study look for in an employee?
- _____
- _____
16. What is your overall level of satisfaction with your current program?
- Not at all satisfied
 - Somewhat satisfied
 - Satisfied
 - Very satisfied

17. How satisfied are you that your program has met each of the following expectations?

Please circle the best answer:

1 (not at all satisfied); 2 (somewhat satisfied); 3 (satisfied); 4 (very satisfied)

Program requirements are clear.	1	2	3	4	N/A
I understand what classes I have to take to graduate or transfer.	1	2	3	4	N/A
It is easy to enroll in courses that I need to complete my program.	1	2	3	4	N/A
I am able to register for classes I need with few conflicts.	1	2	3	4	N/A
The skills that I learn from my program are of value to employers.	1	2	3	4	N/A
I enjoy having the same students in many of my classes.	1	2	3	4	N/A
Classes are scheduled at times that are convenient for me.	1	2	3	4	N/A
Nearly all classes deal with practical experiences or applications.	1	2	3	4	N/A
My program is structured so that I can complete the requirements quickly.	1	2	3	4	N/A
I have the opportunity to use technology to assist me in learning as part of my program.	1	2	3	4	N/A
The equipment in the lab facilities is kept up to date.	1	2	3	4	N/A
I will earn a certificate or degree that is valued by employers.	1	2	3	4	N/A
This program has a good reputation within the community.	1	2	3	4	N/A
Tutoring services are available when I need them.	1	2	3	4	N/A
The student support services (such as counselors and advisors) are helpful.	1	2	3	4	N/A
The skills I learn from my program match employers' needs.	1	2	3	4	N/A
The quality of instruction I receive in most of my classes is excellent.	1	2	3	4	N/A
I will earn digital badge(s) that is/are valued by employers.	1	2	3	4	N/A
The classes in my program will prepare me for employment.	1	2	3	4	N/A
Technology is useful in the classroom.	1	2	3	4	N/A
The student support services (such as counselors and advisors) are convenient to use.	1	2	3	4	N/A

Appendix E

College Characteristics

Enrollment in the LAH3C colleges

	Systemwide	ELAC	LACC	LAHC	LAMC	LAPC	LASW	LATTC	WLAC
Total annual enrollment	2,309,930	54,613	32,494	13,737	14,010	29,875	13,961	23,165	15,423
Race/Ethnicity									
Asian/ Pacific Islander	15%	13%	15%	12%	6%	12%	2%	5%	7%
Black/ African American	7%	4%	9%	13%	3%	6%	44%	24%	30%
Hispanic/ Latino	40%	63%	53%	55%	76%	43%	47%	60%	40%
White	29%	7%	17%	13%	11%	33%	2%	6%	14%
Other	9%	12%	6%	6%	4%	7%	5%	6%	8%
Gender (% female)	53%	48%	59%	59%	60%	55%	68%	48%	60%
Share of students receiving BOG*	45%	50%	61%	62%	63%	57%	64%	68%	76%
% FTE in credit CTE courses	29%	33%	29%	27%	23%	26%	20%	65%	36%

Source: Data from California Community Colleges Chancellor's Office Datamart for 2013-2014.

*BOG is Board of Governors enrollment fee waiver.

Appendix F

Program Characteristics

List and description of the LAH3C programs

Program of Study	New or Enhanced with Grant Funds	Type of Program	Type of Award	Length of Program	Total Units
ELAC					
Health Occupations (HOC)	New	Certificate ≤ 12 months	Skills Certificate	1 semester	7.5
Gerontology/Health	New	Certificate ≤ 12 months	Certificate of Achievement	2 semesters	16.5
Health Information Technology	Enhanced	Degree program	Associate's Degree	2 years	62
Respiratory Therapy	Enhanced	Degree program	Associate's Degree	2 years	64
Chemical Dependence Counselor	Enhanced	Certificate > 12 months	Certificate of Achievement	1-2 years	36
Emergency Medical Technician (EMT)	Enhanced	Certificate ≤ 12 months	Skills Certificate	1 semester	8
Emergency Department Assistant	Enhanced	Certificate ≤ 12 months	Skills Certificate	1 semester	4
LACC					
Patient Care Skills Certificate*	New	Certificate ≤ 12 months	Skills Certificate	1 semester	8
Radiology	Enhanced	Degree program	Associate's Degree	2 Years	77
Nursing	Enhanced	Degree program	Associate's Degree	2 Years	38
LAHC					
HOC	New	Certificate ≤ 12 months	Certificate of Completion	1 semester	7.5
Certified Nurse Assistant (CNA)	Enhanced	Certificate ≤ 12 months	Certificate of Achievement	10 weeks	5
CNA / Home Health Aide (HHA)	Enhanced	Certificate ≤ 12 months	Certificate of Achievement	12 weeks	7
EMT	Enhanced	Certificate ≤ 12 months	Certificate of Completion	1 semester	8
Registered Nursing (RN)	Enhanced	Degree program	Associate's degree	2 years	37

