McREL INTERNATIONAL

Orthotics, Prosthetics, and Pedorthics (HOPE) Careers Consortium

Final Evaluation Report

September 2017

Kimberly Good, Ph.D.
Hsiang Yeh-Ho, Ph.D.

4601 DTC Boulevard, Suite 500
Denver, CO 80237-2596
303.337.0990 · mcrel.org

Founded in 1966, McREL International is a not-for-profit corporation with offices in Denver, Colorado; Honolulu, Hawaii; and Charleston, West Virginia. McREL delivers high-quality program evaluation services and develops award-winning reports to provide clients with timely information to improve their programs and document their successes. McREL staff members work collaboratively with clients to build their planning, data, and program evaluation capacity through just-in-time consulting and training. McREL's evaluation services are grounded in the latest research methods and evaluation best practices.

For information about McREL's research, products, or services, contact

4601 DTC Boulevard, Suite 500 • Denver, CO 80237 • 303.337.0990 •fax 303.337.3005
1003 Bishop Street, Suite 2200 • Honolulu, HI 96813 • 808.664.8175 • fax 808.664.8190
P.O. Box 1348 • Charleston, WV 25325 • 304.347.0400 • 800.624.9120 • fax 304.347.0487
info@mcrel.org • www.mcrel.org

This product was funded by a grant awarded to Century College by the U.S. Department of Labor's (DOL's) Employment and Training Administration. The product was created by McREL International and does not necessarily reflect the official position of the DOL or Century College. The DOL makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership. Additionally, you should not assume endorsement by the DOL or Century College.

Table of Contents

Appendices

List of Tables

List of Figures

Executive Summary

TAACCCT Program/Intervention Description and Activities

In September 2013, the Orthotics, Prosthetics, and Pedorthics (HOPE) Careers Consortium was awarded an $11 million grant from the U.S. Department of Labor (DOL) as part of the Round 3 Trade Adjustment Assistance Community College and Career Training (TAACCCT) program. The consortium, which included Baker College, Century College, Oklahoma State University Institute of Technology, Spokane Falls Community College, and St. Petersburg College, aimed to expand and improve the delivery of orthotics, prosthetics, and pedorthics career education and increase students' attainment of industry-recognized credentials needed for the changing health status of communities and the highly likely shortage of workers in the near future.

To accomplish the project's goal, consortium members recruited eligible participants within the established framework of their respective institutions, using best practices in retention strategies, created innovative technology-based and online learning opportunities, accelerated training pathways, supported job placement, and developed stackable credentials and articulation pathways. Consortium colleges collaborated with business and industry leaders and received input from relevant organizations and accreditation partners throughout the development and implementation of the HOPE project.

Evaluation Design Summary

McREL International, an education research and development organization, was contracted by Century College in October 2013 to serve as the third-party evaluator for the HOPE project. The overarching goal of the evaluation was to document and monitor implementation of the key components described in the consortium's Technical Proposal and to understand how the HOPE model worked to support project goals.

The implementation evaluation examined the extent to which program implementation strategies, services, and activities (i.e., program outputs) were implemented as planned (e.g., adherence) and how well they were implemented (e.g., service quality, participant and partner responsiveness, and engagement). Four formative evaluation questions guided the implementation evaluation:

F1. What were the consortium's strategies to support participant recruitment?

F2. How were the core components and activities of the project implemented?

F3. To what extent were the core components and activities implemented with fidelity? What were the operational strengths and weaknesses of the project after implementation?

F4. To what extent is the HOPE project sustainable beyond the life of the grant?

The outcome evaluation examined three summative evaluation questions:

O1. To what extent did the HOPE project achieve the project outcomes, as described in the program narrative (i.e., outcome evaluation)?

O2. To what extent did the HOPE project have an impact on participants?

O3. What were the underlying mechanisms through which the HOPE project had a positive impact on participant outcomes?

To answer question O1, McREL evaluators examined and monitored the HOPE project's progress in meeting the outcome performance targets (i.e., outcome projection table), as described in the program narrative (i.e., outcome analysis). To answer question O2, in Year 4, evaluators conducted a quasi-experimental design using propensity score matching (PSM) to identify a comparison group of students who were similar to the HOPE participants based on various individual-level attributes that are associated with the outcomes of interest (i.e., impact analysis). Question O3 was designed to understand the pathways through which the HOPE project may have an impact on participant outcomes.

Eight data collection methods were used to inform the evaluation. Methods included (1) project and partner staff interviews; (2) participant focus groups; (3) the Adherence of Implementation Self-Assessment; (4) a review of project records, including data entered into the Evaluation Data Management System (EDMS); (5) Student Entrance Surveys; (6) Student Exit Surveys; (7) Partner Surveys; and (8) extant data received through each college's institutional research office.

This executive summary portrays a summary of findings from the *HOPE Careers Consortium Case Studies: Examination of Project Implementation* report (Good, Knotts, Knoster, & Bumgardner, 2017) and findings from both formative and summative evaluation activities that occurred in Year 4. The first part of the summary highlights the implementation findings and is organized by the evaluation questions guiding the implementation evaluation. The second half of the summary describes the project outcomes and impact on participants.

Implementation Findings

How were the core components and activities of the project implemented?

The following successes and challenges, organized by the main project components, were identified through a thematic analysis of the interviews conducted during site visits to each institution in October and November 2016 and are included in *HOPE Careers Consortium Case Studies: Examination of Project Implementation* report (Good, Knotts, Knoster, & Bumgardner, 2017).

Curriculum Development and Implementation

Successes

- HOPE Project participating institutions developed and/or enhanced 19 short-term certificates and degrees in the orthotics and prosthetics field. Additionally, 14 open educational resources (OERs) were developed and reviewed by third-party reviewers. All of the OERs were available on OandPedu.com by the end of the grant. The HOPE institutions have also embedded the OER content into their curriculum. Frequently, HOPE project staff noted that it would have been years before they would have had the time and resources to develop all the curricula that were made possible through the TAACCCT funding.
- The rigorous quality review process designed and self-imposed by the HOPE project staff is particularly noteworthy. The multi-step review process encompassed an internal review by subject-matter experts (i.e., orthotics and prosthetics faculty and curriculum developers). The collective knowledge possessed by the orthotics and prosthetics faculty and project staff was a critical contributor to the high quality of the curriculum. In addition, a third-party review, which involved more than 30 reviewers representing different sectors of orthotics and prosthetics and frequently included industry partners, was an important part of the process.
- The TAACCCT funding allowed the institutions to make significant upgrades to their lab facilities and purchase state-of-the-art technology. Examples of purchased technologies include three-dimensional (3D) scanners, carvers, drill presses, a robotic arm, and a gait lab.[1] The technology enabled the institutions to provide its students with experiences that not only prepared them for employment but which were oftentimes ahead of current industry practices.
- HOPE project staff joined together to offer several workshops at national association and conference meetings. For example, at the American Orthotic and Prosthetic Association (AOPA) meeting in September 2016, HOPE project staff and an industry partner collaboratively taught four Computer-aided Design and Computer-aided Manufacturing (CAD CAM) workshops. The course content was developed by HOPE project staff.

Challenges

- One primary challenge was that development of the curricula took much longer than anticipated. Initial delays were due to the time it took for some institutions to hire personnel (i.e., curriculum developers). In some situations, faculty who already had full teaching loads were in charge of curriculum development, which led to a human capacity issue. In addition, though the comprehensive quality review process enhanced the

[1] Some technology purchases were made possible through the use of leveraged funds (i.e., matching dollars provided by the state).

quality of the curriculum, it was in large part the reason for delays in rolling out the programs of study and why timelines set forth by HOPE project staff were not met.

- Regardless of the challenges, the HOPE project resulted in the development of 10 new programs of study. Because the National Commission on Orthotic and Prosthetic Education (NCOPE), the accrediting agency, has yet to develop the standards for the Orthotic and Prosthetic Assistant Advanced Technical Certificate, this program of study was put on hold by the Consortium.

Participant Recruitment and Outreach

Successes

- There is limited awareness and recognition of orthotics and prosthetics as a career option. The HOPE institutions devoted considerable energy to branding the orthotics and prosthetics field and the Consortium. For individuals already employed in orthotics and prosthetics positions, the program generated awareness of the stacking and laddering credentials available to them as career pathways.
- Outreach at the local levels resulted in the increased prominence of the orthotics and prosthetics profession at the institutions. Industry partners had greater buy-in, as evidenced by the larger number who were willing to serve as internship sites and participated in the non-credit certificate courses.
- Recruitment strategies were diverse and included attendance at numerous local, regional and national events such as community outreach, interdisciplinary, regional workforce training fairs, career and college fairs, military and veteran events, and college-specific gatherings. Radio, television, theater and billboard advertisements were also used as outreach mediums. Print materials included brochures and newsletters. A consortium website (hopecareers.org) was developed and garnered inquiries both nationally and internationally. Three of the five colleges hired or had existing staff with significant marketing experience; the expertise of these individuals was evident in the scope and delivery of outreach activities planned and implemented.
- The HOPE project saw its largest increases in participants in non-credit programs, primarily because incumbent workers can complete these types of programs much more quickly, employers are willing to send their employees to take these courses, and/or incumbent workers participated in these programs to obtain their continuing education units. This was true both at the HOPE Consortium and individual institution levels. Nearly all participating institutions operated at full capacity for their degree programs and one institution had a waiting list. One institution added a third shift to accommodate the increased awareness and registration for O&P programs.

Challenges

- Generally, connecting with the workforce centers was a challenge for the institutions. The Trade Act Adjustment (TAA) staff lacked awareness of the orthotics and prosthetics field. Furthermore, many of the orthotics and prosthetics jobs are never posted and instead are filled through the informal networking that occurs in this small, close-knit field. As a result, there does not appear to be a demand for employment in orthotics and prosthetics.
- TAA eligible participants were also difficult to recruit given changes in economic conditions in the last several years, with low unemployment levels compared to when the project began in 2013. Another factor that contributed to the small number of TAA-eligible participants is that the TAA funding ceased for a period during the HOPE project grant. Additionally, for some colleges, enrollment of adult learners (i.e., students 25 years or older) in higher education was difficult as fewer adult learners are pursuing higher education.

Case Management Model: Student Support Services

Successes

- The career navigator at each institution was a grant-funded staff member who had the greatest interaction with the participants. Career navigators provided a wide range of services to participants. For some career navigators, initial contact came even before the participant was enrolled at the institution. Once a participant was enrolled in the orthotics and prosthetics program of study, the career navigator provided comprehensive student support services in the areas of academic advising, administrative processes, career advising, employment and job placement, and personal issues.
- Given the importance of the career navigator in providing frontline assistance to the participants, the institutions were selective about the type of individual hired. Career navigators were knowledgeable about the orthotics and prosthetics programs of study, skilled in providing academic advising, and possessed strong human relation skills.
- The number of faculty at each HOPE project institution is very small (two faculty members on average). Prior to the TAACCCT grant, faculty members assumed many of the responsibilities of the career navigator. However, given all their other responsibilities, they did not have as much time to dedicate to the students as was made possible through the career navigator.

Challenges

- By and large, having a career navigator was a successful feature of the HOPE project. The career navigators were attentive to participants' academic and personal needs. However, for two of the institutions, there was turnover in the position, which resulted in a gap in service delivery. In one situation, there was also a difference of opinion

between the career navigator and HOPE project leadership about the role and functions of a career navigator.

Case Management Model: Experiential Learning and Job Placement Services

Successes

- Completion of an orthotics and prosthetics degree program of study requires an externship, internship, or clinical rotation. Although those experiential learning opportunities are not new to the HOPE project institutions, during the grant there was an expansion of industry partners who served as placement sites for the orthotics and prosthetics students.
- Frequently, participants are hired by their externship, internship, or clinical rotation site. This speaks well of the preparedness of the participants and quality of education they receive.
- Several other experiential learning opportunities were also provided to the HOPE project participants. Participants were encouraged to do job shadows prior to or at the beginning of a program of study. Industry partners provided guest lectures and demonstrations, and field trips to industry partners to view processes such as fabrication were conducted.

Challenges

- The predominant challenge encountered by orthotics and prosthetics students relative to job placement is the limited number of opportunities in the geographic area of the institutions. This difficulty is a direct reflection of how the limited number of O&P training colleges across the nation are not sufficient to match the growing needs for more O&P skilled workers in the field. The local job market is saturated and, oftentimes, participants do not want to or are unable to leave the area for personal reasons.

Partner Engagement

Successes

- HOPE project partners were an integral part of HOPE project activities. Each institution has an advisory board comprised primarily of industry representatives, which also may include workforce agencies and veterans' organizations. Across the consortium, most institutions' number of partnerships more than doubled since the grant's inception.
- Partners were predominantly engaged in reviewing curricula and providing input on industry needs pertaining to curriculum content and skills. Partners also supported the

HOPE project with recruitment and outreach efforts, serving as experiential learning sites, hiring orthotics and prosthetics graduates, and donating equipment and material.

- Two of the five institutions collaborated with the regional affiliates of the American Academy of Orthotists and Prosthetists (AAOP) to offer continuing education units for orthotics and prosthetics professionals. Student participants were also invited to attend these events and network with potential employers.
- Partners expressed an appreciation for the cutting-edge technology to which the participants were exposed. They were pleased with the quality of the programs of study at the five institutions. Partners valued having their input into industry needs acted upon (e.g., integration of OPIE software, Orthotic and Prosthetic Office Specialist certificate, other additions, and elimination of materials that were no longer relevant).

Challenges

- As previously cited, one challenge shared by three institutions was making inroads with the workforce centers. Without the evidence that there are jobs in the orthotics and prosthetics field (i.e., jobs not posted), it was difficult to convince the workforce centers to engage in conversations and make referrals to the institutions. This is coupled with the fact that the orthotics and prosthetics technician programs of study (two-year programs) are longer than most workforce center clients are interested in.

To what extent were the key strategies and activities implemented as planned?

Details about the key adherence assessment findings are briefly summarized below. A summary of findings for quality and responsiveness as perceived by HOPE project participants and partners is also provided.

Adherence of Implementation. The HOPE project's implementation across all seven core components was at the 93rd percentile at the end of the grant implementation period (March 31, 2017) which is still quite commendable given the ambitious scope of work stated in the proposal. The primary component that was not fully developed was Core Component 3: Develop Accelerated O&P Career Pathways. Five of the nine outputs were self-rated as high implementation (one point away from full implementation).

Quality of Implementation. As measured by the Student Exit Surveys, HOPE project participants reported that the quality of the instruction was high and that they were satisfied with the academic advising they received. The majority of students was also pleased with the lab and training equipment and felt that it helped facilitate their learning experience. HOPE participants who completed their O&P program(s) of study gave high ratings of satisfaction and quality with their program.

Responsiveness. The partners who completed the Partner Survey (approximately one fourth of the 140 HOPE partners) reported moderate to low levels of involvement in project activities.

However, the majority of respondents indicated satisfaction with their level of involvement with the project. HOPE project partners agreed that the project was having a positive impact on the O&P industry and the local community and that they were likely to recommend the HOPE program to others with whom they collaborate. Furthermore, the partners said that the partnership between their company or organization would extend beyond the life of the grant and that they would consider collaborating with the college on other projects in the future.

Overall, HOPE participants who completed their O&P program(s) of study were satisfied with the program. Furthermore, they reported that they were likely to recommend this college's O&P program to others.

To what extent is the HOPE project sustainable beyond the life of the grant?

Data answering the extent to which aspects of the HOPE project will be sustainable at each of the colleges were gathered from interviews conducted during the site visits to each institution in October and November 2016 and are included in the *HOPE Careers Consortium Case Studies: Examination of Project Implementation* report (Good, Knotts, Knoster, & Bumgardner, 2017). The following is a summary of the successes and challenges related to sustainability.

Successes

- The new programs of study and in particular the short-term courses will be an enduring legacy for the HOPE project institutions. These short-term courses tap into a market which most institutions were not previously targeting. The continuing education departments at some of the institutions intend to continue to offer these courses.
- A variety of meetings have taken place that have elements of sustainability threaded throughout. For instance, in June 2016, Century College convened a meeting with HOPE project staff and faculty to begin sustainability discussions. The program directors from the five institutions, along with the program directors from the other two institutions that also offer the orthotics and prosthetics technician degrees, and the executive directors of NCOPE and the American Board of Certification (ABC) met at Spokane Falls Community College in October 2016. The purpose of that meeting was to discuss standards for the Orthotic and Prosthetic Assistant Advanced Technical Certificate program of study.

Challenges

- The grant-funded positions at each institution, essential for carrying out the core components of the HOPE project, will be difficult to sustain. Termination of positions such as the career navigator means that the important functions provided by this type of individual are not likely to continue at the extent they were when there was a staff member focused exclusively on providing student support services to the HOPE participants.

Summary of Participant Impacts and Outcomes

To what extent did the HOPE project achieve project outcomes (i.e., the nine TAACCCT outcome measures)?

The HOPE project was successful in exceeding three of the outcome indicator performance targets. First, 1,873 unique participants were served by the HOPE project. Second, nearly three fourths of the participants (72%) participants completed their program of study. Third, 11% of the participants were still retained in their program of study or enrolled in other TAACCCT-funded programs of study by the end of grant implementation. It is also worth noting that of the 1,873 unique participants, 71% earned at least one certificate of less than one year.

Although the project did not meet the target for the wage increase outcome indicator and the numbers for employment data are very low (two employment indicators), there are several reasons for this. First, and most importantly, the projections were set extremely high in the proposal narrative without sufficient guidance from DOL on how they were defining the indicators. Related to that, any participant, regardless of the type of job they had when initially enrolled as a participant was counted as an incumbent worker and could never be counted under the employment indicators even if they went on to complete their program of study and obtain a position in the O&P field. Second, the numbers are likely to be underestimated primarily due to the time lag in accessing employment and wage data from the workforce agencies for the colleges that were able to establish data sharing agreements. Third, for the colleges that were unable to obtain data sharing agreement with their workforce agencies, the primary challenge was the difficulty to track participants after program exit and the permission to use participant self-report data were not given by the DOL until the third year of the grant. By that time, it was even more challenging to track participants who left the program during the first two years of the grant.

To what extent does the HOPE program have an impact on project participants?

A quasi-experimental design using PSM was performed to understand the extent to which the project has impacted participant outcomes. Three outcomes of interest were examined. First, results revealed that HOPE grant participants, overall, had higher program completion rates than comparisons across all colleges; the difference ranged between 3% and 23% across colleges. However, these differences were not statistically significant based on the results of logistic regressions. Second, HOPE grant participants[2] had a lower rate of completing more than one certificate or degree program as compared to comparisons (18% difference); yet, the difference was not statistically significant. Lastly, the HOPE grant participants in four out of five HOPE colleges, overall, had lower furthering education rates than comparisons across all colleges. The difference was statistically significant for one college. In contrast, one college had a higher furthering education rate than comparisons; yet, the difference was not statistically significant.

[2] This outcome is only relevant for one of the HOPE colleges.

Overall, the findings of the impact study did not reveal statistically significant findings regarding program impact on program completion rate[3] or completion of more than one certificate or degree rate. One negative effect was found regarding the furthering education rate within one college, and one plausible explanation is that the rising costs of higher education in the past 10 years may deter students from pursuing higher education right after completing a certificate or degree. Overall, these null findings should be interpreted with caution given the constraints of PSM (i.e., important baseline factors that were associated with postsecondary education success were not available). Additionally, the findings are not generalizable to all HOPE grant participants.[4]

What were the underlying mechanisms through which the HOPE program has a positive impact on participant outcomes?

McREL evaluators explored the potential underlying mechanisms explaining the effect of HOPE on grant participants by interviewing 68 grant participants through seven focus groups in Fall 2016. The common elements that were perceived as effective and high quality were instructors, hands-on experiences, and technologically advanced learning environments. Comprehensive support provided by a group of professionals (e.g., career navigator, professors, lab technicians) was also identified as a key factor that supported their success. Further study using a different methodology (e.g., testing mediation models by including instructor quality, comprehensive student support) to uncover the specific strategies that work is warranted.

Conclusions

This section presents the perspectives of HOPE project staff on successes and challenges beyond those shared related to the main HOPE project components (e.g., curriculum development and implementation, participant recruitment and outreach, etc.); the lessons learned by the external evaluators; and suggested next steps for further research.

Successes

- The five institutions comprising the HOPE Careers Consortium valued their collaboration. Although the faculty knew of each other and interacted at the annual orthotics and prosthetics professional association conferences, they had not previously worked together on curriculum development or in any of the other ways that they did as a result of the TAACCCT grant. HOPE project staff and faculty are convinced that the established relationships will continue past the grant.
- The collaboration has resulted in the development of higher-quality, more efficient programs of study than would have been possible to develop by any individual college. By engaging in a joint curriculum development process, the institutions became more

[3] Although the differences in program completion rates were not significant in statistical terms, the differences were quite large for several colleges (i.e., three colleges had a difference in program completion rates between participants and comparisons equal or greater than 15%).

[4] To be included in the impact study, participants who were enrolled between the 2014 fall semester and the 2016 spring semester and had sufficient time to complete the program on-time within the project timeframe were included.

willing to share with one another and the environment became less competitive. This was important to the advancement of orthotics and prosthetics education.

- HOPE project staff had opportunities to visit each other's institutions, learn from one another, and garner ideas to apply in their settings. Ultimately, this will result in higher-quality programs, which in turn will attract potential students and provide better opportunities for all orthotics and prosthetics students. These visits and conversations likely would not have occurred without the HOPE project as the catalyst.
- The HOPE project committee structure was a vital way to parse out the essential project functions and maintain organization. The subcommittees included the site managers, curriculum and articulation, evaluation, and technology. Generally, the subcommittees held web-based meetings biweekly.

Challenges

- Although the HOPE project was successful in implementing the proposal and most of the deliverables, the process may have been expedited or strengthened if the subcommittees (specifically the Curriculum and Articulation and Technology subcommittees) had opportunities early on for face-face working meetings and if project management tools were developed and utilized from the onset (e.g., Microsoft Project or regularly updated Gantt charts).
- The majority of the HOPE project staff were not involved in the proposal development. Hence, considerable time was spent in trying to understand what was written in the funded proposal. One recommendation to lessen this challenge would have been to have more meetings at the beginning of the grant with the proposal developers and HOPE project staff.
- Generally speaking, the HOPE institutions had never received a grant of this magnitude before. There was a learning curve in understanding how to manage the grant and delays in hiring some of the HOPE project staff. However, the HOPE project staff that were hired and faculty already at the institutions were a dedicated collection of individuals with varying backgrounds, all of whom worked diligently to implement the grant activities.

HOPE project staff shared that the TAACCCT funding has revitalized the orthotics and prosthetics field. New curricula were developed and enhanced, the institutions were able to make major renovations to their labs, awareness of the orthotics and prosthetics field was increased through a myriad of outreach activities, partnerships were expanded, and there was an increase in leveraged funds being provided from non-DOL funders, all to students' benefit. The following quote sums it up well:

> *It was frustrating me to no end before the grant that here is a profession that has a manpower shortage and a need and a program to provide that need that was dying on the vine for lack of exposure, for lack of enrollment, and for lack of people who knew anything about it. The grant has changed all*

that. Now, we're viable and we're growing and we're providing graduates to the workforce that is so hungry for graduates. It is a real black and white thing to me. I mean, if it weren't for the grant, I don't think we [orthotics and prosthetics program] would be here.

Evaluators' Lessons Learned and Challenges

Key lessons learned from the HOPE project evaluation are summarized below.

- **Establish a clear understanding about project staff members' evaluation roles.** Facilitating an in-person kick-off evaluation meeting with project staff from the five colleges was valuable. It was beneficial for articulating expectations to the HOPE project's staff, establishing a common understanding of the evaluation, and helping project staff understand the evaluation's value and purpose. Additionally, follow-up webinars were helpful to train staff who were responsible for assisting with evaluation data collection efforts. This process helped to ensure the quality of data obtained, aptitude of project staff to use the evaluation findings, and the overall commitment to support the evaluation.
- **Develop a data tracking system.** With a consortium evaluation, developing a data tracking system was essential to ensure consistent data collection across the participating colleges. Hosting webinars (and archiving for later reference) established a common understanding of the data points and definitions.
- **Peer learning is valuable.** As an organization that has evaluated more than one TAACCCT grant, McREL found it advantageous to build upon economies of scale. Internally, McREL evaluators learned from each other's projects and used common evaluation methods and scales. It would have been valuable to have all TAACCCT grant evaluators convene for at least one national meeting, as proposed in the SGA, to build a community of learners, which would have permitted evaluators to share what was learned during the evaluations, discuss instruments and processes, and facilitate networking with one another.

Challenges experienced when conducting the implementation and impact evaluation of the HOPE grant are summarized below:

- **Low survey response rates from participants and partners when conducting online surveys.** Despite efforts secure higher response rates (e.g., using both paper and online formats), survey response rates tended to be low. One potential barrier to securing a higher response rate was not being allowed to use incentives.
- **Projected outcomes included in the grant application were frequently unrealistic.** This appeared to be primarily due to a lack of understanding about the definitions of the indicators when those with familiarity or knowledge of realistic targets were not involved in the grant-writing process. The solicitation for grant applications (SGA) provided some initial descriptions of the outcome indicators, but greater detail provided in future SGAs may result in more realistic projections.

- **Lack of a clear understanding about acceptable data sources for the outcome evaluation.** Towards the latter part of Year 3 (June 2016), it was made known that other data sources (e.g., surveys and self-reports) were permissible for reporting on the outcome indicators. It would have been helpful to have this information earlier so that evaluators could plan accordingly to ensure all required data for reporting were collected using the most rigorous and appropriate approach.
- **Inability to secure individual-level employment and wage data limited evaluators' ability to conduct a more comprehensive evaluation of the project's impact.** Only two colleges were able to secure a data sharing agreement with their state workforce agencies and obtain the individual-level employment and wage data. Had all colleges been able to have access to this data for both participants and comparisons, the evaluation could have examined the impact of the HOPE project on employment and wage outcomes.

Suggestions for Future Research

Two suggestions are provided for future workforce and education research initiatives:

- Consider funding longitudinal studies to track a sample of participants to examine long-term outcomes and study sustainability of TAACCCT-funded programs at a sample of colleges.
- Explore how TAACCCT-funded programs work to support participant success. For the HOPE evaluation, McREL evaluators initially proposed to examine the underlying mechanisms (i.e., instructor quality, comprehensive student support) through which the HOPE project exerts its influence on participant success (i.e., on-time program completion). However, limited by the availability of the data, McREL evaluators were only able to collect anecdotes from grant participants. Further study using a different methodology (e.g., testing mediation models by including instructor quality, comprehensive student support) to undercover the specific strategies that work is warranted.

Chapter 1: Introduction and Overview

In September 2013, Baker College (Baker), Century College (Century; lead institution), Oklahoma State University Institute of Technology (OSUIT), Spokane Falls Community College (SFCC), and St. Petersburg College (SPC) received a four-year grant award through Round 3 of the Trade Adjustment Assistance Community College and Career Training (TAACCCT) program, sponsored by the U.S. Department of Labor (DOL), to form a consortium called the Orthotics, Prosthetics & Pedorthics (HOPE) Careers Consortium (hereafter referred to as the HOPE project). The aim of HOPE is to expand and improve the delivery of orthotics, prosthetics, and pedorthics (O&P) career education and increase students' attainment of industry-recognized credentials needed for the changing health status of communities and predicted shortage of workers.

McREL International, an education research and development organization, was contracted by Century College in October 2013 to serve as the third-party evaluator for the HOPE project. In this capacity, McREL conducted a formative and summative evaluation that aims to understand the structural and procedural aspects of the HOPE project's implementation and the extent to which the project impacted participant outcomes. This chapter provides an overview of the HOPE project, followed by a brief description of the evaluation questions and design.

Overview of the HOPE Project

Throughout the U.S., there are only seven community and technical college institutions with programs that train technicians for careers in orthotics, prosthetics, and pedorthics (O&P) fields. Of those institutions, five are participating in the HOPE Careers Consortium: Baker in Michigan; Century in Minnesota; OSUIT in Oklahoma; SFCC in Washington; and SPC in Florida. The primary goal of the HOPE project was to address the urgent need for and increase the pipeline of workers qualified to serve the nation's rapidly growing population of individuals living with limb loss or disabilities due to chronic disease, congenital defects, trauma, or war-related injury. The five institutions comprising the HOPE Careers Consortium used the TAACCCT funding to expand their ability to expand and improve the delivery of orthotics, prosthetics, and pedorthics (O&P) career education and increase students' attainment of industry-recognized credentials needed for the changing health status of communities and predicted shortage of workers. The training also prepared workers eligible for trade adjustment assistance (TAA) and other adults (e.g., veterans, underemployed, long-term unemployed, and incumbent workers) for high-wage, high-skilled employment in O&P occupations.

While directly targeting TAA-eligible, displaced or job-threatened workers, and other adult workers in and around the five consortium institutions (see Figure 1), the HOPE project provided education and training opportunities to O&P professionals and others in the healthcare field from across the country through 14 open educational resources (OERs) available through OandP.edu. Through this four-year project, the HOPE Careers Consortium served a total of 1,873 participants. The focus of this report is to describe the outcomes and impact of the HOPE project and the fidelity of implementation of the project in supporting participant outcomes.

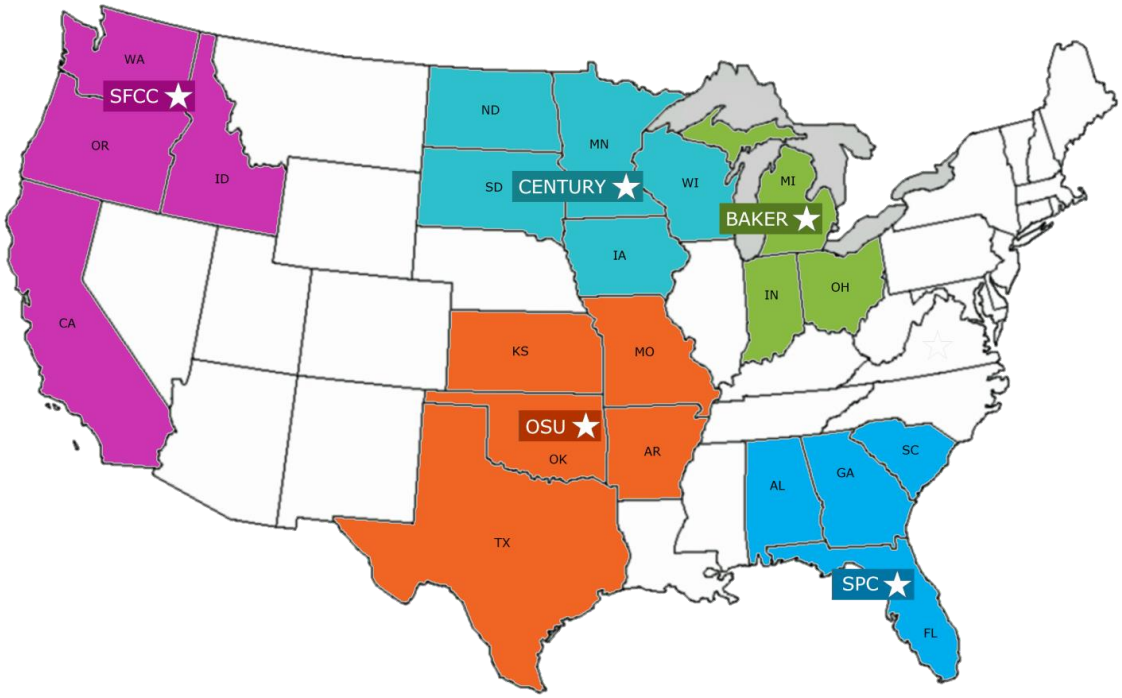


Figure 1. HOPE Careers Consortium States Served

Logic Model

Figure 2 (shown on the following page) is a graphical representation of the logic model being used by the HOPE project, which depicts the key strategies and components (e.g., interventions) implemented to support participant success. The following sections provide an overview of the project framework as described in the logic model.

Resources

The HOPE project management structure addressed the hierarchy of responsibilities in overseeing the project's implementation and performance. Specifically, the HOPE project was led by a director who oversees the operation and implementation of the entire grant. Each of the HOPE colleges had a local grant manager who was tasked with handling the day-to-day grant activities and reported to the director, and a career navigator who provided student support services and conducted awareness and outreach activities. Industry, workforce, and community partners were also key resources who contributed to the grant in multiple ways and to varying degrees, particularly in job placement, experiential learning opportunities, curriculum reviews, and leveraging of resources.

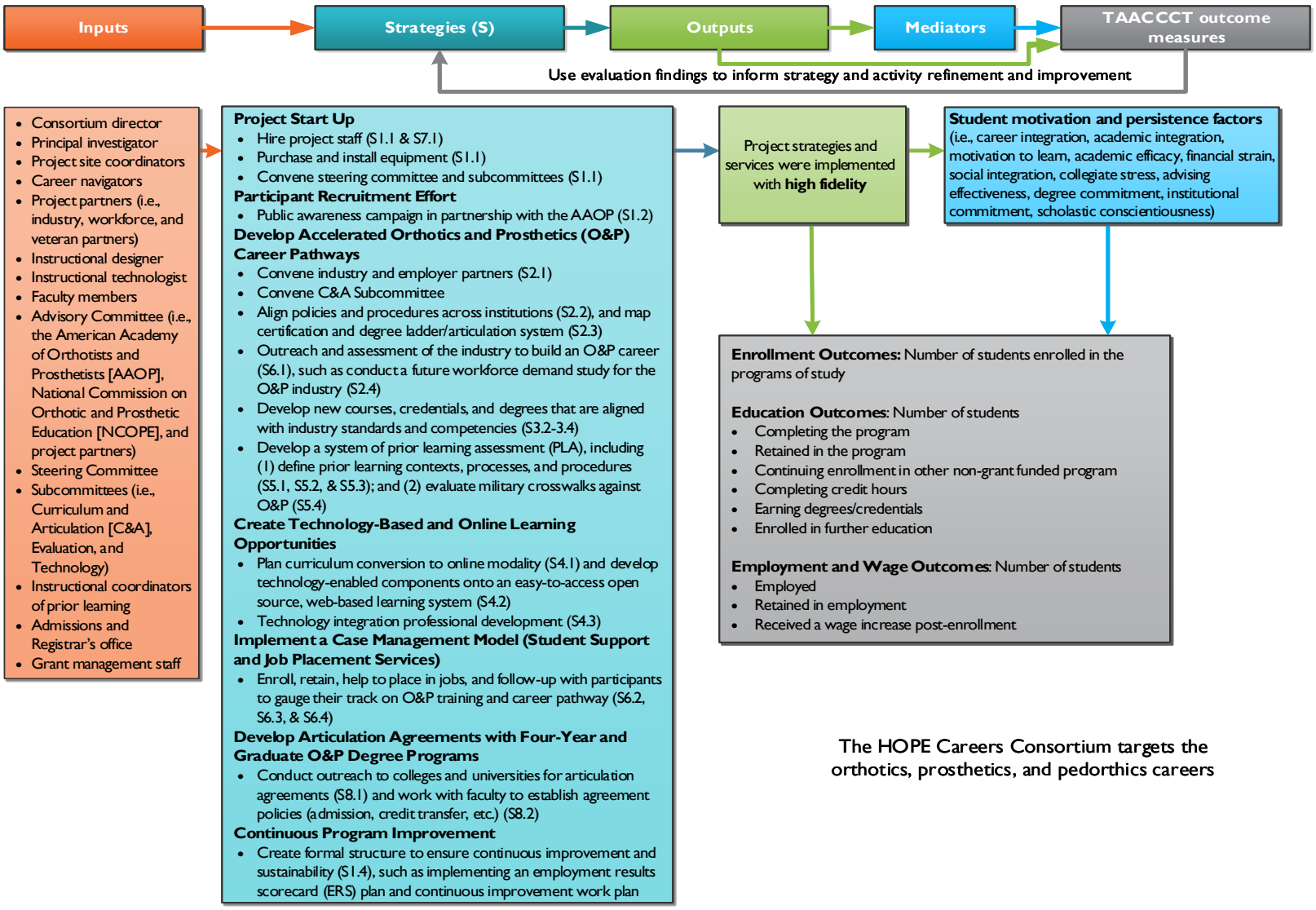


Figure 2. HOPE Careers Consortium Logic Model

Strategies

As depicted in the logic model, the HOPE project implemented seven core components, including startup activities, recruiting eligible participants across the nation through the national campaign, developing accelerated O&P careers pathways (i.e., develop stackable and latticed credentials), creating innovative technology-based and online learning opportunities (i.e., incorporate technology into program design and delivery), implementing a case management model (i.e., using best practices in retention strategies, supporting job placement), developing articulation agreements with other colleges and institutions, and creating process and structures to support continuous program improvement.

Outputs

Outputs are defined as the direct results of the HOPE project's strategies. Specifically, it was expected that all components would be in place by the end of the performance period; implementation would adhere to the Project Work Plan; and the quality of implementation, as well as participants' response and engagement in these services, would be high, as they are what matters the most to ensure students' success. Therefore, the focus of the implementation evaluation was not only to document the implementation of key strategies, but also to evaluate the quality and participant responsiveness (e.g., satisfaction, engagement, and enthusiasm) to the outputs. The assessment of the HOPE project's outputs was guided by the fidelity assessment framework suggested by Century, Rudnick, and Freeman (2010). Methods to assess the fidelity of implementation are discussed further in Chapter 3: Formative Evaluation Design, Data Analysis, and Findings.

Intermediate Outcomes

The target population for the HOPE project is adult learners, who often encounter multiple barriers and challenges to persistence and retention (Roger, 2009). Empirical studies have identified many variables associated with persistence, such as academic integration and advising effectiveness (Bremer et al., 2011; Davidson, Beck, & Milligan, 2009). Academic integration often describes student perceptions of instructional quality, and advising effectiveness assesses students' perception of advising services they have received. Evaluators hypothesized that the HOPE project supports student success through enhanced curricula as measured by academic integration and advising effectiveness.

Outcomes

As part of the HOPE project's summative evaluation, nine outcome measures specified by the DOL as grant performance indicators were evaluated (see Table 1).

Table 1. HOPE Project Outcome Measures and the Performance Targets

	Outcome Measures	Performance Targets
1	Total unique participants served	1,736
2	Total number of participants who have completed a TAACCCT-funded program	1,266
3	Total number of participants still retained in their program of study or another TAACCCT-funded program	177[a]
4	Total number of participants completing credit hours	1,305
5	Total number of participants earning credentials	1,330
6	Total number of participants enrolled in further education after grant-funded program of study completion	364
7	Total number of participants employed after grant-funded program of study completion	900
8	Total number of participants retained in employment after program of study completion	819
9	Number of participants employed at enrollment who received a wage increase post-enrollment	553

Note. Indicators listed in this table are slightly different from the indicators reported in the Annual Performance Report (APR), The indicators in this table were specified in the grant proposal narrative with set performance targets.
[a] In the project narrative, the cumulative number was reported as the overall performance target by the end of the grant. However, it seems more appropriate to use the Year 3 projection as the target since it suggests that number of participants that would still be retained in the HOPE programs of study by the end of the performance period.

Definitions of each outcome and their projected targets are described below.[5] When comparing the results against the projected targets, percentages were calculated to allow for these comparisons to occur from a more complete perspective. For instance, if the HOPE project recruited a lower number of participants than projected, the percentage of participants who complete a program of study was calculated and used to compare against the projected percentage to avoid underestimating the project's performance in reaching the anticipated outcomes. In addition, the denominators used to calculate the percentages differ depending on the definition of each indicator.

- **Total Number Who Have Completed a Grant-Funded Program of Study:** *Total number of unique participants who completed any grant-funded program.* Participants were only included once, even if they completed multiple programs of study. The HOPE project anticipated that 73% (1,266 out of 1,736) of the grant participants would complete a TAACCCT-funded program.
- **Total Number Still Retained in Their Program of Study or Other Grant-Funded Program(s):** *Of the total number of unique participants enrolled who have not completed their programs, the total number of enrollees who are still enrolled either in their original program of study or a different grant-funded program of study at the end of the performance period.* The HOPE project anticipated that 10% (177 out of 1,736) of the grant participants would be retained in a TAACCCT-funded program by the conclusion of the grant implementation period.

[5] Definitions are those from the SGA. Where there are differences in the definitions of the SGA and the DOL's APR, they are described.

- **Total Number of Students Completing Credit Hours:** *Number of students who have enrolled and completed any number of credit hours.* The HOPE project anticipated that 75% (1,305 out of 1,736) of the grant participants would complete at least some credit hours.
- **Total Number of Students Earning Credentials, Diplomas, and Degrees***: Total number of students who earned certificates (including industry-recognized credentials), diplomas, or degrees.* A student can be counted only once in this field even if multiple certificates, diplomas, or degrees were earned by that student. The HOPE project anticipated that 77% (1,330 out of 1,736) of the grant participants would earn a credential, diploma or degree. For the DOL's Annual Performance Report (APR), grantees were permitted to count a student one time each for each certificate of less than one year earned, certificate of more than one year earned, and degree earned. Because of the discrepancies in the definitions used for preparing the grant proposal narrative and the APR, comparisons to the target were unable to be made.
- **Total Number Enrolled in Further Education After Program of Study Completion:** *Of the total number of participants who completed at least one grant-funded program, the total number of individuals who entered another program of study (grant-funded or not).* The HOPE project anticipated that 29% (364 out of 1,266) of the grant participants who completed a program of study would enroll in further education.
- **Total Number Employed After Program of Study Completion:** *Of the total number of participants who were not incumbent workers and who completed at least one grant-funded program, the total number of individuals who entered unsubsidized employment in the first quarter after the quarter in which they exited the college.* The HOPE project estimated that 900 non-incumbent participants would be employed after program of study completion. However, there is no information available about the number of projected non-incumbent workers completing a grant-funded program in the proposal narrative; therefore, a comparison to the target using percentages is not presented.[6]
- **Total Number Retained in Employment After Program of Study Completion:** *Of the total number of participants who were not incumbent workers and who completed at least one grant-funded program, the total number of individuals who entered unsubsidized employment in the first quarter after the quarter in which they exited the college, the total number of individuals who were employed in the second and third quarters after exiting.* The HOPE project anticipated that 91% (819 out of 900) of the non-incumbent participants who gained employment would be retained in employment. Like the previous indicator, there is no information available about the number of projected non-incumbent workers completing a grant-funded program in the proposal narrative; therefore, a comparison to the target using percentages is not presented.