Note: Accuracy of information was verified by college personnel

*LACC's version of HOC

List and description of the LAH3C programs (continued)

LAMC					
HOC	New	Certificate ≤ 12 months	Skills Certificate	1 semester	8
CNA / HHA	New	Certificate ≤ 12 months	Certificate of Achievement	2 semesters	16
Medical Billing and Coding	New	Certificate ≤ 12 months	Certificate of Achievement	2 semesters	18.5
Pharmacy Technician-Basic	New	Certificate ≤ 12 months	Certificate of Achievement	2 semesters	20
Pharmacy Technician-Advanced	New	Certificate > 12 months	Certificate of Achievement	3 semesters	28.25
Pharmacy Technician-AS Degree	New	Degree program	Associate's degree	2 years	60
Biotechnology Lab Assistant-Basic	New	Certificate ≤ 12 months	Skills Certificate	1 semester	12
LAPC					
HOC	New	Certificate ≤ 12 months	Certificate of Completion	8 weeks	7.5
Nursing	Enhanced	Degree program	Associate's Degree	2 Years	38
LASW					
CNA	New	Certificate ≤ 12 months	Certificate of Achievement	1 semester	14.5
LATTC					
HOC	New	Certificate ≤ 12 months	Certificate of Completion	1 semester	7.5
Senior Care Technician	New	Certificate ≤ 12 months	Certificate of Completion	2 semesters	16.5
RN	Enhanced	Degree program	Associate's Degree	2 years	42
Kinesiology	Enhanced	Degree program	Associate's in Arts for Transfer Degree	2 years	20-23

Note: Accuracy of information was verified by college personnel

List and description of the LAH3C programs (continued)

WLAC					
HOC	New	Certificate ≤ 12 months	Skills Certificate	1 semester	7.5
Pharmacy Technician-Basic	New	Certificate ≤ 12 months	Certificate of Achievement	1 semester	21.75
Pharmacy Technician-Advanced	New	Certificate ≤ 12 months	Certificate of Achievement	1 year	33.25
Pharmacy Technician-AS Degree	New	Degree program	Associate's Degree	2 years	60
Autism Technician	New	Certificate ≤ 12 months	Skills Certificate	1 semester	3
Dental Assistant	New	Certificate ≤ 12 months	Certificate of Achievement	9 months	29
Dental Assistant-AS Degree	New	Degree program	Associate's Degree	2 years	60-61
Medical Assisting-Administrative	Enhanced	Certificate ≤ 12 months	Certificate of Achievement	6 months	22
Medical Assisting-Clinical	Enhanced	Certificate ≤ 12 months	Certificate of Achievement	1 year	31.5
Medical Assisting-Administrative and Clinical	Enhanced	Certificate ≤ 12 months	Certificate of Achievement	1 year	38.5
Medical Assisting-AS Degree	Enhanced	Degree program	Associate's Degree	2 years	60+
CNA	Enhanced	Certificate ≤ 12 months	Skills Certificate	9 weeks	6.5
HHA	Enhanced	Certificate ≤ 12 months	Skills Certificate	4 weeks	2
Dental Hygiene-Infection Control and Radiation Safety	Enhanced	Certificate ≤ 12 months	Skills Certificate	1 semester	3
Dental Hygiene-AS Degree	Enhanced	Degree program	Associate's Degree	2 years	83
Dental Hygiene-BS Degree	Enhanced	Degree program	Bachelor's Degree	4 years	125

Note: Accuracy of information was verified by college personnel

Appendix G

Student Characteristics

Sociodemographic and educational background characteristics of LAH3C students and comparison group before PSM.