[6] The grant proposal specifies an anticipated 1,163 of the projected 1,736 participants will be unemployed (non-incumbent workers). However, to calculate the indicator properly it is necessary to know the projected number of unemployed who completed a program of study.

- **Total Number of Those Employed at Enrollment Who Received a Wage Increase Post-Enrollment**: *Of the number of incumbent workers (those employed at enrollment) who enter a grant-funded program, the total number who received an increase in their wages at any time after becoming enrolled.* The grant proposal narrative indicated that of the 1,736 new participants anticipated to be served by the HOPE project, 1,163 would be unemployed. Therefore, it can be inferred that the number of incumbent workers to be served by the project was targeted at 573. The HOPE project anticipated that 97% (553 out of 573) would receive a wage increase.

Additionally, for the impact study, McREL evaluators, in collaboration with the HOPE project evaluation subcommittee, selected three outcomes of interest to understand the extent to which the HOPE project has impacted participants as compared to comparisons (i.e., non-TAACCCT grant participants). The outcomes are:

- **Completion status:** An individual is counted as a completer when he or she has successfully completed the declared program of study[7] within the designated timeframe (e.g., complete a 2-year program by the end of the 2-year mark). The study hypothesizes that with all the support provided through TAACCCT funding, students are more likely to complete the program of study within the specified timeframe.
- **Completion of more than one certificate or degree:** Given the stackable nature of the HOPE programs, participants are likely to complete more than one TAACCCT funded-program of study. Hence, the evaluation examined whether HOPE participants are more likely to earn multiple certificates or degrees as compared to their counterparts.
- **Further education status:** An individual who has completed a TAACCCT-funded program of study and continues to take courses outside of the college within the next two semesters after program completion is defined as an individual who continues further education.

Evaluation Questions

The overarching goal of the HOPE evaluation was to document and monitor the implementation of the key components described in the HOPE Careers Consortium's Technical Proposal and to understand how the HOPE model worked to support project goals. Hence, the evaluation addresses questions related to *project implementation*—the structural and procedural fidelity of project implementation—and *project outcomes*—the degree to which the project's goals were met and outcomes achieved. Implementation findings shared in earlier project years, examined alone and in concert with project objectives, allowed the HOPE project team to make *formative* decisions for program improvement and refinement over the course of the grant period. In the final year, the evaluation looked across the HOPE project's implementation and outcomes to make *summative* statements about *what*, *how*, and *why* the program design and implementation work to support the

[7] If a student completed more than one TAACCCT-funded program of study, the last degree completed is used as his/her declared program of study.

outcomes. In this section, the series of implementation and outcome evaluation questions being used to guide the evaluation are presented.

Implementation Evaluation Questions

Guided by the logic model and within the context of the TAACCCT grant's overall evaluation strategy, four overarching formative evaluation questions guided by the TAACCCT Round 3 SGA are described below:

1. What were the consortium's strategies to support participant recruitment? Did the recruitment efforts vary across institutions? If so, how?
2. How were the core components and activities of the project implemented?
3. To what extent were the core components and activities implemented with fidelity? What were the operational strengths and weaknesses of the project after implementation?
4. To what extent is the HOPE project sustainable beyond the life of the grant?

These questions (1) analyzed the steps taken by the HOPE Careers Consortium to create and implement the HOPE project (Question 1 and 2); (2) assessed the project's operational strengths and weaknesses (Question 3); and (3) examined its sustainability beyond the life of the grant (Question 4). Under each question, several subquestions were also examined to describe the operation of the HOPE grant and address questions specified in the TAACCCT SGA. Findings addressing formative questions 1, 2 and 4 are fully addressed and presented in previous reports. This final report focuses on formative question 3. (See the Report Organization section at the end of this chapter for a summary of previous reports.)

Summative Evaluation Questions

Within the context of TAACCCT's overall evaluation strategy, the HOPE project's summative evaluation addressed the three questions described below:

1. To what extent did the HOPE project achieve the project outcomes, as described in the program narrative (i.e., outcome evaluation)?
2. To what extent did the HOPE project have an impact on participants?
3. What were the underlying mechanisms through which the HOPE project had a positive impact on participant outcomes?

The aim of the summative evaluation was to (1) understand the extent to which the HOPE project met the performance targets on the nine key outcomes specified in Table 1 (Question 1); (2) examine whether the HOPE project had a positive impact on participants (Question 2); and (3) explore the underlying mechanism through which the project impacted participants (i.e., how and what works to support participant success in education and employment) (Question 3). This report addresses all three summative questions.

Report Organization

Following this brief introduction, Chapter 2 describes the measures and data sources used for the evaluation. Specifically, in addition to the final evaluation report, throughout the project period, McREL evaluators delivered several reports to the consortium and individual colleges to provide formative data and summative data to date to support continuous program improvement. These deliverables were:

- *Orthotics, Prosthetics, and Pedorthics (HOPE) Careers Consortium Year 1 Evaluation Report* (Good & Stone, 2014): This report documented the consortium's implementation progress as of the end of grant Year 1. Specifically, this report addressed formative evaluation questions 2 and 3.
- *Orthotics, Prosthetics, and Pedorthics (HOPE) Careers Consortium Case Study: A Look at the Processes and Impact of Collaborative Curriculum Development* (Roseland, 2015): This case study provided additional information to address formative evaluation question 2 regarding the consortium's collaborative effort and approach to develop O&P curricula. As part of the case study, evaluators also gathered data related to the barriers and challenges faced by the consortium when developing O&P curricula, and described how the TAACCCT funding contributed and facilitated the O&P curricula development work.
- *Orthotics, Prosthetics, and Pedorthics (HOPE) Careers Consortium Year 2 Evaluation Report* (Good & Bumgardner, 2016): This report documented the consortium's implementation progress and reported on summative data collected at the end of grant Year 2. Specifically, this report addressed formative evaluation questions 2 and 3 and provided preliminary data for summative evaluation questions 1 and 3.
- *HOPE Careers Consortium Case Studies: Examination of Project Implementation* (Good, Knotts, Knoster, & Bumgardner, 2017): The case studies described implementation of the project at each of the five institutions, focusing on each individual institution's approach to implementation and experiences with the HOPE project. The purpose of this case study was to provide the HOPE project's stakeholders with information to better understand local-level implementation and describe stakeholders' experiences. Individual case studies for each of the five participating colleges were conducted, followed by a summary of the overall HOPE project successes, challenges, lessons learned, and conclusions. Findings from this report contributed to formative evaluation questions 1, 2 and 4.

Through these deliverables, formative evaluation questions 1, 2, and 4 are fully addressed. Therefore, in this final evaluation report, only new information collected after the last report (i.e., Year 4 Case Study) is provided to address formative evaluation question 3 and the three proposed summative evaluation questions. The executive summary of this final evaluation report provides summarized findings for all formative and summative questions based on the previous reports and the findings of this final evaluation report. Methods and data collection activities that contribute to these previous reports are presented in Chapter 2. Chapter 3 describes the formative evaluation

design, related data analysis plan, and findings, and Chapter 4 presents the summative evaluation design, analysis plan, and findings. The report concludes with Chapter 5, which presents an overall summary of evaluation findings for the final evaluation report.

Chapter 2. Measures and Data Collection

Given the multifaceted evaluation design, McREL evaluators gathered both quantitative and qualitative information through a variety of methods (e.g., surveys, interviews, and extant data) from multiple sources (e.g., program staff, participants, other stakeholders—such as partners/employers, and project records). This mixed-method design allowed evaluators to triangulate the data from various sources to provide a deeper understanding about the processes and mechanisms that contributed to the outcomes. Table 2 provides an overview of data collection methods used to address the formative and summative questions. More details on the purpose and methodology of each method are described below.

Table 2. Evaluation Questions and Data Collection Methods

Evaluation Questions	Project Records	Adherence of Implementation Self-Assessment	Interviews	Partner Surveys	Participant Entrance and Exit Surveys	Participant Focus Groups	Extant Data
Formative Evaluation Questions							
1. What were the consortium's strategies to support participant recruitment? Did the recruitment efforts vary across institutions? If so, how?	x		x	x			
2. How were the core components and activities of the project implemented?	x		x	x	x	x	
3. To what extent were the core components and activities implemented with fidelity? What were the operational strengths and weaknesses of the project after implementation?	x	x	x	x	x	x	
4. To what extent is the HOPE project sustainable beyond the life of the grant?	x		x	x			
Summative Evaluation Questions							
1. To what extent did the HOPE project achieve the project outcomes, as described in the program narrative (i.e., outcome evaluation)?							x
2. To what extent did the HOPE project have an impact on participants?						x	x
3. What were the underlying mechanisms through which the HOPE project had a positive impact on participant outcomes?	x					x	

Review of Project Records

Data collected as a regular part of the HOPE project's implementation and maintained by consortium staff were used as part of the evaluation. Records reviewed for this report included project meeting minutes (i.e., minutes from meetings of HOPE's workgroups, managers, the Curriculum and Articulation [C&A] Subcommittee, the Evaluation Subcommittee, and the Technology Subcommittee) and DOL quarterly narrative progress reports. As part of the evaluation, project staff also recorded data in a secured online database system, the Evaluation Database Management System (EDMS), created and maintained by McREL staff for the HOPE program evaluation. This system stores all collected demographic, implementation (e.g., academic and career counseling services), and outcome data for individual participants.[8] In addition, EDMS is used to record program-level implementation data, including awareness and outreach events and activities; partners' roles and involvement in the project strategies and activities; and adherence to the workplan and assessment of the extent to which the project components and activities are being implemented as planned (i.e., Adherence of Implementation Self-Assessment). Through EDMS, project staff could generate quick summary reports when needed to assist with decision-making.

Adherence of Implementation Self-Assessment

To assess the adherence of the project's implementation, the HOPE project director and the site project managers completed a consortium-level Adherence of Implementation Self-Assessment on a semi-annual basis. The purpose of the self-assessment was to document the consortium's efforts and progress in implementing the HOPE project as described in the project narrative. More specifically, the form focused on the adherence to the Project Work Plan and assessed the extent to which the project components and activities were implemented as planned.

The form contained 28 indicators organized around the seven core components of the project (i.e., start-up activities, participant recruitment, developing accelerated O&P career pathways, etc.). For each indicator, the consortium's project director and site project managers selected the current implementation status, using a numeric scale of 0 to 4 (0 = *currently under development and has not yet been implemented*; 1 = *low level of implementation*; 2 = *moderate level of implementation*; 3 = *high level of implementation*; and 4 = *full implementation*). To support the numeric rating, a summary of the evidence was provided. Additionally, the HOPE project director noted and described any modifications that were made, identified whether the modifications aligned with the project's objectives and goals, and explained the main reasons for the modifications.

The HOPE project director was responsible for completing the self-assessment and ensuring that data were entered in EDMS. Five of the 28 indicators required specific college input (i.e., four related to the project start-up activities at each member institution and the fifth to the development, revision, and approval of programs). For those five indicators, each site project manager was asked to submit his or her numeric rating and evidence to support the rating for their respective member

[8] It is important to note that EDMS only contains information for those individuals who have consented to participate in the evaluation (i.e., participants). Therefore, data presented about participation in the surveys and student support services is a subset of all of the participants served by the HOPE project.

institutions. The overall ratings representing the consortium for those indicators were then assigned based on consensus from the member institutions' representatives. The Year 1 self-assessment was completed at the end of Year 1 and served as baseline data. In Years 2 and 3, the self-assessment was completed at the end of the second and fourth quarters. The final self-assessment occurred at the end of the second quarter in Year 4, which concluded the HOPE project's implementation. These data were analyzed to determine the HOPE project's implementation progress over time.[9]

Interviews

During grant Years 1, 2 and 3, project staff were interviewed annually to gather their perceptions and experiences with the grant across various stages of project implementation. Specifically, in grant Year 1 (September 2014), McREL evaluators conducted phone interviews with 12 project staff members (i.e., the HOPE Careers Consortium principal investigator and director, site project managers, and career navigators) to gather data on program development and implementation on the core project components. The interviews lasted about 40 to 75 minutes, depending on each individual's role and level of involvement in the project.

In grant Year 2 (September 2015), 13 project staff members (i.e., the HOPE project's principal investigator, director, data quality coordinator, site project managers, and career navigators) were interviewed over the phone. The interviews lasted about 35 to 85 minutes, depending on the individual's responsibilities and the extent of involvement with the project. For this round of data collection, evaluators focused on questions related to program implementation progress, challenges, and successes on the key project components.

The last round of interviews was conducted in October/November of 2016. Most interviews were conducted onsite at each college's campus, and some partner interviews were conducted over the phone when onsite interviews could not be arranged due to scheduling conflicts. The focus of this round of data collection was to gather in-depth data to tell the story of each college's implementation efforts, challenges, and successes in supporting project goals and meeting project targets since project inception. Interview protocols included a collection of open-ended questions, with additional probes to elicit further conversation and gain clarification on specific aspects of the implementation features. These protocols were broken into six sections: (1) curriculum development and implementation; (2) participant recruitment and outreach; (3) case management model: student support services; (4) case management model: experiential learning and job placement; (5) partner engagement; and (6) sustainability. A total of 54 individuals (i.e., four consortium leadership/administration, 31 faculty and staff, 19 partners) were interviewed. Data collected from this data collection directly contributed to the case studies.

[9] Round 3 grantees were permitted a six-month extension for project implementation. As such, the implementation phase of the HOPE project was extended through Year 4, Quarter 2 (i.e., March 31, 2017).

Partner Survey

A web-based Partner Survey was administered to HOPE partners in August 2015 and September 2016 to gather information related to their (1) perceptions of project implementation, (2) level of involvement in project activities, (3) perceptions of implementation quality, (4) responsiveness to project activities and services, (5) involvement in participant recruitment efforts, and (6) perceptions of the project's impact on the O&P industry and local community. Per the evaluation team's request, each of the five HOPE colleges provided a list of partners who were involved in the project.

In the first round of survey administration, 36 out of 72 partners who were invited to take the survey responded for an overall response rate of 50%. The majority of partners responding to the survey became involved with the HOPE project once it was funded in the fall of 2013 (37%) or were involved with the colleges before the project was funded (34%). The other 30% were added as partners after Year 1. Additionally, 69% of the Partner Survey respondents described their organization or company type as a provider of O&P services (e.g., practitioner, fitter, or technician), while 33% indicated that they are an industry partner (e.g., manufacturer, central fabricator, or distributor).[10]

In the second round of survey administration, 36 out of 76 partners who were invited to take the survey responded for an overall response rate of 47%. Similarly, the majority of partners responding to the survey (40%) became involved with the HOPE project once it was funded in the fall of 2013 or were involved with the colleges before the project was funded (23%). The other 27% were added as partners after Year 1. Additionally, 61% of the Partner Survey respondents described their organization or company type as a provider of O&P services (e.g., practitioner, fitter, or technician), while 33% indicated that they are an industry partner (e.g., manufacturer, central fabricator, or distributor).

Participant Entrance and Exit Surveys

Approximately four to six weeks following the first day of classes each term (e.g., Fall 2014, Winter/Spring 2015, and Spring/Summer 2015), Student Entrance Surveys were administered to HOPE participants who had a signed consent form on file and were enrolled in a program of study that was one year or longer. These surveys were administered using several different methods to secure the highest response rates possible. Options included McREL or HOPE college staff e-mailing students a link to access the survey online and paper survey distribution by HOPE staff to students either during class or at another meeting, with staff either collecting all completed surveys and returning them to McREL or providing a self-addressed, stamped envelope for each student to use in sending their completed survey back to McREL. Staff at the HOPE colleges selected the survey method that they believed would be most appropriate and successful for their college and students.

[10] Respondents could select more than one response option for organization or company type.

The Student Entrance Survey included a series of questions about participants' motivation and barriers to learn, which is measured by the College Persistence Questionnaire (CPQ) (Davidson et al., 2009). The CPQ, validated with community and technical college populations, assesses 10 factors that are associated with college retention and persistence. For the purposes of the HOPE evaluation, the survey included the following CPQ constructs: (1) academic integration, (2) advising effectiveness, (3) collegiate stress, and (4) scholastic conscientiousness, as well as a fifth construct (career integration), which McREL collaborated with CPQ to develop. Recognizing that participants' commitment to degree completion, family support, personal issues, and financial strain are also critical to their persistence and retention, evaluators developed four additional items to assess those areas. This survey took participants about 10-15 minutes to complete. Table 3 shows the number of respondents by term. Overall, between Fall 2014 and Summer 2016, a total of 172 out of 299 participants who were invited to respond to the Student Entrance Survey did so, with a response rate of 58%.

Table 3. Student Entrance Survey Response Rates by Term

Term	Administration Date	# of Participants Invited	# of Participant Responses	Response Rate
Fall 2014	Oct.–Dec. 2014	120	50	41.7%
Winter/Spring 2015	Feb.–Mar. 2015	28	13	46.4%
Spring/Summer 2015	May– Jun. 2015	16	12	75.0%
Fall 2015	Sept. – Oct. 2015	105	80	76.2%
Winter/Spring 2016	Feb.–Mar. 2016	23	14	60.9%
Spring/Summer 2016	May–Jun. 2016	7	3	42.9%
Total		**299**	**172**	**57.5%**

The evaluation team also administered a Student Exit Survey to participants who were completing a HOPE program of study and were exiting the college. This survey was administered to participants three to four weeks before program completion and, like the Student Entrance Survey, was administered as either a web-based or paper survey.[11] The Student Exit Survey also took respondents about 10-15 minutes to complete and contained two parts. The first part included questions related to participants' perceptions and experiences with all aspects of program activities (e.g., technology, networking opportunities, experiential learning experiences, and advising and coaching services). The second part of the survey included the same CPQ items and four additional items (i.e., participants' commitment to degree completion, family support, personal issues, and financial strain) as the entrance survey. Table 4 shows the number of survey respondents by term. Specifically, between Spring 2015 and Spring 2017, a total of 104 out of 189 participants who were invited to respond to the Student Survey did so, with a response rate of 55%.

[11] In situations where a participant was completing a practicum as a part of their final program completion requirements, the survey was administered 6-8 weeks prior to graduation.

Table 4. Student Exit Survey Response Rates by Term

Term	Administration Date	# of Participants Invited	# of Participant Responses	Response Rate
Winter/Spring 2015	Apr.–May 2015	20	16	80.0%
Spring/Summer 2015	May–Aug. 2015	63	34	54.0%
Fall 2015	Nov.–Dec. 2015	19	12	63.2%
Winter/Spring 2016	Mar.–Apr. 2016	13	13	100.0%
Spring/Summer 2016	May–Aug. 2016	49	19	38.8%
Fall 2016	Nov.–Feb. 2017	28	11	39.3%
Winter/Spring 2017	Mar.–Apr. 2017	17	15	88.2%
Total		**189**	**104**	**55.0%**

Participant Focus Groups

In October/November 2016, group interviews were conducted with participants from each consortium college to gather data on their perceptions and experiences with the HOPE project. A total of seven focus groups were conducted across the consortium, involving a total of 68 participants. Each group interview took about 60 to 75 minutes. The participant interview protocol included ten sets of open-ended questions asking about respondents' programs of study; intention regarding program completion; factors influencing the decision to choose their program of study and pursue an O&P career; experiences with the HOPE program and its associated services (i.e., student support services, experiential learning and job placement, technology enabled learning experiences, quality of education); challenges while enrolled; and the most valuable aspect of the program. Data collected from this round of data collection directly contributed to the case studies.

Extant Data

Participants' education, employment and wage data collected by the HOPE project through EDMS and each college's institutional research databases are included as part of the summative evaluation. Comparisons' education data, collected by each college's institutional research database, are also used to understand the extent to which the HOPE project has a positive impact on participants' educational outcomes, including (1) program completion status, (2) number of certificates or degrees earned, and (3) enrollment in further education after program completion. To access participants' and comparisons' education records, McREL evaluators established institutional data sharing agreements with all consortium colleges individually. To access participants' employment and wage data, two colleges were able to establish a data sharing agreement with their state workforce agencies to supply participants' employment and wage data. All colleges attempted to collect this data through employer and participant self-report including surveys and telephone calls. Participants' educational, employment, and wage data were entered by the HOPE project staff into EDMS on an annual basis for evaluation and reporting purposes. For the impact study, an Excel data template, including variables that are needed for impact study, was created by McREL

evaluators and used by HOPE project staff to enter data gathered from their institutional research database.

As mentioned in the Chapter 1 Report Organization section, several evaluation deliverables were prepared for the HOPE project throughout the implementation period. Measures and data sources contributing to these deliverables as well as this final evaluation report are summarized in Table 5.

Table 5. McREL's Evaluation Deliverables

Deliverable Title	Project Records	Adherence of Implementation Self-Assessment	Interviews	Partner Surveys	Participant Entrance and Exit Surveys	Participant Focus Groups	Extant Data
Orthotics, prosthetics, and pedorthics (HOPE) careers consortium year 1 evaluation report (Good & Stone, 2014)	x	x	x				
Orthotics, prosthetics, and pedorthics (HOPE) careers consortium case study: A look at the processes and impact of collaborative curriculum development (Roseland, 2015)			x				
Orthotics, prosthetics, and pedorthics (HOPE) careers consortium year 2 evaluation report (Good & Bumgardner, 2016)	x	x	x	x	x		x
HOPE careers consortium case studies: Examination of project implementation (Good, Knotts, Knoster, & Bumgardner, 2017)	x		x			x	
Orthotics, prosthetics, and pedorthics (HOPE) careers consortium: Final evaluation report Ho & Good, 2017)	x	x		x	x	x	x

Chapter 3. Formative Evaluation Design, Data Analysis, and Findings

As mentioned in the Chapter 1 Report Organization section, this final evaluation report addresses formative evaluation question 3, *To what extent were the core components and activities implemented with fidelity? What were the operational strengths and weaknesses of the project after implementation?,* using additional data that were gathered since last the report (i.e., *HOPE careers consortium case studies: Examination of project implementation*). This chapter elaborates on the methods (i.e., fidelity assessment) used to address this question, followed by a detailed description of data analysis plan and findings.

Fidelity Assessment

Although full implementation of the original program of study is desired, McREL evaluators recognize that, in practice, model modification (e.g., program adjustment and strategic refinement) may occur to support and enhance the feasibility and sustainability of the program at the local level (Century, et al., 2010; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005), particularly for programs implemented at multiple institutions and by multiple groups of stakeholders (Bell, 2001). However, any deviation (e.g., low implementation levels or frequent modification) from the original design also creates a potential threat to program fidelity (Century et al., 2010). When a program is implemented with low fidelity, it is unclear whether the successes or failures of the program is due to the program itself or lack of fidelity in implementation. Hence, one of the key formative evaluation questions was to assess the extent to which the core elements of the HOPE project were implemented as intended. To do so, McREL evaluators conducted a fidelity assessment throughout the grant's implementation period (i.e., October 1, 2013–March 31, 2017). The fidelity assessment included three indices that are tied to three aspects of project implementation: *Adherence Index*, *Quality Index,* and *Participant Responsiveness Index* (Century et al., 2010).

By definition, **adherence** refers to the extent to which the critical components of an intended program are present when the program is enacted. In Year 1, McREL evaluators worked closely with HOPE project site managers to develop the Adherence of Implementation Self-Assessment. The HOPE project director, with the input of the five site managers, was asked to conduct a self-assessment with regard to the state of project implementation (i.e., adherence) on a semi-annual basis to coincide with the submission of the DOL quarterly reports. The self-assessment also captured any modifications that occurred during the implementation period, the reasons for the modifications, and a determination of whether the reasons were aligned with the HOPE project goals and targets (i.e., to support implementation and participant outcomes).

Quality measures the qualitative aspects of program delivery that are not directly related to the implementation of prescribed content, such as leader preparedness, global estimates of session effectiveness, and leader and project staff attitudes toward the program (Dane & Schneider, 1998). For the HOPE project, evaluators assessed stakeholders' perceptions of the quality and effectiveness of implementation to support the project's goals and outcomes. Sources of data included participant and partner surveys. **Participant responsiveness** is a measure of responses from participants in

regard to program activities, which may include indicators such as students' level of participation, enthusiasm, and satisfaction. For the HOPE project, evaluators assessed stakeholders' satisfaction with the project's services and activities, level of participation, and enthusiasm to support the project. Sources of data included participant surveys, partner surveys, and project records (i.e., Evaluation Data Management System [EDMS] data).

Taken together, the fidelity assessment provided information related to the program's strengths and weaknesses; hence, it was utilized as a tool to guide strategic planning that supports continuous improvement throughout the project's implementation.[12] For this purpose, McREL evaluators created an **implementation report card** to show the HOPE project's progress toward full implementation throughout the grant period. The implementation report card was included in the Year 1 and 2 annual evaluation reports and presented a summary of implementation status at the conclusion of each of those two years. This report presents an implementation report card that displays implementation status at the end of March 31, 2017.

Data Analysis Plan

For the fidelity assessment, descriptive statistics (e.g., frequencies, percentages, means, standard deviations, or cross-tabulations) were conducted for the Student Exit Surveys, Partner Surveys, and other relevant project records. Before data analyses were performed, McREL evaluators screened the data for data entry errors and improbable responses.

A variety of qualitative data sources were also collected throughout the grant and used to amass a body of contextual knowledge about the HOPE project from multiple stakeholders. These data help ensure a comprehensive understanding of how and why the project results were achieved. Further, the triangulation of qualitative and quantitative data enables evaluators to corroborate patterns and/or identify discrepancies in data obtained through mixed methods. The general approach to analyzing qualitative data includes the following concepts from interview analyses: *Life world*, to enter and understand what is being expressed by the interviewee; *Meaning*, to understand and interpret the meaning of central themes; *Specificity*, to obtain descriptions of specific situations; *Focus*, to focus the interview on themes as they emerge; *Qualitative knowledge*, to obtain qualitative knowledge as expressed by the interviewees; and *Deliberate näiveté*, to be open to any new and unexpected phenomena (Kvale, 1996). As appropriate, qualitative data were analyzed using NVivo software, and prevalent themes and emerging issues were identified. Thematic analysis focuses on identifying words or phrases that summarize the information being shared in the interviews. As such, data were segmented into passages through coding and emerging themes were identified, then the data were reviewed for replicating categories. These categories were given broad codes; finer coding was employed to identify patterns emerging within each coded set. Themes were then summarized by salient, prevalent issues.

[12] The HOPE project opted to take a six-month extension for implementation of project activities. The implementation concluded March 31, 2017.

Findings

This section of the report contains findings for the formative evaluation question 3, *To what extent were the core components and activities implemented with fidelity? What were the operational strengths and weaknesses of the project after implementation?* Specifically, evaluators gathered data around three aspects of implementation: adherence, quality, and participant and partner responsiveness. The measurement for the fidelity of implementation and these three aspects is driven and guided by current implementation science literature (Century et al., 2010; Dane & Schneider, 1998; Fixsen et al., 2005). As mentioned, **adherence** refers to the extent to which the critical components of an intended program are present when the program is enacted (Century et al., 2010). **Quality** measures qualitative aspects of program delivery that are not directly related to the implementation of prescribed content, such as implementer enthusiasm, leader preparedness, global estimates of session effectiveness, and leader and implementer attitudes toward the program (Dane & Schneider, 1998). **Participant and partner responsiveness** is a measure of participants' and partners' responses to program activities, which may include indicators such as their level of participation, enthusiasm, and satisfaction (Century et al., 2010). Findings of each aspect of the fidelity assessment are discussed in the following sections.

Adherence of Project Implementation

As previously noted in the Adherence of Implementation Self-Assessment section, a total of 28 adherence indicators were identified. During implementation, three indicators were determined to no longer have applicability. Hence, the highest total adherence score is 100. Year 1 values are used as a baseline data to understand the project's progress over time. On the Adherence of Implementation Scorecard (see Table 6), the Year 1 values serve as baseline data with the first year receiving a total overall score was 37 or 37% of the total possible points. By the end of Year 2 when a third self-assessment was completed, the score was 80, or 80% of the total possible points. Therefore, significant advances in the HOPE project's implementation were made during Year 2. Progress continued into Year 3 and by the end of the project year, 91 or 91% of the total possible points were attained. At the end of the project's implementation period (i.e., March 31, 2017), 93, or 93%, of the total possible points were attained. A summary of the findings at the end of project implementation for each of the core components follows; the appendix shows the implementation evidence provided to support the numeric ratings and the planned implementation dates for each of the indicators specified in the project workplan:

- **Core Component 1: Project Start-Up** received 19 out of 20 points. Four of the five indicators were given a rating of "4" on the numeric scale (i.e., 0 = *currently under development and has not yet been implemented*; 1 = *low level of implementation*; 2 = *moderate level of implementation*; 3 = *high level of implementation*; and 4 = *full implementation*) and one indicator was given a rating of "3" on its level of implementation.
- **Core Component 2: Participant Recruitment Effort (National Level)** was rated at full implementation for all six indicators (i.e., received 24 points). Information about college-level recruitment efforts is detailed after Table 6.

- **Core Component 3: Develop Accelerated O&P Career Pathways** received 31 out of 36 points. Of the 9 indicators, five were assigned a rating of "3" and the other four indicators were rated as a "4."
- **Core Component 4: Create Technology-Based and Online Learning Opportunities** received seven out of 8 points. One indicator had a rating of "3" and the other indicator was rated as a "4."
- **Core Component 5: Implement a Case Management Model that Supports Student Retention and Job Placement** is not included as a part of the self-assessment. It refers to the support provided through the career navigator and gathered through alternative data collection methods (i.e., the Student Support Tracking Form), which are used to track implementation of this component. Findings related to this core component follow Table 6.
- **Core Component 6: Develop Articulation Agreements with Four-Year and Graduate O&P Degree Programs** received eight out of eight points. Both indicators were given a rating of "4."
- **Core Component 7: Continuous Program Improvement** received all four points for its one indicator.

Table 6. HOPE Careers Consortium Adherence of Implementation Scorecard

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)			
		Y1	Y2	Y3	Y4 Q2
Core Component 1: Project Start-Up					
Hire project staff (S1.1 and S7.1)	Career navigators at all five colleges were hired.	3	4	4	4
	Project staff at all five colleges were hired and/or reassigned.	3	4	4	4
Purchase and install equipment (S1.1)	All five colleges have all equipment ordered, purchased, installed, and ready for use.	3	3	3	3
Convene subcommittees (S1.1)	Subcommittee members from all five colleges participated in the Curriculum and Articulation (C&A), Evaluation, and Technology Subcommittee initial meetings.	4	4	4	4
Convene steering committee (S1.1)	The initial Steering Committee meeting was held.	4	4	4	4
Total Score for Core Component 1 (20 points possible)		**17**	**19**	**19**	**19**
Core Component 2: Participant Recruitment Efforts (National)					
Public awareness campaign in partnership with the American Academy of Orthotists & Prosthetists (AAOP) (S1.2)	TV public service announcements (PSAs) were produced by the AAOP.	0	4	4	4
	Radio PSAs were produced by the AAOP.	0	4	4	4
	Program brochures were produced by AAOP.	0	4	4	4
	TV PSAs were implemented by the AAOP.	0	4	4	4
	Radio PSAs were implemented by the AAOP.	0	4	4	4
	Website developed by the AAOP.	0	4	4	4
Total Score for Core Component 2 (24 points possible)		**0**	**24**	**24**	**24**
Core Component 3: Develop Accelerated Orthotics, Prosthetics and Pedorthics (O&P) Career Pathways					
Convene C&A and Technology Subcommittees (S3.1)	C&A and Technology Subcommittee members were identified and are comprised of faculty and industry leaders.	2	4	4	4
Align policies and procedures across colleges (S2.2) and map certificate and degree ladder/articulation system (S2.3)	C&A Subcommittee and faculty members worked on aligning policies and procedures across colleges. The policies and procedures are clearly outlined in the HOPE Operations Manual.	2	3	3	3
	The C&A Subcommittee created a certificate and degree articulation map.	0	3	3	3
Outreach and assessment of the industry to build an O&P career (S6.1), such as conducting a future workforce demand study for the O&P industry (S2.4)	The National Commission on Orthotic and Prosthetic Education (NCOPE) reviewed and developed new standards that meet the education and training needs for current and future O&P professionals, and conducted a future demand study within the O&P sector. Specifically, a publishable and defined future workforce demand study for the O&P industry was produced.	1	4	4	4
Develop new courses, credentials, and degrees that are aligned with industry standards and competencies (S3.2-S3.4)	The C&A Subcommittee developed new courses and credentials that are aligned with industry standards and conducted cognitive task analyses[1] to incorporate experts' cognitive processes in course development.	2	2	3	3

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)			
		Y1	Y2	Y3	Y4 Q2
Develop new courses, credentials, and degrees that are aligned with industry standards and competencies (S3.2-S3.4) *(continued)*	The C&A Subcommittee defined the pre-program course "brain map" (i.e., process and steps) of tasks and processes for course development (e.g., course outline, syllabi, and course requirements).	3	4	4	4
	C&A and Technology Subcommittees led the development of new in-class and online courses, credentials, and degrees, including six new credentials[2], three new certificates,[3] and three new two-year degrees.[4]	2	2	3	3
	Each of the five colleges has submitted its newly developed or revised courses, credentials, and degrees (as reflected on the Program of Study form) for approval to its college's academic affairs and standards council or equivalent approval body.	1	2	3	3
Develop a system of prior learning assessment (PLA), including (1) definitions of prior learning contexts, processes, and procedures (S5.1, S5.2, and S5.3) and (2) evaluations of military crosswalks against O&P curricula (S5.4)	The C&A Subcommittee will have an outline for validation of prior learning experiences for consideration by each college.	0	1	4	4
	The C&A Subcommittee will review documentation provided by each college on its military vocations, conduct a crosswalk with the O&P curricula, and develop an outline for validation of prior learning experiences in the military for consideration by each college. (Indicator determined to be not applicable.)	N/A	N/A	N/A	N/A
Total Score for Core Component 3 (36 points possible)		**13**	**25**	**31**	**31**
Core Component 4: Create Technology-Based and Online Learning Opportunities					
Plan curriculum conversion to online modality (S4.1) and develop technology-enabled components into an easy-to-access open source, web-based learning system (S4.2)	Instructional designers (or instructional technologists) collaborated to design, develop, and install online learning opportunities for at least 10 O&P online courses.	2	2	3	3
	The consortium has provided access to all colleges for the 10 new online courses and materials, which are hosted by the third-party educational platform.	0	1	3	4
Technology integration professional development (S4.3)	Training modules for online instruction of 10 O&P courses were uploaded to the third-party educational platform. (Indicator determined to be not applicable.)	N/A	N/A	N/A	N/A
	Instructional technologist program staff and/or an online learning vendor providing an open source, web-based learning system completed a train-the-trainer professional development workshop or training class for HOPE Careers Consortium faculty. (Indicator determined to be not applicable.)	N/A	N/A	N/A	N/A
Total Score for Core Component 4 (8 points possible)		**2**	**3**	**6**	**7**
Core Component 5: Implement a Case Management Model that Supports Student Retention and Job Placement					
All activities relevant to Core Component 5 were documented and measured through the Student Support Services Tracking Form.					

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)			
		Y1	Y2	Y3	Y4 Q2
Core Component 6: Develop Articulation Agreements with Four-Year and Graduate O&P Degree Programs					
Conduct outreach to colleges and universities to develop and obtain articulation agreements (S8.1) and work with faculty to establish agreement policies (e.g., admission, credit transfer, etc.) (S8.2)	The C&A Subcommittee developed courses and credentials with program credits that articulate to higher-level degrees as evidenced by a course offering guidesheet.	3	3	3	4
	The C&A Subcommittee developed courses and credentials that are stackable and/or offer transferable credits or skills recognized by four-year and graduate O&P degree programs. College administration leaders and the consortium project director will seek out new and existing relations with four-year and graduate O&P degree programs to develop or strengthen relations across colleges that help lead to at least one letter of interest or an articulation agreement.	2	2	4	4
Total Score for Core Component 6 (8 points possible)		**5**	**5**	**7**	**8**
Core Component 7: Continuous Program Improvement					
Create a formal structure to ensure continuous improvement and sustainability (S1.4), such as implementing an Employment Results Scorecard plan and continuous improvement work plan.	After McREL delivers the annual evaluation report, the Evaluation Subcommittee will hold a meeting to review evaluation findings and develop (if necessary) an action plan to guide program improvement.	0	4	4	4
Total Score for Core Component 7 (4 points possible)		0	**4**	**4**	**4**
Total Adherence Score (100 points possible)		**37**	**80**	**91**	**93**

Note. A total of 28 adherence indicators were identified. During the course of implementation, three indicators were determined to no longer have applicability. Hence, the highest total adherence score is 100. Year 1 values are used as a baseline data to understand the project's progress over time.

[1] The C&A Subcommittee will tap the experiences of industry experts through a well-defined Cognitive Task Analysis interview and observation protocol that will capture the knowledge that experts use to perform complex tasks.

[2] The six new credentials are (1) Animal Patient Certificate, (2) Mastectomy Fitter, (3) Orthotic and Prosthetic Assistant Advanced Technical Certificate, (4) Orthotic and Prosthetic Clinical Applications Diploma, (5) Pedorthic Certificate, and (6) Therapeutic Shoe Fitter, Following the receipt of the TAACCCT funding, industry partners indicated the Animal Patient program of study was not an industry need. Hence, this program of study was not developed.

[3] The three new certificates are (1) Computer-aided Drafting and Computer-aided Manufacturing (CAD CAM), (2) Orthotic and Prosthetic Office Assistant, and (3) Wheelchair Technology. Although the curriculum has been developed for the Orthotic and Prosthetic Assistant Advanced Technical Certificate, it will not be approved as industry-recognized during the course of the grant because the National Commission on Orthotic and Prosthetic Education (NCOPE), the accrediting agency, has yet to develop the standards for this program of study.

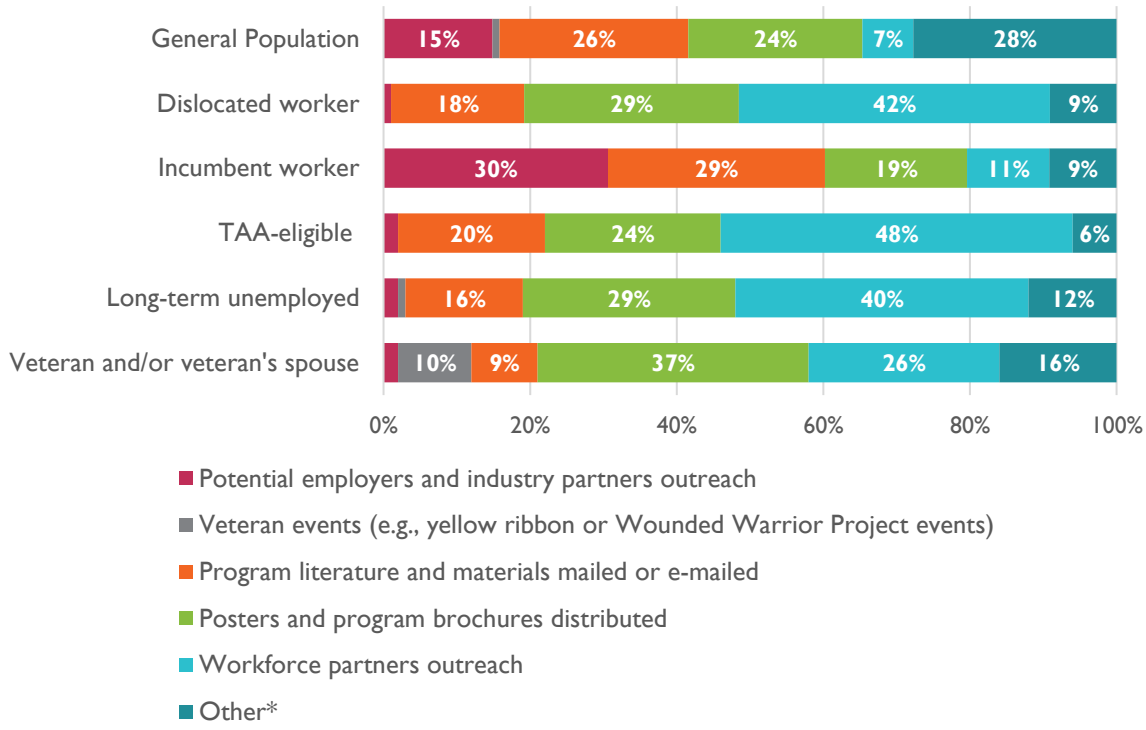
Following the receipt of the TAACCCT funding, industry partners indicated the Wheelchair Technology program of study was not an industry need. Hence, this program of study was not developed.

[4] The three new two-year degrees are (1) Associate in Applied Science-Transfer (AAS-T) in Orthotic and Prosthetic Technology, (2) Associate in Science (AS)/Associate in Applied Science (AAS) in Pedorthics, and (3) AS in Orthotic and Prosthetic Technology.

Participant Recruitment Efforts

In addition to the national-level recruitment activities described in Table 6, each of the HOPE member institutions conducted their own local, state and regional awareness and outreach events and activities. Project staff used EDMS to track and record the college-level events. While information was collected at the event level, it is recognized that there may be more than one activity occurring at an event. In other words, an event was defined as a grouping of awareness and outreach activities as there may be multiple types of activities that occur (e.g., programs and brochures distributed, high school/technology center presentations, etc.).

By the end of the project's implementation (i.e., March 31, 2017), a total of 2,024 awareness and outreach events were conducted or attended by the HOPE colleges. Figure 3 shows the targeted populations intended for the various activities within these events. By and large, workforce partner outreach activities were the most prevalent for targeting the TAACCCT populations of interest with activities focusing on TAA-eligible individuals (48%), dislocated workers (42%) and the long-term unemployed (40%). The second-highest activity focused on the targeted populations was the distribution of posters and program brochures. More than one third of the activities involving the dissemination of these printed materials targeted veterans and/or veteran spouses (37%) and more than one fourth to the long-term unemployed (29%) and dislocated worker (24%).



Note. Specific percentages for each activity type are only displayed if they are 5% or higher.
* The "Other" category within this table consists of the following awareness and outreach activities: Community events (e.g., health fairs and expos); high school/technology center presentations; news releases or media reports; utilization of social media or social networks; and other activities that could not be categorized elsewhere.

Figure 3. Awareness and Outreach Activities for TAACCCT Targeted Populations

Implementing a Case Management Model that Supports Student Retention and Job Placement

As indicated in the Adherence of Implementation Scorecard (see Table 6), activities related to implementing the case management model were documented in EDMS and therefore evidence supporting implementation of this component is featured in a separate section. The primary vehicle for implementing the case management model that supported student retention and job placement took place via the hiring of a grant-funded career navigator. The career navigator met with the students throughout the project's implementation and provided services to ensure students' success in their education and employment. Following each contact or meeting with participants, the career navigator at each site completed a Student Support Services form with the data being subsequently entered into EDMS. For each student contact/meeting, data was collected about the mode (e.g., e-mail, phone, or in-person), time spent in contact/meeting, and reasons for the contact or meeting.