	LAH3C Students N=6,259	Comparison Group N=13,372
STUDENT CHARACTERISTICS	Mean or %	Mean or %
Gender (% female)	72%	80%
Age	27.6	27.6
Race/ethnicity		
Asian	11%	19%
Black/African American	22%	15%
Hispanic/Latino	58%	53%
White	7%	12%
Other	3%	1%
CA resident	96%	98%
U.S. citizen	86%	83%
Low-income	52%	48%
EDUCATIONAL BACKGROUND		
Education status		
Not a high school graduate	15%	3%
High school graduate without college degree	69%	80%
College degree (associate's or higher)	16%	16%
Enrollment status		
First-time enrollment at a college	59%	15%
Continuing student from previous term	30%	79%
Returning student enrolled after absence	11%	7%
CAMPUS		
ELAC	28%	31%
LACC	11%	16%
LAHC	7%	14%
LAMC	4%	4%
LAPC	6%	14%
LASW	19%	8%
LATTC	15%	9%
WLAC	10%	5%
EDUCATIONAL GOAL		
Career development or advancement	30%	29%
Obtain a certificate or degree	59%	66%
Improve basic skills or other personal development	30%	5%

Source: LACCD SIS data

Sociodemographic and educational background characteristics of LAH3C students and comparison group after PSM.

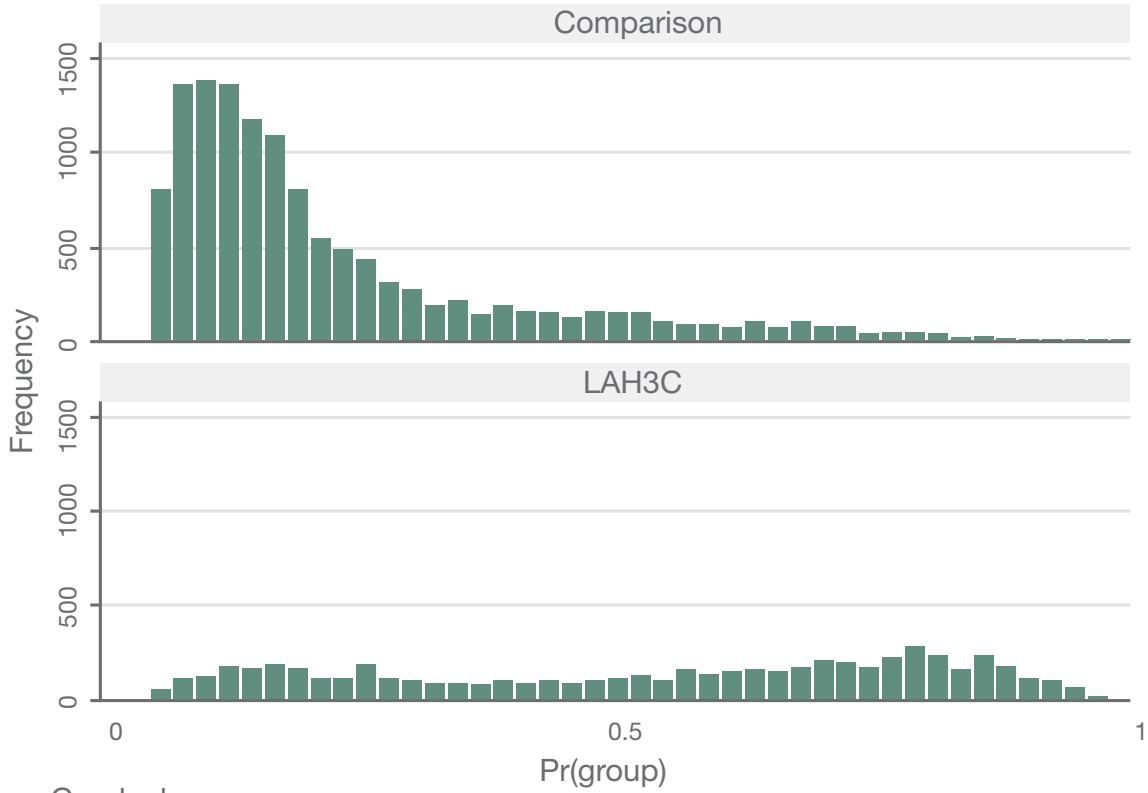
	LAH3C Students N=6,056	Comparison Group N=13,190
STUDENT CHARACTERISTICS		
	Mean or %	Mean or %
Gender (% female)	72%	73%
Age	28.5	27.6
Race/ethnicity		
Asian	10%	11%
Black/African American	21%	20%
Hispanic/Latino	56%	57%
White	6%	7%
Other	3%	3%
CA resident	96%	97%
U.S. citizen	86%	85%
Low-income	53%	54%
EDUCATIONAL BACKGROUND		
Education status		
Not a high school graduate	15%	13%
High school graduate without college degree	69%	69%
College degree (associate's or higher)	16%	17%
Enrollment status		
First-time enrollment at a college	58%	58%
Continuing student from previous term	30%	31%
Returning student enrolled after absence	11%	11%
CAMPUS		
ELAC	27%	30%
LACC	11%	11%
LAHC	7%	7%
LAMC	4%	4%
LAPC	5%	6%
LASW	19%	17%
LATTC	15%	7%
WLAC	10%	9%
EDUCATIONAL GOAL		
Career development or advancement	23%	23%
Obtain a certificate or degree	46%	48%
Improve basic skills or other personal development	9%	6%