By the end of the project implementation period (i.e., March 31, 2017), EDMS contained 4,446 Student Support Services records. The majority of the support services provided to HOPE students occurred either in person (44%) or email (44%) (see Figure 4). Phone calls represented 10% of the communication mode. A very small percentage of contacts were made via other means, such as texts or Facebook and Skype chats.

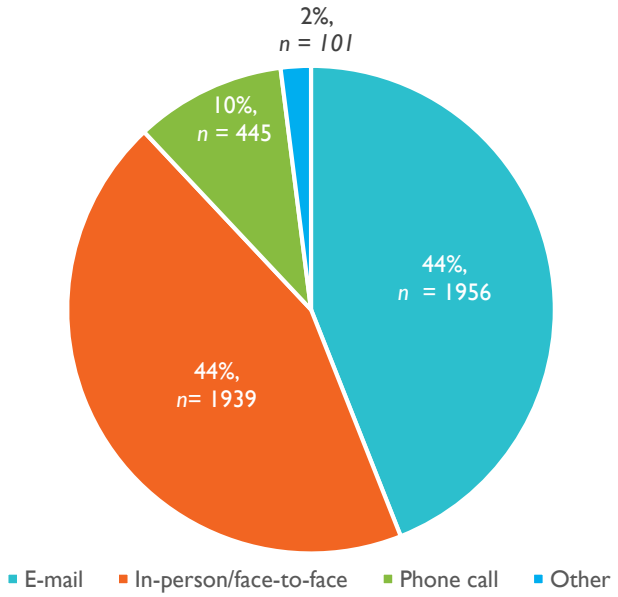
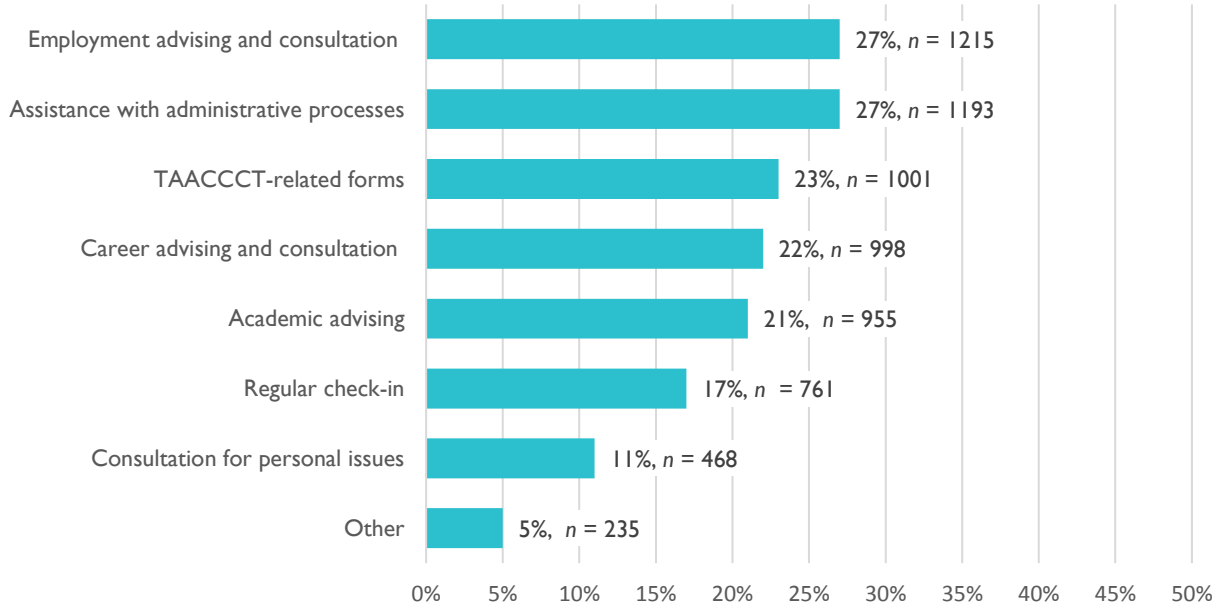


Figure 4. Student Services Mode

Slightly more than one fourth of the support services provided to HOPE project participants pertained to employment advising and consultation (27%) or assistance with administrative processes such as registration or adding/dropping classes (27%) (see Figure 5). Completion of TAACCCT-related forms (23%), career advising (22%), and academic advising (21%) were also important areas in which assistance was provided.



Note. Project staff could select more than one student support service type.

Figure 5. Nature of Student Services Contact/Meeting

Participants completing the Student Exit Survey were asked a series of questions about their perceptions of the services provided by the career navigator (see Table 7). One third of the participants (33% or *n* = 39) completing the survey indicated they had met with a career navigator. Of those students, most (84%) agreed that that the career navigator understood their career interests and goals and that the career navigator was sensitive to their personal problems and needs (76%). Likewise, the majority of students using the services provided by the career navigators reported feeling comfortable going to the career navigator when they had school-related problems (74%). Overall, students rated the career navigator services as *excellent* (31%) or *good* (41%), with the majority also reporting they were satisfied with the frequency of services (62%).

Table 7. Students' Perceptions of Advising/Coaching Services – Exit Survey[13]

Services	Responses				
	Strongly Disagree	*Disagree*	*Neither Agree or Disagree*	*Agree*	*Strongly Agree*
The career navigator was knowledgeable about the O&P profession. (*n* = 37)	5.4%	13.5%	21.6%	32.4%	27.0%
The career navigator was sensitive to my personal problems and needs. (*n* = 38)	--	7.9%	15.8%	39.5%	36.8%
The career navigator understood my career interests and goals. (*n* = 38)	--	--	15.8%	36.8%	47.4%
I felt comfortable going to the career navigator when I had school-related problems. (*n* = 35)	5.7%	8.6%	11.4%	25.7%	48.6%

[13] Not applicable was a response option for each of the items. Not applicable responses were excluded from the analyses.

Services	Responses				
	Strongly Disagree	*Disagree*	*Neither Agree or Disagree*	*Agree*	*Strongly Agree*
I felt comfortable going to the career navigator when I had personal issues that affected my academic performance. (*n* = 33)	9.1%	6.1%	18.2%	27.3%	39.4%
The career navigator provided information and resources I needed to support my learning needs and career goals. (*n* = 38)	7.9%	7.9%	18.4%	34.2%	31.6%
The career navigator worked with my faculty advisor to make sure my learning needs were met. (*n* = 33)	6.1%	6.1%	24.2%	27.3%	36.4%
The career navigator helped me stay on track to complete my program (*n* = 33)	9.1%	3.0%	21.2%	27.3%	39.4%
Overall Quality and Satisfaction	**Responses**				
	Very Poor/ Dissatisfied	*Poor/ Somewhat Dissatisfied*	*Neutral*	*Good/ Somewhat Satisfied*	*Excellent/ Very Satisfied*
Overall, how would you rate the quality of the advising or coaching services you received through the career navigator? (*n* = 39)	5.1%	7.7%	15.4%	30.8%	41.0%
Overall, how satisfied are you with the frequency of the advising or coaching services you received through the career navigator? (*n* = 39)	10.3%	7.7%	20.5%	23.1%	38.5%

Note. Percentages may not add up to 100 due to rounding.

Students were asked, "What would you like to see differently in terms of advising or coaching services offered by the career navigator changed to be more helpful?" One half of the respondents who reported meeting with a career navigator (51% or *n* = 20) were satisfied with the services they had received and had no suggestions for changes. One third of the respondents (33% or *n* = 13) wished the career navigator would have reached out to them more often.

Job Placement. Networking was an important aspect of the project, and enabled participants to establish relationships with future employers and other professionals in the O&P field. HOPE participants completing the Student Exit Survey reported on their involvement in networking opportunities and perceptions of experiential learning offered at their respective colleges. As shown in Table 8, approximately one half of the participants (53%) answered that they were *frequently* or *very frequently* provided with opportunities to build a network of professional contacts, with 37% reporting this occurred occasionally. Over one third of the respondents (36%) felt they were *frequently* or *very frequently* provided with opportunities to specifically network with potential employers, with 39% reporting that this occurred occasionally.

Table 8. Students' Perceptions of Networking Opportunities – Exit Survey (*n* = 119)

Questions	Responses				
	Never	*Rarely*	*Occasionally*	*Frequently*	*Very Frequently*
How often were you provided with opportunities to build a network of professional contacts (including peers, mentors, employers, and so on)?	1.7%	8.4%	37.0%	27.7%	25.2%
How often were you provided with opportunities specifically to network, connect, or interact with potential employers?	4.2%	21.0%	38.7%	25.2%	10.9%

Note. Percentages may not add up to 100 due to rounding.

Additionally, in terms of experiential learning experiences, students reported that they most often participated in clinical rotations, externships, and internships (see Table 9). The majority of respondents (89%) rated their clinical rotation, externship, or internship as *good* or *excellent*. Overall, students were *very satisfied* (42%) or *somewhat satisfied* (35%) with their experiential learning opportunities.

Table 9. Students' Perceptions of Experiential Learning – Exit Survey

Quality of Experiential Learning	*N*	Responses				
		Very Poor	*Poor*	*Fair*	*Good*	*Excellent*
During the course of your training, you may have participated in some of the following experiential learning opportunities. How would you rate the quality of the experiential learning opportunities in which you have participated?						
Clinical rotation/ externship/internship	110	1.8%	1.8%	7.3%	32.7%	56.4%
Company visits	79	1.3%	7.6%	16.5%	49.4%	25.3%
Job shadowing	59	3.4%	10.2%	8.5%	37.3%	40.7%
Job fairs	39	12.8%	7.7%	28.2%	28.2%	23.1%
Satisfaction with Experiential Learning	***N***	**Responses**				
		Very Dissatisfied	*Somewhat Dissatisfied*	*Neither Satisfied or Dissatisfied*	*Somewhat Satisfied*	*Very Satisfied*
Overall, how satisfied are you with the quality of the experiential learning opportunities in which you participated?	118	5.1%	5.1%	13.6%	34.7%	41.5%

Note. Percentages may not add up to 100 due to rounding.

Quality of Project Implementation

The quality of project implementation was measured using a number of key indicators that are relevant and useful for informing program improvements. The two data sources used to assess quality are the Student Exit Survey and Partner Survey.

Student Exit Survey. Additionally, students completing their programs of study and exiting the college were asked about six aspects related to academic integration and advising effectiveness (see Table 10). Academic integration included three items that measured students' ratings of instructional quality, their satisfaction, and the extent to which instructors and courses promote students' self-efficacy. The majority of respondents (86%) rated the quality of instruction they are receiving as either *good* or *excellent*. Participants also indicated that their instructors and courses make them feel like they can successfully do their work, with 79% reporting *much* or *very much*. Moreover, 83% of respondents indicated that they were *somewhat satisfied* or *very satisfied* with the quality of the instruction they are receiving in the HOPE program.

Students were asked to give feedback about the academic advising the HOPE program provides. Nearly two thirds of the students responded that they were *somewhat satisfied* or *very satisfied* with the advising they received (66%) and that the advising was *excellent* or *good* (65%). Three-fourths of students (75%) responded that getting answers to questions about things related to education and training is either *somewhat easy* or *very easy*.

Table 10. Quality of Instruction and Advisor Effectiveness – Exit Survey

Question	Responses					Descriptive Statistics	
Academic Integration							
How would you rate the quality of the instruction you are receiving here? (*n* = 120)	*Very Poor*	*Poor*	*Fair*	*Good*	*Excellent*	*M*	*SD*
	--	2.5%	11.7%	40.8%	45.0%	4.28	0.77
How much do the instructors and the courses make you feel like you can do the work successfully? (*n* = 115)	*Very Little*	*Little*	*Some*	*Much*	*Very Much*	*M*	*SD*
	1.7%	3.3%	15.8%	31.7%	47.5%	4.20	0.94
In general, how satisfied are you with the quality of instruction you are receiving here? (*n* = 120)	*Very Dissatisfied*	*Somewhat Dissatisfied*	*Neutral*	*Somewhat Satisfied*	*Very Satisfied*	*M*	*SD*
	1.7%	9.2%	5.8%	28.3%	55.0%	4.26	1.03
Advising Effectiveness							
How satisfied are you with the academic advising you receive here? (*n* = 115)	*Very Dissatisfied*	*Somewhat Dissatisfied*	*Neutral*	*Somewhat Satisfied*	*Very Satisfied*	*M*	*SD*
	7.0%	6.1%	20.9%	27.0%	39.1%	3.85	1.21
How would you rate the academic advisement you receive here? (*n* = 114)	*Very Poor*	*Poor*	*Fair*	*Good*	*Excellent*	*M*	*SD*
	5.3%	7.0%	22.8%	38.6%	26.3%	3.74	1.09

Question	Responses					Descriptive Statistics	
How easy is it to get answers to your questions about things related to your education and training here? (*n* = 120)	*Very Hard*	*Somewhat Hard*	*Neutral*	*Somewhat Easy*	*Very Easy*	*M*	*SD*
	5.0%	6.7%	13.3%	33.3%	41.7%	4.00	1.13

Note. Percentages may not add up to 100 due to rounding.

The Student Exit Survey also asked HOPE participants to indicate the extent to which technology used in their programs of study enhanced their experience. As shown in Table 11, nearly two thirds of students (63%) felt that the college *greatly* or *extensively* provided state-of-the-art lab and training equipment that prepared them for the O&P job market. Almost three-fourths of students (74%) also indicated that the technology provided by the college helped facilitate their learning experience *greatly* or *extensively*.

Table 11. Students' Perceptions of Technology – Exit Survey (*n* = 119)

Questions	Responses					Descriptive Statistics	
	Not at all	*Very little*	*Somewhat*	*Greatly*	*Extensively*	*M*	*SD*
To what extent did the technology provided in your college facilitate your learning experience?	2.5%	5.0%	29.4%	42.0%	21.0%	3.74	0.93
To what extent did your college provide state-of-the-art lab and training equipment that prepared you to be competitive in the O&P job market?	1.7%	4.2%	20.2%	49.6%	24.4%	3.91	0.87

Note. Percentages may not add up to 100 due to rounding.

Partner Survey. Evaluators asked the HOPE project partners about their perceptions of the quality of five project components. Overall, as shown in Table 12, the partners perceived the program quality to be relatively high. Using a scale of 1 to 5 (the higher value denoting a higher perception of quality), the average level of quality ranged from 3.88 (i.e., participant recruitment) to 4.05 (i.e., curriculum design and development and student support and placement services).

Table 12. Partners' Perceptions of Quality of Project Implementation

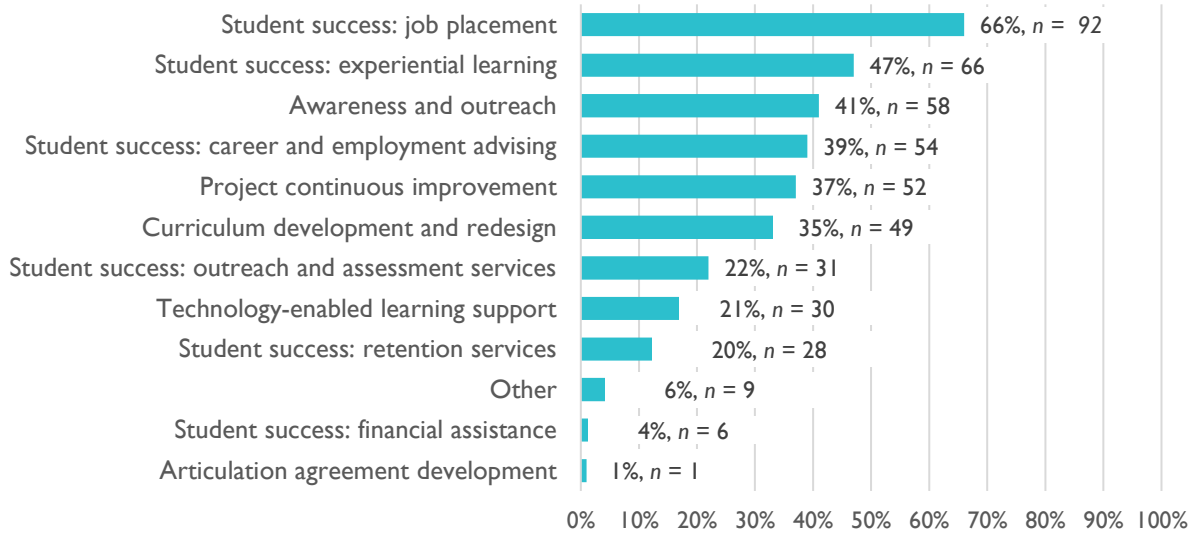
What is your perceived quality of the following project components?	N	Responses					Descriptive Statistics	
		Poor 1	2	3	4	High 5	M	SD
Participant recruitment	17	--	5.9%	35.3%	23.5%	35.3%	3.88	0.99
Curriculum design and development	21	--	4.8%	23.8%	33.3%	38.1%	4.05	0.92
Student support and placement services	20	--	5.0%	30.0%	20.0%	45.0%	4.05	1.00
Technology and equipment support	17	5.9%	--	41.2%	29.4%	23.5%	3.65	1.06
Partnership support	19	--	--	26.3%	52.6%	21.1%	3.95	0.71

Note. N/A responses were excluded from the calculations of means and standard deviations. Percentages may not add up to 100 due to rounding.

Responsiveness to Project Implementation

Responsiveness to project implementation is a measure of participants' and partners' responses regarding program activities. The main data sources were EDMS, Partner Surveys, and Student Exit Surveys. Data from EDMS were used to exhibit partners' roles and their involvement in the project. The Partner Survey included questions about their involvement in project activities, satisfaction with the HOPE Careers Consortium, and impact on the O&P field. The Student Exit Survey gathered data about participants' satisfaction with the O&P programs. The following section is organized by findings from each of these data sources.

EDMS Partner Information. Each member institution was asked to enter information about its project partners in EDMS. Across the five colleges, there were a total of 140 partners identified in the system. Almost one half of those partnerships (46%) were established since the HOPE grant was awarded. More than one third of the partners (36%) serve on the HOPE colleges' local advisory boards. Additionally, information was collected about the partners' roles and involvement with the project (see Figure 6). The colleges reported that the partners are integral to job placement (66%) and experiential learning opportunities (47%). A substantial percentage of the partners were identified as assisting with awareness and outreach activities (41%), career and employment advising (39%), the project's continuous improvement (37%), or having a role with curriculum development and redesign (35%).



Note. Project staff could select more than one type of partner role and involvement.

Figure 6. Partner Roles and Involvement

Partner Survey. Through the Partner Survey, evaluators asked HOPE project partners to rate their current level of involvement with the project relative to the five key components. Table 13 shows the partners' current level of involvement across the key component areas, using a scale of 1 to 5 (the higher value means a higher level of involvement). Across all components and activities, the level of involvement mean ratings tended to be quite low (less than "3" on the 5-point scale). The component in which partners rated the lowest level of involvement was participant recruitment, with the average scores ranging from 1.43 (recruit TAA-eligible participants) to 2.03 (recruit other program participants). Partners' involvement in student support and placement services had the widest range of scores across the five areas, ranging from 1.56 (provide graduate placement services) to 2.55 (provide contextualized learning experiences).

Partners' perceptions of their engagement in curriculum design and development activities were rated with mean scores ranging from 2.24 (assist in curriculum design and redesign to ensure the training provided is aligned with industry needs) to 2.58 (identify important knowledge and skill sets that meet industry needs). Partners reported having minimal involvement in technology and equipment support (M = 2.55) and the two partnership support items (M = 2.09, M = 2.22).

Table 13. Partners' Current Level of Engagement

As of today, to what extent have you personally been engaged in the following project activities:	*n*	Responses					Descriptive Statistics	
		Not involved at all 1	2	3	4	*Highly involved* 5	*M*	*SD*
Participant recruitment								
Recruit incumbent workers	31	64.5%	16.1%	3.2%	6.5%	9.7%	1.81	1.35
Recruit TAA-eligible participants	28	78.6%	10.7%	3.6%	3.6%	3.6%	1.43	1.00

As of today, to what extent have you personally been engaged in the following project activities:	n	Responses					Descriptive Statistics	
		Not involved at all 1	2	3	4	*Highly involved* 5	*M*	*SD*
Recruit veterans or spouses of veterans	28	71.4%	17.9%	--	3.6%	7.1%	1.57	1.17
Recruit underemployed participants	28	67.9%	17.9%	10.7%	--	3.6%	1.54	0.96
Recruit long-term unemployed	28	75.0%	14.3%	3.6%	3.6%	3.6%	1.46	1.00
Recruit other program participants	30	46.7%	16.7%	26.7%	6.7%	3.3%	2.03	1.16
Curriculum design and development								
Assist in curriculum design and redesign to ensure the training provided is aligned with industry needs	33	39.4%	21.2%	18.2%	18.2%	3.0%	2.24	1.25
Identify important knowledge and skill sets that meet industry needs	33	27.3%	21.2%	24.2%	21.2%	6.1%	2.58	1.28
Student support and placement services								
Provide contextualized learning opportunities (e.g., paid or unpaid internships, company visits)	33	48.5%	9.1%	6.1%	12.1%	24.2%	2.55	1.73
Provide graduate placement services (e.g., mock interviews, assistance developing résumés)	32	71.9%	15.6%	3.1%	3.1%	6.3%	1.56	1.13
Provide information related to job openings in O&P fields to the college and the project team	32	28.1%	25.0%	28.1%	9.4%	9.4%	2.47	1.27
Offer job opportunities for HOPE program graduates	33	51.5%	12.1%	15.2%	12.1%	9.1%	2.15	1.42
Technology and equipment support								
Provide facilities and equipment for training activities	33	39.4%	12.1%	18.2%	15.2%	15.2%	2.55	1.52
Partnership support								
Assist in creating new partnerships to support project success	32	43.8%	21.9%	18.8%	12.5%	3.1%	2.09	1.20
Sharing information about the HOPE project with local or regional O&P stakeholders	32	31.3%	37.5%	12.5%	15.6%	3.1%	2.22	1.16

Note. Percentages may not add up to 100 due to rounding.