Source: LACCD SIS data

Appendix H

Results of Selected Analyses

PSM common support graph.



Graphs by group

Note: Graph depicts whether treated (LAH3C students) and control (comparison group) units have similar probabilities of treatment (grant-funded program participation).

Grant participation is associated with increases in GPA, controlling for covariates.

Linear Regression	Number of observations=	18,477
	F(23, 18453)=	45.96
	Prob > F=	0.00
	R-squared=	0.11
	Root MSE=	0.67
DEPENDENT VARIABLE: GPA		
Independent Variables	Coefficient (B)	Standard Error
Grant participation	0.18***	0.02
Gender (% female)	0.00	0.02
Age	0.01***	0.00
Asian & Native Hawaiian/Pacific Islander	0.07*	0.03
Black/ African American	-0.30***	0.03
Hispanic/Latino	-0.18***	0.03
Other	-0.09	0.06
CA resident	0.03**	0.06
U.S. citizen	-0.09	0.03
Low-income	-0.10***	0.02
High school graduate	0.18***	0.05
College degree	0.41***	0.05
Continuing student from previous term	-0.02	0.02
Returning student enrolled after absence	-0.05*	0.03
ELAC	0.09***	0.02
LACC	-0.09**	0.03
LAHC	0.08*	0.03
LAMC	0.11*	0.04
LAPC	0.04	0.03
LASW	-0.07*	0.03
WLAC	0.14**	0.05
Career development or advancement	-0.03	0.02
Obtain a certificate or degree	-0.02	0.02
_Constant	2.49***	0.09

Note. *= $p < .05$; **= $p < .01$; ***= $p < .001$

White, not a high school graduate, first-time enrollment at college, LATTTC, and improving basic skills or other personal development were the reference groups.

Grant participation is associated with a higher likelihood of retention, controlling for covariates.

Logistic Regression	Number of observations= 19,199	
	Wald chi2(23)= 979.05	
	Prob > chi2= 0.00	
	Pseudo R-squared= 0.10	
	Log pseudolikelihood= -6677.78	
DEPENDENT VARIABLE: RETENTION TO SECOND TERM		
Independent Variables	Odds Ratio	Robust Standard Error
Grant participation	1.81***	0.10
Gender (% female)	1.06	0.07
Age	1.00	0.00
Asian & Native Hawaiian/Pacific Islander	0.91	0.10
Black/ African American	0.73**	0.08
Hispanic/Latino	0.80*	0.07
Other	0.79	0.18
CA resident	1.46*	0.26
U.S. citizen	0.82	0.08
Low-income	1.07	0.07
High school graduate	2.31***	0.23
College degree	2.41***	0.28
Continuing student from previous term	4.42***	0.27
Returning student enrolled after absence	1.04	0.08
ELAC	0.79**	0.07
LACC	1.07	0.11
LAHC	0.61***	0.06
LAMC	1.55**	0.26
LAPC	1.06	0.13
LASW	0.89	0.09
WLAC	0.63***	0.07
Career development or advancement	0.89	0.07
Obtain a certificate or degree	1.10	0.07
_Constant	0.67	0.16

Note. *= $p < .05$; **= $p < .01$; ***= $p < .001$

White, not a high school graduate, first-time enrollment at college, LATTTC, and improving basic skills or other personal development were the reference groups.