Additionally, HOPE partners who completed the Partner Survey were asked to share information about their satisfaction with the HOPE project as measured by four questions asking about the likelihood that they would recommend the HOPE programs and about their overall program satisfaction (see Table 14). Most of the partners (81%) indicated they were *likely* or *very likely* to recommend the HOPE programs of study to companies, organizations, and community partners with which they collaborate. The likelihood of partners to recommend the program externally is positive, with over one half (52%) responding that they were *likely* or *very likely* to

recommend the program to current or prospective employees. The partners were also asked to indicate their satisfaction with their current level of involvement in the HOPE project. Almost two thirds of the respondents (63%) reported being satisfied or very satisfied, while the remaining respondents were neutral in their response to this question. Three-fourths of the respondents (75%) were satisfied or very satisfied with HOPE project staff members' efforts to engage them in the project.

Table 14. Partners' Satisfaction with the HOPE Project

Question	Responses				
How likely are you to recommend the HOPE program to your current or prospective employees? (*n* = 25)	*Not Likely*	*Somewhat Likely*	*Neutral*	*Likely*	*Very Likely*
	--	20.0%	28.0%	36.0%	16.0%
How likely are you to recommend the HOPE program to companies, organizations, and community partners with which you collaborate? (*n* = 32)	*Not Likely*	*Somewhat Likely*	*Neutral*	*Likely*	*Very Likely*
	--	6.3%	12.5%	43.8%	37.5%
Overall, how satisfied are you with HOPE project staff's effort to engage you in the project? (*n* = 32)	*Strongly Dissatisfied*	*Dissatisfied*	*Neutral*	*Satisfied*	*Very Satisfied*
	--	--	37.5%	56.3%	6.3%
Overall, how satisfied are you with your current level of involvement in the project? (*n* = 32)	*Strongly dissatisfied*	*Dissatisfied*	*Neutral*	*Satisfied*	*Very satisfied*
	--	--	25.0%	59.4%	15.6%

Note. N/A responses were excluded from the calculations of means and standard deviations. Percentages may not add up to 100 due to rounding.

Project partners were asked about their intention to hire HOPE program graduates if positions become available. Most partners (92%) indicated a willingness to hire graduates if there are open positions, and the remaining partners responded that they did not know if this was something they would consider.

Finally, evaluators gathered data via the Partner Survey to assess partners' perceptions of the project's overall impact on the O&P industry and local community. As shown in Table 15, from a scale of 1 to 5 (a higher value means a higher positive impact), the average level of agreement ranged from 3.68 (*The HOPE programs prepare highly skilled workers who meet my company's [organization's] needs*) to 4.22 (*I will consider collaborating with this college on other projects in the future*).

Table 15. Project Impact on the O&P Industry and Local Community

To what extent do you agree with the following statements?	Responses					Descriptive Statistics	
	Strongly Disagree	*Disagree*	*Neutral*	*Agree*	*Strongly Agree*	*M*	*SD*
The HOPE project offers certificate and degree programs that meet the O&P industry's needs. (*n* = 32)	--	--	12.5%	65.6%	21.9%	4.09	0.59
The HOPE programs prepare workers with the knowledge and skills needed to be successful in the O&P industry. (*n* = 32)	--	--	9.4%	62.5%	28.1%	4.19	0.59
The HOPE project offers programs that support local workforce development. (*n* = 32)	--	--	21.9%	53.1%	25.0%	4.03	0.70
The HOPE programs prepare highly skilled workers who meet local industry needs. (*n* = 32)	--	--	34.4%	56.3%	9.4%	3.75	0.62
The HOPE programs prepare highly skilled workers who meet my company's [organization's] needs. (*n* = 31)	--	--	48.4%	35.5%	16.1%	3.68	0.75
The partnership between my company [organization] and the college will continue beyond the life of the grant period fostering sustainability of this college's O&P programs. (*n* = 32)	3.1%	--	15.6%	50.0%	31.3%	4.06	0.88
I will consider collaborating with this college on other projects in the future. (*n* = 32)	--	--	15.6%	46.9%	37.5%	4.22	0.71

Note. Percentages may not add up to 100 due to rounding.

Student Exit Survey. HOPE participants completing the Student Exit Survey were asked to rate the overall quality of the program, their overall satisfaction, and the likelihood that they would recommend the program to another individual (see Table 16). Participants responded with high ratings overall; 81% rated their O&P program as being *good* or *excellent* and 82% were *somewhat satisfied* or *very satisfied* with their program of study in general. Furthermore, 72% of respondents indicated they were *likely* or *very likely* to recommend their O&P program of study to others.

Table 16. Participants' Satisfaction with the Program – Exit Survey (*n* = 119)

Question	Responses					Descriptive Statistics	
Overall, how would you rate the quality of the O&P program at this college?	*Very Poor*	*Poor*	*Fair*	*Good*	*Excellent*	*M*	*SD*
	2.5%	4.2%	11.8%	38.7%	42.9%	4.15	0.96
Overall, how satisfied are you with the O&P program at this college?	*Very Dissatisfied*	*Somewhat Dissatisfied*	*Neutral*	*Somewhat Satisfied*	*Very Satisfied*	*M*	*SD*
	2.5%	6.7%	10.1%	38.7%	42.0%	4.11	1.01
How likely are you to recommend the O&P program at this college to friends or other prospective students?	*Very Unlikely*	*Unlikely*	*Neither Likely nor Unlikely*	*Likely*	*Very Likely*	*M*	*SD*
	10.9%	5.9%	11.8%	30.3%	41.2%	3.85	1.32

Chapter 4. Summative Evaluation Design, Data Analysis, and Findings

This chapter elaborates on the summative questions presented in Chapter 1, followed by a detailed description of the study design, sample, data analysis plan, and findings for each question.

Summative Evaluation Questions

The summative evaluation examined three summative evaluation questions, as described in Chapter 1. To answer summative question 1, *To what extent did the HOPE project achieve the project outcomes, as described in the program narrative (i.e., outcome evaluation)?,* McREL evaluators examined the extent to which the HOPE project met its performance targets, as described in the program narrative (i.e., **outcome analysis**). Specifically, the evaluation examined the extent to which the HOPE project met the end-of-project performance targets on nine indicators, including (1) the number of individuals: enrolling in the programs of study, (2) completing their programs, (3) still retained in their programs or other programs of study, (4) completing credit hours, (5) earning credentials, (6) enrolled in further education after program completion, (7) becoming employed after program completion, (8) retained in employment after program completion, and (9) employed at enrollment and receiving a wage increase post-enrollment.

To answer summative question 2, *To what extent did the HOPE project have an impact on participants?,* evaluators conducted a **quasi-experimental design** using **propensity score matching (PSM)** to identify a comparison group of students who were similar to the HOPE participants based on various individual-level attributes that are associated with the outcomes of interest (i.e., **impact analysis**). Specifically, the evaluation team examined the differences between HOPE project participants and comparison students on three main outcomes, including (1) completion status, (2) earning more than one credential or degrees, and (3) continuing on for further education.

Summative question 3, *What were the underlying mechanisms through which the HOPE project had a positive impact on participant outcomes?,* was designed to explore the underlying mechanisms through which the HOPE project exerted its influence on participant outcomes. The following sections present the evaluation methods, samples, analysis plan, and findings for each study.

Study 1[14]

This study addresses the first outcome question—to what extent did the HOPE project achieve project outcomes? This section provides details on the methods, sample, and analysis plan for the outcome evaluation.

[14] Data presented in Study 1 will differ from what the HOPE Consortium submits in its final APR. Evaluators used data provided by the colleges that was available as of August 21, 2017. At the time the report was finalized, HOPE Consortium members were still collecting data on outcome measures and per the DOL had until November 14, 2017 to submit the final APR data.

Methods

The main data sources for Study 1 were the Annual Performance Reports (APRs) provided by the lead college. Each college shared their data with the lead college who, in turn, compiled the data for the consortium.

Sample

All participants (n = 1,863) enrolled in a HOPE program through the first 42 months of the grant were included in the outcome analysis. Table 17 provides the demographic characteristics of these participants. Demographic data were not available for approximately one third of the participants. For participants whose demographic data were collected, approximately one third of the total participants were male (32%) and one third female (37%). The majority were White or Caucasian (48%). Approximately one third of the participants self-reported as incumbent workers (30%). A small percentage of the participants were eligible for a Pell Grant (14%), persons with a disability (3%) or TAA-eligible (less than 1%). On average, participants were about 33 years old.

Table 17. HOPE Participant Characteristics (n = 1,873) [a]

Demographic Characteristics	*n*	%	*M*
Gender			
Male	595	31.8%	--
Female	685	36.6%	--
Race/Ethnicity			
Hispanic/Latino	92	4.9%	--
American Indian or Alaskan Native	60	3.2%	--
Asian	34	1.8%	--
Black or African American	77	4.1%	--
Native Hawaiian or Other Pacific Islander	3	0.2%	--
White or Caucasian	901	48.1%	--
More than One Race	47	2.5%	--
Enrollment Status [a]			
Full-time Status	707	37.7%	--
Part-time Status	80	4.3%	--
Other			
Incumbent Worker	561	30.0%	--
Eligible Veterans	70	3.7%	--
Age	--	--	32.5
Persons with a Disability	55	2.9%	--
Pell-Grant Eligible	268	14.3%	--
TAA Eligible	11	0.6%	--

[a] Percentages for gender, race/ethnicity and enrollment status do not add up to 100% due to missing data.

Data Analysis

To examine the HOPE project's outcomes, evaluators conducted descriptive analyses of the nine TAACCCT outcome indicators listed below. Percentages of participants meeting each of the outcome indicators were calculated and compared against the performance targets.

- Total number of unique participants served
- Total number of participants who have completed a TAACCCT-funded program
- Total number of participants still retained in their program of study or another TAACCCT-funded program
- Total number of participants completing credit hours
- Total number of participants earning credentials
- Total number of participants enrolled in further education after grant-funded program of study completion
- Total number of participants employed after grant-funded program of study completion
- Total number of participants retained in employment after program of study completion
- Number of participants employed at enrollment who received a wage increase post-enrollment

Findings

Table 18 shows the HOPE project's outcomes as compared to the performance targets. Methods and definitions to calculate the performance targets are described in detail in Chapter 2 (see Outcomes section, p. 5). The project met the performance targets on three outcome indicators:

- **Outcome Indicator #1:** The HOPE project served 1,873 unique participants in its 42 months of implementation. This number exceeded the targeted projection of 1,736.
- **Outcome Indicator #2:** 1,350 out of 1,873 (72.1%) of the participants completed a grant-funded program of study. This number exceed the targeted projection of 1,266 participants completing a program of study by the end of the grant.
- **Outcome Indicator #3:** 209 out of 1,873 (11.2%) of the participants were still retained in their program of study or were enrolled in other TAACCCT-funded programs in comparison to the target of 177 out of 1,736 (10.2%) by the end of the grant.

Table 18. HOPE Performance Outcomes

	Outcome Measures	Actual Outcomes		Performance Targets	
		n	%[a]	*n*	%[b]
1	Total unique participants served	1,873	--	1,736	--
2	Total number of participants who have completed a TAACCCT-funded program	1,350	72.1%	1,266	72.9%
3	Total number of participants still retained in their program of study or another TAACCCT-funded program	209	11.2%	177	10.2%[c]
4	Total number of participants completing credit hours	881	47.0%	1,305	75.2%
5	Total number of participants earning credentials	--[d]	--[d]	1,330	76.6%
6	Total number of participants enrolled in further education after grant-funded program of study completion	113	8.4%[e]	364	28.8%[f]
7	Total number of participants employed after grant-funded program of study completion	--[g]	--[g]	900	71.1%
8	Total number of participants retained in employment after program of study completion	--[g]	--[g]	819	91.0%[h]
9	Number of participants employed at enrollment who received a wage increase post-enrollment	181	32.3%[i]	553	96.5%[j]

[a] The denominator for calculating the percentage was 1,873; otherwise is noted.
[b] The denominator for calculating the percentage was 1,736; otherwise is noted.
[c] In the project narrative, the cumulative number was reported as the overall performance target by the end of the grant. However, it seems more appropriate to use the Year 3 projection as the target since it suggests that number of participants that would still be retained in the HOPE programs of study by the end of the performance period.
[d] Comparisons to targets unable to be calculated.
[e] The denominator was based on the number of completers of a TAACCT-funded program (i.e., 1,350).
[f] The denominator was based on the number of projected completers of a TAACCT-funded program (i.e., 1,266).
[g] Comparisons to targets unable to be calculated.
[h] The denominator was based on the number of participants employed after grant-funded program of study completion (Indicator 7).
[i] The HOPE Consortium reported serving 561 incumbents; this was the value used for the denominator in calculating the percentage of participants employed at enrollment who received a wage increase post-enrollment.
[j] The denominator was 573. The grant proposal narrative indicated that of the 1,736 new participants anticipated to be served by the HOPE project, 1,163 would be unemployed. Therefore, it can be inferred that the number of incumbent workers to be served by the project was targeted at 573.

Below are the three indicators that did not meet the performance targets:

- **Outcome Indicator #4:** 881 out of 1,873 (47.0%) of the participants earned credits in comparison to the target of 1,305 out of 1,736 (75.2%). Collectively the 881 participants earned 22,238 credits which translates to an average of 25.2 credits per participant. The low percentage of participants earning credits is due to most HOPE participants completing non-credit programs of study. For example, 227 of the HOPE participants attended a non-credit, continuing education HOPE course at a national-level event or one of the OERs. Each of the five colleges also had a significant number of participants who completed short-term certificates that were non-credit bearing.
- **Outcome Indicator #6:** 113 out of 1,350 (8.4%) of the program completers enrolled in further education (TAACCCT grant-funded or not) as compared to the target of 364 out

of 1,266 (28.8%). The low number of program completers enrolling in further education may be explained by three factors. First, per DOL guidelines, participants who entered in employment cannot be counted again if they also entered in further education. As a result, participants who were both employed and entered in further education after program exit were not counted. Second, in Year 3 DOL clarified its definition of further education which required a participant to exit the college to be counted in this indicator. Third, the increasing cost of higher education and the need to pay off student loans, students may have chosen to obtain employment first and wait to continue their education immediately after they completed a program of study.

- **Outcome Indicator #9:** 181 out of 561 (32.3%) of the participants received wage increases after becoming enrolled in a TAACCCT-funded program of study in comparison to the target of 553 out of 573 (96.5%). This outcome is likely to be underestimated, given three of the colleges had to rely on participant self-report, pay stubs or employer verification for this information. Furthermore, DOL did not permit participant self-report as a data collection method until the latter part of Year 3 (June 2016). Therefore, it was difficult to track participant data for individuals in the prior years. For the two colleges that were able to establish data sharing agreements with their workforce agencies, there is a time lag when the employment and wage data are available. With many participants completing their programs of study in the fourth quarter of grant Year 4, employment and wage data were not yet available when this report was prepared.

The following three indicators were unable to be compared to the targets contained in the proposal narrative given the discrepancies between the SGA and APR definitions or lack of information in the grant proposal narrative which would have permitted calculation of appropriate comparisons.

- **Outcome Indicator #5:** Of the 1,873 participants, 1,338 earned a certificate of less than one year, 100 earned a certificate of one year or more, and 289 earned degrees.[15] The total number of earned credentials by HOPE participants was 1,932.[16]
- **Outcome Indicator #7:** 67 of the program completers who were non-incumbents gained employment during the first quarter after completing their program of study and exiting the college.[17] This outcome is likely to be underestimated for the same reasons cited in Outcome Indicator #9.
- **Outcome Indicator #8:** 55 of the participants who gained employment during the first quarter after completing their program of study and exiting the college were retained for

[15] The definition in the SGA was the total number of participants earning a credential. The APR permitted counting a participant in each of the three credential categories one time for each applicable credential earned (i.e., less than one year certificate, one year or more certificate, degree). Therefore, data were not available on the total number of unique participants earning a credential.

[16] This data point includes instances when participants earn more than one type of credential (i.e., less than one year certificate, one year or more certificate, degree).

[17] The HOPE project estimated that 900 non-incumbent participants would be employed after program of study completion. However, there is no information available about the number of projected non-incumbent workers completing a grant-funded program in the proposal narrative; therefore, a comparison to the target using percentages is not presented.

the second and third quarters following.[18] As discussed in Indicator #9, this outcome may be underestimated.

Study 2

This study addresses the second outcome question — to what extent did the HOPE project have an impact on participants? This section includes details on the methods, sample, analysis plan, and findings for the impact evaluation.

Methods

The main data source for Study 2 was the extant data gathered from each college's institutional research database. See the Data Collection Methods section for additional details.

Sample

To examine the HOPE project's impact on participant outcomes, a quasi-experimental design using PSM was conducted to identify a group of matched comparisons based on a list of individual characteristics that are associated with the outcomes of interest (Guo & Fraser, 2010). PSM can be conducted at different levels (e.g., consortium or college) depending on the availability of the data and the extent to which the programs offered varied or similar across colleges. For the HOPE project, evaluators determined that it was most appropriate to conduct PSM and analyze impact at the college level, for several reasons. First, even though the HOPE colleges all offered programs in the O&P field, program characteristics (e.g., program type, program length, number of credits required) varied across colleges. Second, each college has different enrollment periods (i.e., some colleges allow individuals to enroll during any semester, while some colleges only enroll new students in the fall) and academic schedule (i.e., two colleges operated on a quarter schedule while the other colleges were on a semester schedule). Lastly, essential data for PSM were not collected consistently in each college's institutional database. A detailed description of the methods and results of PSM (i.e., balance diagnostics) are presented in Appendix C. Impact findings are presented anonymously.

The primary sources of comparisons were individuals who were enrolled in HOPE-like programs within HOPE colleges and had sufficient time to complete their programs of study before the grant. PSM is most appropriate when a large pool of comparison students (at least three times greater than the number of participants) is available from where evaluators can draw individuals who are most similar (i.e., a good match) to the participants. Evaluators communicated with each college's HOPE project site manager and determined that a sufficient number of potential comparisons existed by including all individuals who were enrolled in the HOPE-like programs between Spring 2005 and Fall 2011 (i.e., a historical pool; n = 726). Using this historical pool,

[18] The HOPE project anticipated that 91% (819 out of 900) of the non-incumbent participants who gained employment would be retained in employment. Like the previous indicator, there is no information available about the number of projected non-incumbent workers completing a grant-funded program in the proposal narrative; therefore, a comparison to the target using percentages is not presented.

evaluators conducted PSM separately for each college using the following characteristics (i.e., covariates): age, gender, minority status, educational attainment, and program type.[19]

Overall, a total of 95 HOPE participants who were enrolled in the HOPE programs between Fall 2014 and Spring 2016[20] and 221 matched comparisons who were enrolled in the HOPE-like programs between Spring 2005 and Fall 2011 were included in the impact study.[21] Sample sizes and characteristics of the participants and selected comparisons by college are presented in Table 19.

Table 19. Impact Study Sample by College

Characteristics (Pn = number of participants; Cn = number of comparisons)	Participants		Comparisons	
	Valid n	Valid % *M (SD)*	*Valid n*	Valid % *M (SD)*
College A (Pn = 8; Cn = 24)				
Age (M [SD]) *	8	25.75 (6.50)	24	25.88 (6.77)
Gender (% male) *	8	37.5%	24	37.5%
Minority Status (% minority) *	8	0.0%	24	0.0%
Educational attainment (% at least some college)	8	75.0%	2	100.0%
Program type (% AAS degree)	8	100.0%	24	100.0%
College B (Pn = 18; Cn = 90)				
Age (M [SD]) *	18	25.22 (5.31)	90	25.26 (5.51)
Gender (% male) *	18	66.7%	90	67.8%
Minority Status (% minority) *	18	16.7%	90	16.7%
Educational attainment (% at least some college)	18	100.0%	90	100.0%
Program type (% AAS degree)	18	61.1%	90	57.8%
College C (Pn = 15; Cn = 30)				
Age (M [SD]) *	15	25.20 (10.61)	30	25.57 (9.31)
Gender (% male) *	15	60.0%	30	63.3%
Minority Status (% minority)	12	50.0%	29	37.9%
Educational attainment (% at least some college)	15	66.7%	30	56.7%
Program type (% AAS degree)	15	0.0%	30	0.0%
College D (Pn = 31; Cn = 31)				
Age (M [SD]) *	31	29.94 (10.65)	31	29.97 (9.99)
Gender (% male) *	31	48.4%	31	54.8%
Minority Status (% minority)	30	26.7%	31	41.9%
Educational attainment (% at least some college)	28	71.4%	29	62.1%
Program type (% AAS degree) *	31	67.7%	31	74.2%

[19] Depending on the availability of the data and the results of balance diagnostics, not all variables were used in the matching algorithm. See Appendix C for more detail.

[20] This timeframe was chosen because key elements of the HOPE projects were in place by Fall 2014, and the participants who were enrolled between Fall 2014 and Spring 2016 would have sufficient time to complete their programs of study. It is important to note that, program length differed by program of study across different colleges. Hence, some colleges may only one cohort included in the impact study while some colleges had more than one cohort of participants depending on the amount of time required for program completion.

[21] The PSM matching ratio varied across colleges, ranging from a 1:1 ratio to 1:5 ratio. The decisions were made based on the number of potential comparisons as well as the results of balance diagnostics (i.e., baseline equivalence). See Appendix C for more detail.

Characteristics (Pn = number of participants; Cn = number of comparisons)	Participants		Comparisons	
	Valid n	Valid % *M (SD)*	*Valid n*	Valid % *M (SD)*
College E (Pn = 23; Cn = 46)				
Age (M [SD]) *	23	26.17 (8.82)	46	26.20 (8.18)
Gender (% male) *	23	60.9%	46	69.6%
Minority Status (% minority)	21	28.6%	45	13.3%
Educational attainment (% at least some college) *	23	95.7%	46	93.5%
Program type (% AAS degree)	23	0.0%	46	0.0%

Note. Not all key covariates that are listed in this table were included in the matching algorithm. Only the variables that had complete information were included in PSM. Variables that caused imbalance were excluded.
*variables included in the matching algorithm

Data Analysis

To understand the impact of the HOPE project on grant participants, evaluators conducted regression statistical models that predict the outcomes of interest as a function of program participation status (i.e., HOPE participants vs. comparison students) while controlling for a set of background characteristics (i.e., covariates). The outcomes of interest were:

- Completion status[22]
- Completion of more than one certificate or degree
- Furthering education status [23]

The key covariates were:

- Age
- Gender (male vs. female)
- Minority status (minority vs. Caucasian)[24]
- Educational attainment (high school/GED vs. at least some college)
- Program Type (AAS vs. non-AAS program)

Because the key covariates were not collected consistently across the HOPE colleges, there were missing data on some key covariates among some colleges. Evaluators performed multiple imputation as needed so that cases with missing values can be retained in the impact analyses. Multiple imputation has been found to be an effective strategy to handle missing data (Graham, 2009; Enders, 2010), and it is a better alternative when the missing pattern is not random missing data (Collins, Schafer & Kam, 2001).

[22] An individual is counted as a completer when he or she has successfully completed their declared program of study within the designated timeframe (e.g., complete a 2-year program by the end of the 2-year mark).
[23] An individual who has completed a TAACCCT-funded program of study and continues to take courses outside of the college within the next two semesters after program completion is defined as an individual who continued for further education.
[24] Individuals who were multi-racial were grouped under minority group.

As shown in Table 20, the amount of missing data was small across all colleges except for one variable (i.e., education attainment) within College A. Additionally, it should be noted that the completion of more than one certificate or degree outcome is only relevant for College B. This is primarily because for all other colleges the stackable credentials were developed during the duration of the grant. Comparisons did not have the same opportunities to earn multiple credentials.

Table 20. Percent of Missing by Outcomes

College	Covariates	% Missing by Outcome		
		Completion Status	Completion of more than one certificate or degree	Furthering Education
College A	Age	0.0%	Not applicable	0.0%
	Gender	0.0%		0.0%
	Minority status	0.0%		0.0%
	Education attainment	68.8%		66.7%
College B	Age	0.0%	0.0%	0.0%
	Gender	0.0%	0.0%	0.0%
	Minority status	0.0%	0.0%	0.0%
	Education attainment	0.0%	0.0%	0.0%
	AAS degree	0.0%	0.0%	0.0%
College C	Age	0.0%	Not applicable	0.0%
	Gender	0.0%		0.0%
	Minority status	8.9%		0.0%
	Education attainment	0.0%		0.0%
College D	Age	0.0%	Not applicable	0.0%
	Gender	0.0%		0.0%
	Minority status	1.6%		0.0%
	Education attainment	8.1%		0.0%
	AAS degree	0.0%		0.0%
College E	Age	0.0%	Not applicable	0.0%
	Gender	0.0%		0.0%
	Minority status	4.4%		1.8%
	Education attainment	0.0%		0.0%

When imputing the missing values, the outcome of interest was included in the imputation model and 10 sets of imputed data were created per dataset. After imputing the datasets, logistic regressions were conducted to examine the extent to which the outcomes of interest differed between the participants and the selected comparisons while controlling for the covariates. The associated covariates for each impact model were identified in Table 20. These covariates were chosen for theory-driven reasons. However, to increase the precision of the impact estimate, the covariates that did not significantly impact the model at a $p < 0.20$ level were dropped.[25] The pooled results from multiple imputation were reported and used to guide the decision of retaining or dropping covariates from the impact statistical models. After dropping the covariates with a p value

[25] Research has shown that a backward selection methodology using a $p < 0.20$ criterion for model inclusion does a satisfactory job of identifying covariates that should be retained or dropped in order to increase the precision of impact estimate (Budz-Jorgensen, Keiding, Grandjean & Weihe, 2001; Price, Goodson & Stewart, 2007).

of equal or greater than 0.20, multiple imputation became unnecessary for most of the datasets, except for College D's completion status outcome.

Findings

This section presents the findings of project impact on participant outcomes. Results are presented by the outcomes of interest: program completion status, completion of more than one certificate or degree, and furthering education status. A detailed statistical report is provided in Appendix D.

Program completion. As shown in Table 21, program completion rate varied by college. Overall, the program completion rate was higher among the HOPE participant group than the comparisons. The difference ranged from 3% (College D) to 23% (College C).

Table 21. Program Completion Rate by Group by College

College	HOPE Participants			Comparisons			% Completion Rate Difference
	Number of Participants	Number of Completers	Program Completion Rate	Number of Comparisons	Number of Completers	Program Completion Rate	
College A	8	7	87.5%	24	20	83.3%	4.2%
College B	18	12	66.7%	90	47	52.2%	14.5%
College C	15	7	46.7%	30	7	23.3%	23.4%
College D	31	8	25.8%	31	7	22.6%	3.2%
College E	23	22	95.7%	46	35	76.1%	19.6%

Logistic regressions were conducted to understand the extent to which the differences in program completion rates were statistically different between the participants and comparisons. As shown in Table 22, the program completion rate of HOPE participants was not statistically significantly different from the completion rate of comparisons across all colleges. However, some covariates were significant predictors of program completion status. Specifically, within College C and College E, individuals who had at least some college experiences upon enrollment were 6.30 and 25.72 times, respectively, more likely than those with a high school diploma or GED to complete their program of study. Within College D, male students were 0.09 times less likely than female students to complete their program of study, and students from minority racial/ethnic backgrounds were 12.58 times more likely than their Caucasian peers to complete their program of study.

Table 22. Program Impact on Program Completion Status by College

College	Variables included in the impact model	Statistically significant predictor of program completion status
College A	• Group	• None
College B	• Group • Program type	• None

College	Variables included in the impact model	Statistically significant predictor of program completion status
College C	• Group • Education attainment	• Education attainment (β = 1.84, *SE* = 0.86, p = 0.032, odds ratio = 6.30)
College D	• Group • Gender • Minority • Education attainment	• Gender (β = -2.40, *SE* =0.87, p = 0.006, odds ratio = 0.09) • Minority (β = 2.53, *SE* = 0.89, p = 0.005, odds ratio = 12.58)
College E	• Group • Education attainment	• Education attainment (β = 3.25, *SE* = 0.87, p = 0.021, odds ratio = 25.72)

Note. To increase the precision of the impact estimate, the covariates that did not significantly impact the model at a p < 0.20 level were dropped. Group was coded as 1 (HOPE participants) and 0 (comparisons); program type was coded as 1 (AAS) and 0 (non-AAS); Education attainment was coded as 1 (at least some college) and 0 (high school or GED); minority was coded as 1 (non-Caucasian) and 0 (Caucasian).

Completion of More Than One Credential or Degree. As noted in the data analysis section, this outcome was only examined with the College B sample. Findings reveal that, of those who completed at least one program of study, 33% (4 out of 12) of HOPE grant participants completed more than one certificate or degree; yet, 51% (24 out of 47) of the comparisons completed more than one certificate or degree. Results of logistic regression indicated that the difference in completion of more than certificate or degree rate was not statistically significant between participants and comparisons (β = -0.90, SE = 0.70, p = 0.197, odds ratio = 0.41).

Furthering Education. As shown in Table 23, the furthering education rate varied by college. Overall, the furthering education rate was lower among the HOPE participant group than the comparisons, except for College E.

Table 23. Furthering Education Rate by Group by College

College	HOPE Participants			Comparisons			% Furthering Education Rate Difference
	Number of participants completing a program	Number of completers furthering education	Participants' furthering education rate	Number of comparisons completing a program	Number of completers furthering education	Comparisons' furthering education rate	
College A	7	2	28.6%	20	9	45.0%	-16.4%
College B	12	8	66.7%	47	36	76.6%	-9.9%
College C	7	1	14.3%	7	5	71.4%	-57.1%
College D	8	1	12.5%	7	1	14.3%	-1.8%
College E	22	10	45.5%	35	0	0.0%	45.5%

Logistic regressions were conducted to understand the extent to which the differences in furthering education rates were statistically different between the participants and comparisons. As shown in Table 24, the furthering education rate was only statistically significant between participants and comparisons for College C. For College C, HOPE grant participants were 0.07

times less likely than the comparisons to continue to further education (β = -2.71, SE = 1.37, p = 0.047, odds ratio = 0.07).

Table 24. Program Impact on Furthering Education Status by College

College	Variables included in the impact model	Statistically significant predictor of further education status
College A	• Group	• None
College B	• Group • Age	• None
College C	• Group	• Group (β = -2.71, SE = 1.37, p = 0.047, odds ratio = 0.07).
College D	• Group	• None
College E	• Group • Gender	• None

Note. To increase the precision of the impact estimate, the covariates that did not significantly impact the model at a p < 0.20 level were dropped. Group was coded as 1 (HOPE participants) and 0 (comparisons); Gender was coded as 1 (male) and 0 (female).

Overall summary. The overall findings are summarized as follow.

- The HOPE grant participants, overall, had higher program completion rates as compared to comparisons across all colleges, but the differences were not statistically significant.
- The HOPE grant participants within College B had a lower rate of completing more than one certificate or degree than the comparisons; yet, the difference was not statistically significant.
- Findings of the impact on further education status differed across colleges. Specifically, the HOPE grant participants in College A, College, B, College C, and College D, overall, had lower furthering education rates than the comparisons across all colleges. The difference was statistically significant only for College C. In contrast, the HOPE grant participants in College E had a higher furthering education rate than the comparisons; yet, the difference was not statistically significant.

The findings should be interpreted with caution the limitation of the data available for PSM. Overall, McREL evaluators were able to increase the overall sample sizes for all colleges for the impact study through an increase of the matching ratio. Yet, the main constraint of the impact study was the limitation to gather baseline data from the participants as well as potential comparisons who were enrolled in the colleges between 2005 and 2011. Research has identified key predictors of postsecondary education success, including college readiness skills, high school GPA, and financial support status (American Institutes for Research, 2013). However, these data were not consistently available across the HOPE colleges especially for the potential comparisons. The only relevant variable that was collected from grant participants across colleges was educational attainment status (i.e., high school diploma/GED vs. some college credits); however, this data was also limited with the potential comparisons. Moreover, only two out of five HOPE colleges had educational attainment status data from both participants and potential comparisons that allowed McREL

evaluators to include the variable in the matching algorithm.[26] Lastly, it is also important to understand that the findings of this impact study are not generalizable to all HOPE participants given that only a subgroup of HOPE participants were included in the impact analysis given the specified timeframe that is appropriate for the impact study (see Sample section for the specified timeframe, p. 43.

Study 3

This study addresses the third outcome question—what were the underlying mechanisms through which the HOPE program had a positive impact on participant outcomes? McREL evaluators explored the possible answers by collecting data from grant participants through focus groups.[27] This section provides details on the methods, sample, analysis plan, and findings.

Methods

The main data sources for Study 3 were the participant focus groups. Details about the instruments are described in Data Collection Methods section.

Sample

A total of 68 participants across seven focus groups from HOPE colleges were interviewed in October/November 2016. Generally, the participants were in their second (final) year of the program of study. During the focus groups, participants were asked to identify the most valuable aspects of the HOPE program in which they were enrolled.

Data Analysis

Thematic analysis was conducted to analyze the participant focus group data. Thematic analysis focuses on identifying words or phrases that summarize the information being shared in the interviews. As such, data were segmented into passages through coding and emerging themes were identified, then the data were reviewed for replicating categories. These categories were given broad codes; finer coding was employed to identify patterns emerging within each coded set. Themes were then summarized by salient, prevalent issues.

[26] It should also be noted that, for one college, it causes baseline imbalance by including the educational attainment in the matching algorithm. Hence, educational attainment status was removed from the matching algorithm for the college, but was entered in the impact statistical model for the purpose of control.

[27] The initial study plan was to collect participant exit data from all participants before program exit regardless of program completion status. Evaluators planned to use exit data and link it with program completion status to identify the factors that are associated with program completion and persistence. However, given the challenge to collect data from participants who Exited the program without completing their programs (e.g., dropouts, transfers to other colleges or programs of study), the exit survey was only administered to those who completed the O&P program of study. Hence, quantitative data that were needed to address this question were not available.

Findings

During the focus groups, participants were asked what they perceived to be the most valuable aspects of their O&P program and why. Students indicated that having high-quality instructors and being able to complete the coursework in a hands-on, technologically advanced learning environment were the most valuable aspects of their programs of study. One student shared, "By the time we get out and are looking for jobs, we are going to be so much more prepared than [graduates from] the other schools." The students were also quite appreciative of the experiential learning opportunities they had through their clinical rotations and internships.

The Student Exit Survey data reinforced the themes that emerged from the student focus groups. High marks were given for the quality of the instruction and the exposure to lab equipment and technology that prepared them to be competitive in the O&P job market (a detailed report of the quality of student support and instruction quality are provided in Chapter 3, Quality of Project Implementation section, see p. 30). Furthermore, 80% or more of students responding to an exit survey rated the quality of the O&P program at their college as good or excellent.

From the career navigator to lab technicians and professors, the students said they had various individuals who supported their development in the program and prepared them for post-graduate success. One student summed up his experiences stating, "[The faculty] prepare you to go out into a field and give you the stuff and the tools that you were going to need to find a job wherever it is, in the U.S. or overseas."

Chapter 5. Evaluation Summary of Findings

The final evaluation report focuses on Year 4 of the HOPE project (i.e., October 1, 2016 to September 30, 2017).[28] The following summarizes key evaluation findings. The first part of the summary includes implementation evaluation findings for one of the four formative evaluation questions.[29] The second half of the summary provides outcome evaluation findings for the three summative evaluation questions.

Summary of Implementation Evaluation Findings

To what extent were the key strategies and activities implemented with fidelity?

Details about the key adherence assessment findings are presented above and briefly summarized below. A summary of findings for quality and responsiveness as perceived by the HOPE project participants and partners is also provided.

Adherence of Implementation. The HOPE project's implementation across all seven core components was at the 93rd percentile at the end of the grant implementation period (March 31, 2017) which is still quite commendable given the ambitious scope of work stated in the proposal. The primary component that was not fully developed was Core Component 3: Develop Accelerated O&P Career Pathways. Five of the nine outputs were self-rated as high implementation (one point away from full implementation).

Quality of Implementation. As measured by the Student Exit Surveys, HOPE project participants reported that the quality of the instruction was high and that they were satisfied with the academic advising they received. The majority of students were also pleased with the lab and training equipment and felt that it helped facilitate their learning experience. HOPE participants who have completed their O&P program(s) of study indicated high ratings of satisfaction and quality with their program.

Responsiveness. The partners completing the Partner Survey (approximately one fourth of the 140 HOPE partners) reported moderate to low levels of involvement in project activities. However, the majority of respondents indicated satisfaction with their current level of involvement with the project. HOPE project partners agreed that the project had a positive impact on the O&P industry and the local community and that they were likely to recommend the HOPE program to others with whom they collaborate. Furthermore, the partners said that the partnership between their company or organization would extend beyond the life of the grant and that they would consider collaborating with the college on other projects in the future.

[28] The HOPE project extended its implementation into the first six months of Year 4 (i.e., October 1, 2016 – March 31, 2017); thus, the final report includes findings on both implementation and outcomes.
[29] The other three formative evaluation questions were addressed in prior evaluation reports.

Overall, HOPE participants who have completed their O&P program(s) of study were satisfied with the program. Furthermore, they reported that they were likely to recommend this college's O&P program to others.

Summary of Outcome Evaluation Findings

To what extent does the HOPE project achieve project outcomes (i.e., the nine TAACCCT outcome measures)?

The HOPE project was successful in exceeding three of the outcome indicator performance targets. First, 1,873 unique participants were served by the HOPE project. Second, nearly three fourths of the participants (72%) participants completed their program of study. Third, 11% of the participants were still retained in their program of study or enrolled in other TAACCCT-funded programs of study by the end of grant implementation. It is also worth noting that of the 1,873 unique participants, 71% earned at least one certificate of less than one year.

Although the project did not meet the target for the wage increase outcome indicator and the numbers for employment data are very low (two employment indicators), there are several reasons for this. First, and most importantly, the projections were set extremely high in the proposal narrative without sufficient guidance from DOL on how they were defining the indicators. Related to that, any participant, regardless of the type of job they had when initially enrolled as a participant was counted as an incumbent worker and could never be counted under the employment indicators even if they went on to complete their program of study and obtain a position in the O&P field. Second, the numbers are likely to be underestimated primarily due to the time lag in accessing employment and wage data from the workforce agencies for the colleges that were able to establish data sharing agreements. Third, for the colleges that were unable to obtain data sharing agreement with their workforce agencies, the primary challenge was the difficulty to track participants after program exit and the permission to use participant self-report data were not given by the DOL until the third year of the grant. By that time, it was even more challenging to track participants who left the program during the first two years of the grant.

To what extent did the HOPE project have an impact on participants?

A quasi-experimental design using PSM was performed to understand the extent to which the project has impacted participant outcomes. The outcomes of interest included program completion status, completion of more than one certificate or degree program, and furthering education status. Results are summarized as follows.

- The HOPE grant participants, overall, had higher program completion rates as compared to comparisons across all colleges; yet, the differences were not statistically significant.

- The HOPE grant participants within one college [30] had a lower rate of completing more than one certificate or degree as compared to comparisons (18% difference); yet, the difference was not statistically significant.
- Findings of the impact on the furthering education status differed across colleges. Specifically, the HOPE grant participants in four out of five HOPE colleges, overall, had lower furthering education rates as compared to comparisons across all colleges. The difference was statistically significant for one college. In contrast, one college had a higher furthering education rate as compared to comparisons; yet, the difference was not statistically significant.

Overall, although the differences in program completion rates were not significant in statistical term, the differences were quite large for several colleges. Specifically, three colleges had a difference in program completion rates between participants and comparisons, equal to or greater than 15%. In terms of completion of more than one certificate or degree outcome and furthering education status, the rates seem to be higher among comparisons than among participants. One plausible explanation is the rising costs of higher education in the past two decades. According to the U.S. Department of Education, National Center for Education Statistics (2016), the average cost of two-year public institutions was $7,721 per academic year in 2005; ten years later, the average cost increased to $9,586. The average cost for four-year public institutions was even greater, increasing from $14,401 in 2005 to $18,632 in 2015. An individual who has completed a two-year degree and wants to continue his/her education in a four-year institution would have to pay at least $37,264 (for two years) to $74,528 (for four years) depending on how many credits from the two-year degree are transferable to the four-year institution, as compared to $28,802 to $57,604 10 years ago. Time and cost required for higher education are the key factors when individuals decide whether they want to continue for further education, and whether further education can benefit them long-term (e.g., ability to pay off student loan, greater earning, promotion). With the increasing cost of higher education and the need to pay off student loans, students may want to enter the job market first and hold off pursuing further education immediately after they completed a program of study.

One HOPE college did have a higher furthering education rate among HOPE participants than comparisons. One plausible explanation is that the college established an articulation agreement with a four-year institution so that grant participants can easily transfer the credits earned to the four-year institution. However, before the grant, the college also had an articulation agreement with the same institution but for a different program; it is unclear why the comparisons did not take the advantage of that agreement and pursue further education.

However, caution should be exercised when interpreting these findings due to the constraints of PSM (i.e., lack of statistical power to detect meaningful differences). Additionally, the findings are not generalizable to all HOPE grant participants.

[30] This outcome is only relevant for one of the HOPE colleges.

What were the underlying mechanisms through which the HOPE program has a positive impact on participant outcomes?

McREL evaluators explored the potential underlying mechanisms explaining the effect of HOPE on grant participants by interviewing 68 grant participants through seven focus groups. The common elements that were perceived as effective and high quality were the instructors, hands-on experiences, and a technologically advanced learning environment. Comprehensive support provided by a group of professionals (e.g., career navigator, professors, lab technicians) was also identified as a key factor that supported participants' success. Further study using different methodology (e.g., testing mediation models by including instructor quality, comprehensive student support) to undercover the specific strategies that work is warranted.