Grant participation is associated with a higher likelihood of program completion, controlling for covariates.

Logistic Regression	Number of observations= 19,246	
	Wald chi2(23)= 993.71	
	Prob > chi2= 0.00	
	Pseudo R2= 0.18	
	Log pseudolikelihood= -4258.87	
DEPENDENT VARIABLE: PROGRAM AWARD		
Independent Variables	Odds Ratio	Robust Standard Error
Grant participation	7.23***	0.55
Gender (% female)	1.20**	0.08
Age	1.01*	0.00
Asian & Native Hawaiian/Pacific Islander	1.10	0.13
Black/ African American	0.54***	0.06
Hispanic/Latino	0.76**	0.07
Other	0.81	0.16
CA resident	1.54*	0.27
U.S. citizen	0.86	0.07
Low-income	1.10	0.07
High school graduate	2.59***	0.38
College degree	3.06***	0.50
Continuing student from previous term	2.60***	0.17
Returning student enrolled after absence	1.21	0.12
ELAC	1.93***	0.18
LACC	1.42**	0.16
LAHC	0.74*	0.10
LAMC	0.65*	0.13
LAPC	1.38*	0.19
LASW	1.14	0.13
WLAC	1.50**	0.18
Career development or advancement	1.02	0.08
Obtain a certificate or degree	1.08	0.07
_Constant	0.01***	0.00

Note. *= $p < .05$; **= $p < .01$; ***= $p < .001$

White, not a high school graduate, first-time enrollment at college, LATTC, and improving basic skills or other personal development were the reference groups.

Notes

- 1 The Health Resources and Services Administration, under the U.S. Department of Health and Human Services, designates regions, populations, or facilities as Health Professional Shortage Areas for having shortages of primary, dental, and mental health care. For more information, go to <https://datawarehouse.hrsa.gov/tools/analyzers/hpsafind.aspx>.
- 2 There are nine colleges in LACCD. The ninth college, Los Angeles Valley College (LAVC), received some grant funds and was considered a “learning partner” with LAH3C. During the initial planning stages of the grant, LAH3C project staff noted that LAVC would not be part of the evaluation.
- 3 Low-income is defined as receipt of a Board of Governors (BOG) fee waiver. California residents who meet criteria for financial need are eligible for the BOG fee waiver to cover community college enrollment fees.
- 4 Enrolled students are students who were part of a program of study that had been enhanced or developed using the grant funds. This includes students coded in the LAH3C database as “enrolled,” “LAH3C completer,” and “LAH3C withdrawal.”
- 5 Skills certificates are short-term (less than one year), college-issued certificates of fewer than 18 semester credits that do not need Chancellor’s Office approval.
- 6 The campaign promotes the benefits of the California Community Colleges career education programs as affordable pathways to rewarding careers. See <http://careered.cccco.edu/#california-community-college-education> for more information.
- 7 The Strong Workforce Program aims to improve CTE programs across the California Community Colleges by targeting student success, career pathways, workforce data and outcomes, curriculum and instruction, and regional collaboration. See <http://doingwhatmatters.cccco.edu/StrongWorkforce/Overview.aspx> for more information.
- 8 Served students are students who received resources or took a course/prerequisite that had been enhanced by the grant funds, but were not part of a program of study.
- 9 The California community college system uses six-digit TOP codes to classify its programs by discipline. See the TOP code manual at http://extranet.cccco.edu/Portals/1/AA/Credit/2013Files/TOPmanual6_2009_09corrected_12.5.13.pdf. We defined health care programs as those with the first two digits 12.
- 10 Since many of the LAH3C programs were short-term, taking only one or two semesters to complete, we did not use retention to a second year as a milestone,
- 11 EDD codes the health care industry using four subsectors from the North American Industry Classification System used by the Bureau of Labor Statistics (<https://www.bls.gov/iag/tgs/iag62.htm>). The subsectors include ambulatory health care services, hospitals, nursing and residential care facilities, and social assistance.
- 12 EDD adjusted the average monthly earnings for inflation to 2016 dollars.



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