Conclusions

Overall, the HOPE project was implemented as intended, although often the time needed to complete outputs and deliverables was after the timeline projected in the proposal. Partners were engaged in the project to the extent they desired. The HOPE project was able to reach almost 2,000 unique participants and nearly all of those participants completed at least one program of study. Most importantly, HOPE participants were pleased with the quality of instruction, access to technology and student support services offered through the HOPE project.

Although there was not a statistically significant effect of the HOPE project on participant outcomes (i.e., program completion status, completion of more than certificate or degree, furthering education status) in the impact study (Study 2), the null findings were partially due to data limitations (i.e., underpowered). In fact, although there is no statistical evidence to explain whether and how the HOPE work works to support participant success, anecdotes collected from participants through focus groups reveal some promising features of the HOPE project. For instance, participants reported that having high-quality instructors and being able to complete the coursework in a hands-on, technologically advanced learning environment were the most valuable aspects of their programs of study. Findings of the student survey data echo this finding. Specifically, students gave high ratings on the quality of the instruction and the exposure to lab equipment and technology that prepared them to be competitive in the O&P job market.

References

American Institutes for Research (2013). *Predictors of postsecondary success*. Washington, DC: College and Career Readiness and Success Center.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research - conceptual, strategic, and statistical consideration. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Bell, S. H. (2001). *Improving the evaluation of DOL/ETA pilot and demonstration projects: A guide for practitioners* [Research and evaluation report series 01-A]. Washington, DC: U.S. Department of Labor, Employment, and Training Administration.

Bremer, C. D., Opsal, C., Hirschy, A., Castellano, M., Center, B., Geise, A., & Medhanie, A. (2011). *Relative impact of interventions to improve achievement and retention in postsecondary occupational programs*. Louisville, KY: National Research Center for Career and Technical Education, University of Louisville.

Budtz-Jorgensen, E., Keiding, N., Grandjean, E. M., & Weihe, P. (2007). Confounder selection in environmental epidemiology: Assessment of health effects of prenatal mercury exposure. *Annals of Epidemiology, 17,* 27-35.

Century College. (2013). *The Orthotics, Prosthetics & Pedorthics (HOPE) Careers Consortium*. White Bear Lake, MN: Author.

Century, J., Rudnick, M., & Freeman, C. (2010). A framework for measuring fidelity of implementation: A foundation for shared language and accumulation of knowledge. *American Journal of Education, 31*(2), 199-218.

Collins, L.M., Schafer, J.L., & Kam, C.M. (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Psychological Methods, 6*, 330-351.

Dane, A. V., & Schneider, B. H. (1998). Program integrity in primary and early secondary prevention: Are implemention effects out of control? *Clinical Psychology Review, 18*(1), 23-45.

Davidson, W. B., Beck, H., & Milligan, M. (2009). The College Persistence Questionnaire: Development and validation of an instrument that predicts student attrition. *Journal of College Student Development, 50*, 373-390.

Enders, C.K. (2010). *Applied Missing Data Analysis*. New York: Guilford Press.

Fixsen, D. L., Naoom, S. F., Blase, K., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature*. Tampa, FL: University of South Florida.

Good, K., Knotts, A., Knoster, K, & Bumgardner, K. (2017). HOPE careers consortium case studies: Examination of project implementation. Denver, CO: McREL International

Good, K. & Bumgardner. (2016). Orthotics, prosthetics, and pedorthics (HOPE) careers consortium year 2 evaluation report. Charleston, WV: McREL International.

Good, K. & Stone, Z. (2014). Orthotics, prosthetics, and pedorthics (HOPE) careers consortium year 1 evaluation report. Charleston, WV: McREL International.

Guo, S., & Fraser, M. W. (2010). *Propensity score analysis: statistical methods and applications*. Thousand Oaks, California: Sage Publications, Inc.

Graham, J.W. (2009). Missing data analysis: Making it work in the real world. *The Annual Review of Psychology, 60*, 549-576.

Maldonado, G., & Greenland, S., (1993). *Simulation study of confounder-selection strategies*. American Journal of Epidemiology, *138*(11), 923-936.

Price, C., Goodson, B., & Stewart, G. (2007). *Infant Environmental Exposure to Thimerosal and Neuropsychological Outcomes at Ages 7 to 10 Years Technical Report Volume II*. Bethesda, MD: Abt Associates, Inc; Prepared for Immunization Safety Office Centers for Disease Control and Prevention.

Roger, C. J. (2009). Understanding the adult learners' motivation and barriers to learning. *European Society for Research on the Education of Adults, 6-8*, 905-915.

Roseland, D. (2015). Orthotics, prosthetics, and pedorthics (HOPE) careers consortium case study: A look at the processes and impact of collaborative curriculum development. Charleston, WV: McREL International.

What Works Clearinghouse. (2013). *What Works Clearinghouse: Procedures and standards handbook* (Ver. 3). Washington, DC: U.S. Department of Education.

U.S. Department of Education, National Center for Education Statistics (2016). *Digest of Education Statistics, 2015* (NCES 2016-014), Table 330.10.

Appendix A:
Adherence of Implementation Self-Assessment – Year 4[31]

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Core Component 1: Project Start-Up						
Hire project staff (S1.1 and S7.1)	Career Navigators at all five colleges were hired.	4	06/2014	10/2014	Five (5) of the five (5) member institutions hired full-time career navigators. The last member's career navigator was hired full time in October 2014.	Member HR records, meeting minutes, and member QNPR reports
	Project staff at all five colleges were hired and/or reassigned.	4	10/2014	10/2014	All consortium project staff positions that were intended to be filled have been hired by member colleges. One college declined to fill a faculty position and is re-budgeting the money elsewhere.	Member HR records and HOPE managers' meeting minutes
Purchase and install equipment (S1.1)	All five colleges have all equipment ordered, purchased, installed, and ready for use.	3	02/2015		All five institutions completed all of their equipment purchases. Four of the five Members are fully using their equipment. One college is awaiting the final installation of one single equipment item.	Business office records of contracts, receipts, invoices, and/or equipment bids. Note that there is a 36-month timeline allowed for this process per DOL policy.
Convene subcommittees (S1.1)	Subcommittee members from all five colleges participated in the C&A, Evaluation, and Technology subcommittee initial meetings.	4	06/2014	06/2014	All five member colleges had participating representation on each of the three subcommittees.	Subcommittee meeting minutes

[31] The final adherence of implementation self-assessment was completed at the conclusion of the project's implementation (i.e., March 31, 2017).

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Convene steering committee (S1.1)	The initial steering committee was held.	4	10/2014	09/2014	Initial steering committee held in September at an AOPA conference in Las Vegas.	Steering committee meeting minutes
Core Component 2: Participant Recruitment Effort (National)						
Public awareness campaign in partnership with the AAOP (S1.2)	TV PSAs were produced by the AAOP.	4	05/2015	09/2015	Video PSAs were produced by the Academy. Previously, the grant director was sent the radio recordings. A follow up to this process is for the director to get a list of the radio stations and an understanding of the air dates.	Awareness Campaign and Advisory Group (ACAG) meeting minutes, correspondence between the Academy and the consortium director, and a signed contract between Century and the Academy
	Radio PSAs were produced by the AAOP.	4	05/2015	07/2015	Radio PSAs were completed.	ACAG meeting minutes and correspondence between the Academy and consortium director
	Program brochures were produced by AAOP.	4	07/2014	08/2015	Nearly all of the program brochures were produced by May 2015. Then, final specialty brochures were completed in August 2015.	ACAG meeting minutes and e-communication between the Academy and Century
	TV PSAs were implemented by the AAOP.	4	08/2015	08/2015	TV PSAs were launched in August 24, 2015.	Ongoing e-communication and shared reports from the Academy
	Radio PSAs were implemented by the AAOP.	4	08/2015	08/2015	Radio PSAs were launched on August 19, 2015 on schedule.	Ongoing communication via e-mail and phone, and shared reports from the Academy

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Public awareness campaign in partnership with the AAOP (S1.2) *(continued)*	Website developed by the AAOP.	4	01/2015	02/2015	Website has been developed and launched.	ACAG meeting minutes and e-communication between the Academy and Century
Core Component 3: Develop Accelerated Orthotics and Prosthetics (O&P) Career Pathways						
Convene C&A and Technology subcommittees (S3.1)	C&A and Technology subcommittee members were identified and are comprised of faculty and industry leaders.	4	05/2014	09/2015	The C&A and Technology subcommittees have faculty representation from all member colleges and meet regularly.	C&A and Technology subcommittee meeting minutes
Align policies and procedures across colleges (S2.2) and map certificate and degree ladder/ articulation system (S2.3)	C&A subcommittee and faculty members worked on aligning policies and procedures across the colleges. The policies and procedures are clearly outlined in the HOPE Operations Manual.	3	12/2014		The aligning of policies and procedures across institutions was captured in an agreed upon in the HOPE Consortium Operations Manual. The Operations Manual describes the general policies and procedures that will be followed throughout the life of the grant. It should be noted that the Operations Manual is a live document and can be changed if necessary.	C&A and managers' meeting minutes
	The C&A subcommittee created a certificate and degree articulation map.	3[1]	09/2014		A complete mapping of a certificate and degree ladder/articulation system is pending C&A approval of changes/additions to existing course curricula and completing the development of new course curricula.	C&A meeting minutes

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Outreach and assessment of the industry to build an O&P career (S6.1), such as conducting a future workforce demand study for the O&P industry (S2.4)	The NCOPE reviewed and developed new standards that meet the education and training needs for current and future O&P professionals, and conducted a future demand study within the O&P sector. Specifically, a publishable and defined future workforce demand study for the O&P industry was produced.	4	09/2014	05/2015	Study is complete, as of May 2015. NCOPE is communicating how it will be delivered to grant staff and preparing the press release which should entail directions about how to share the information with necessary individuals.	Signed contract involving work performed, e-communication, between NCOPE and Century
Develop new courses, credentials, and degrees that are aligned with industry standards and competencies (S3.2-S3.4)	The C&A subcommittee developed new courses and credentials that are aligned with industry standards and conducted cognitive task analyses[2] to incorporate experts' cognitive processes in course development.	3	09/2014		Cognitive Task Analyses report was prepared by Century College HOPE staff and has been reviewed by the Consortium Director.	C&A meeting minutes
	The C&A subcommittee defined the pre-program course "brain map" (i.e., process and steps) of tasks and processes for course development (e.g., course outline, syllabi, and course requirements).	4	09/2014	09/2014	C&A subcommittee agreed upon course development steps and a work flow chart. It includes an agreed upon review rubric that will be used as new and updated course curricula are approved.	C&A meeting minutes

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Develop new courses, credentials, and degrees that are aligned with industry standards and competencies (S3.2-S3.4) *(continued)*	The C&A and Technology subcommittees led the development of new in-class and online courses, credentials, and degrees, including five new credentialed courses,[3] three new certificates,[4] and three new two-year degrees.[5]	3	12/2014		The Consortium finished all development of the number of courses and certificates they sought out to complete on or before March 31, 2017. Alternative courses substituted originally planned courses based on industry need and employer feedback.	C&A and Technology subcommittee meeting minutes
	Each of the five colleges has submitted its newly developed or revised courses, credentials, and degrees (as reflected on the Program of Study form) for approval to its colleges' Academic Affairs and Standards Council or equivalent approval body.	3	04/2015			Work on this aim has been very slow to develop; however, all of the colleges have submitted several courses to their review boards. This is not a rating of 4 because none of the colleges have been able to put forth all the planned courses for approval on or before March 31, 2017.
Develop a system of PLA, including (1) definitions of prior learning contexts, processes, and procedures (S5.1, S5.2, and S5.3) and (2) evaluations of military crosswalks against O&P curricula (S5.4)	The C&A subcommittee will have an outline for validation of prior learning experiences for consideration by each college.	4	03/2015	08/2015	Member colleges shared their processes with the lead college. See Prior Learning Assessments (PLA) chart 8.11.15 created by HOPE Century College staff and shared to each member college after receiving this info and verifying using published information on websites, documents, etc.	C&A and managers' meeting minutes and e-communication between members and Century

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Develop a system of PLA, including (1) definitions of prior learning contexts, processes, and procedures (S5.1, S5.2, and S5.3) and (2) evaluations of military crosswalks against O&P curricula (S5.4) *(continued)*	The C&A subcommittee will review documentation provided by each college on its military vocations, conduct a crosswalk with the O&P curricula, and develop an outline for validation of prior learning experiences in the military for consideration by each college. (Indicator determined to be not applicable.)	0	06/2015	--	This aim, after in-depth research and attempts, was not implemented, since the O&P skills are generally not taught, nor have close overlapping skills, provided in military vocations. C&A will draft a letter to explain this process and why this will stay a "0". Ideally this will be listed as "Not Applicable (NA)" versus a "0".	C&A and managers' meeting minutes
Core Component 4: Create Technology-Based and Online Learning Opportunities						
Plan curriculum conversion to online modality (S4.1) and develop technology-enabled components into an easy-to-access open source, web-based learning system (S4.2)	Instructional designers (or instructional technologists) collaborated to design, develop, and install online learning opportunities for at least 10 O&P online courses.	3	10/2014		The Consortium completed, uploaded, and launched a total of eight (8) online OER courses through its web-based learning system partner on or before March 31, 2017.	C&A and Technology subcommittee meeting minutes
	The Consortium has provided access to all colleges for the 10 new online courses and materials, which are hosted by the third-party educational platform.	4	09/2015	03/2017	All courses are available through D2L and accessible by all colleges. However, the last clause of the indicator is no longer applicable (i.e., which are hosted by the third-party educational platform). With the removal of this clause, it is believed that the intent of the indicator has been fully implemented (i.e., rating of "4").	C&A and Technology subcommittee meeting minutes

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Technology integration professional development (S4.3)	Training modules for online instruction of 10 O&P courses were uploaded to the third-party educational platform. (Indicator determined to be not applicable.)	NA	12/2014	--	This is no longer applicable, as a more cost-effective approach presented itself to the Consortium. It was decided upon to partner with an existing online learning provider, OandPEdu, which meant that the technology integration professional development was no longer a high priority. Therefore, this will be moved from a "0" to an NA if possible.	Technology subcommittee meeting minutes
	Instructional technologist program staff and/or an online learning vendor providing an open source, web-based learning system completed a train-the-trainer professional development workshop or training class for HOPE Careers Consortium faculty. (Indicator determined to be not applicable.)	NA	06/2015	--	This is no longer applicable because of the partnership with an already existing web-based learning system provider. Therefore, this will be moved from a "0" to an NA if possible.	Technology subcommittee meeting minutes
Core Component 5: Implement a Case Management Model that Supports Student Retention and Job Placement						
All activities relevant to Core Component 5 will be documented and measured through the Student Support Services Tracking Form.						

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Core Component 6: Develop Articulation Agreements with Four-Year and Graduate O&P Degree Programs						
Conduct outreach to colleges and universities to develop and obtain articulation agreements (S8.1) and work with faculty to establish agreement policies (e.g., admission, credit transfer, etc.) (S8.2)	The C&A subcommittee developed courses and credentials with program credits that articulate to higher-level degrees as evidenced by a course offering guidesheet.	4	12/2015	03/2017	Century College and Concordia University in St. Paul, MN reached agreement and achieved accreditation for a new Articulations to MS in O&P program. St. Petersburg operates under a partnership with two Florida four-year universities, and the three other HOPE Members have pursued and continue talks with universities on developing articulation agreements or partnerships. Some of those discussions have been ongoing for over 1-2 years.	Century business and administration records
	The C&A subcommittee developed courses and credentials that are stackable and/or offer transferable credits or skills recognized by four-year and graduate O&P degree programs. College administration leaders and the consortium project manager will seek out new and existing relations with four-year and graduate O&P degree programs to develop or strengthen relations across colleges that help lead to at least one letter of interest or an articulation agreement.	4	06/2016	03/2016	Century College and Concordia University in St. Paul, MN together began a new partnership agreement that included developing courses and credentials that are stackable and/or offer transferable credits and skills recognized at Concordia's four-year and graduate O&P degree programs. The C&A subcommittee can use this model as other Member colleges look to open up partnerships with other four-year and graduate O&P degree programs. Century can serve as a model for other colleges as it is now graduating its first cohort.	Century O&P department and administrative files

Activities	Indicators of Full Implementation (Outputs)	Level of Implementation (0/1/2/3/4)	Implementation Timelines		Implementation Evidence	
			Planned (MM/YY)	Actual for Full Implementation (MM/YY)	Evidence Summary	Evidence Source
Core Component 7: Continuous Program Improvement						
Create a formal structure to ensure continuous improvement and sustainability (S1.4), such as implementing an Employment Results Scorecard plan and continuous improvement work plan.	After McREL delivers the annual evaluation report, the evaluation subcommittee will hold a meeting to review evaluation findings and develop (if necessary) an action plan to guide program improvement.	4	09/2017	09/2015	The Year 1 Report (Good & Stone, 2014) was received and reviewed by each college, and discussed at several meetings to guide program development. The Year 2 report is in process. These illustrate that there is a clear structure to keep improving through the end of the grant.	Evaluation subcommittee meeting minutes and e-communication between McREL and Century

Abbreviations:

AAOP = American Academy of Orthotists and Prosthetists
AAS = Associate in Applied Science
ACAG = Awareness Campaign Advisory Group
AOPA = American Orthotic Prosthetic Association
AS = Associate in Science
C&A = Curriculum and Articulation
D2L = Desire 2 Learn platform
MS = Master of Science
NCOPE = National Commission on Orthotic and Prosthetic Education
O&P = orthotics and prosthetics
OER = online educational resource
PLA = prior learning assessment
PSAs = public service announcements
QNPR = quarterly narrative progress reports

Notes:

[1] Some credentialed course curricula are being revised, new certificates are being developed, and new degrees (i.e., AS/AAS in Pedorthics) are just underway. Once these courses are completed and approved by the C&A subcommittee, it will be a more ideal time to agree on the certificate and degree articulation map.
[2] The six new credentials are (1) Animal Patient Certificate, (2) Mastectomy Fitter, (3) Orthotic and Prosthetic Assistant Advanced Technical Certificate, (4) Orthotic and Prosthetic Clinical Applications Diploma, (5) Pedorthic Certificate, and (6) Therapeutic Shoe Fitter,
[3] The three new certificates are (1) Computer-aided Drafting and Computer-aided Manufacturing (CAD CAM), (2) Orthotic and Prosthetic Office Assistant, and (3) Wheelchair Technology.
[4] The three new two-year degrees are (1) Associate in Applied Science-Transfer (AAS-T) in Orthotic and Prosthetic Technology, (2) Associate in Science (AS)/Associate in Applied Science (AAS) in Pedorthics, and (3) AS in Orthotic and Prosthetic Technology.

Appendix B: Propensity Score Matching Results

McREL researchers conducted propensity score matching (PSM) to identify a group of matched comparisons who were similar to the HOPE participants. In this appendix, the PSM method and the criteria for balance diagnostics are discussed first, followed by the PSM results for each college.

Methods

The main purpose of PSM is to identify a group of comparisons who share similar characteristics that are associated with the outcomes of interest as the participant group at baseline. The main outcomes of interest in this study include (1) program completion status, (2) earning more than one certificates or degrees, and (3) continuing on for further education. Hence, the characteristics that may be associated with these outcomes include (1) age, (2) gender (male vs. female), (3) minority status (Caucasian vs. non-Caucasian[32]), (4) educational attainment (high school diploma or GED versus at least some college), and (5) program type (credential, diploma, or AAS degree). These variables, also referred to as covariates, were included in the matching algorithm whenever possible[33] to ensure that the selected comparisons were similar to the HOPE participants as much as possible.

McREL evaluators collaborated with the project staff from each college to identify a list of comparison programs that were offered through the HOPE colleges before the grant. Specifically, these comparison programs needed to be similar to the HOPE programs in terms of the focus of the program, program length, program type, and number of credits. Table B-1 presents the list of comparison programs identified for each HOPE program across the colleges. Overall, the selected comparison programs and HOPE programs are the same in terms of program focus, program type, and credit hours; yet, participants of HOPE received extra services (e.g., individualized student support services; job placement support) and were trained with the enhanced curricula that were provided through the HOPE grant.

[32] The multi-racial group was merged with the non-Caucasian group.

[33] These data were not collected consistently across colleges. Nevertheless, some data, even though they were collected in the colleges' institutional research database, are incomplete (e.g., a large number of missing data). McREL evaluators made different decisions for each of the colleges to include different variables in the matching algorithm based on the availability of the data within each college. The selection of these variables is reported in this appendix (see the PSM Results and Balance Diagnostics section).

Table B-1. Programs of Study

College	Programs	Program Type	# of Credits	Program Length
College A	Orthotic/Prosthetic Tech	AAS	110	2 years
College B	Prosthetic Technician	Diploma	46	3 semesters
	Orthotic Technician	Diploma	46	3 semesters
	Orthotic Technology	AAS	60	4 semesters
	Prosthetic Technology	AAS	60	4 semesters
College C	O&P Technologies	AAS	73	2 years
College D	Orthotics & Prosthetic Technician	AAS	132	2 years
	Orthotic Certificate	Certificate	66	1 year
	Prosthetic Certificate	Certificate	66	1 year
College E	Orthotics & Prosthetics	BAS	103	5 semesters

To allow for PSM, the size of the potential comparisons (i.e., individuals who were enrolled in the selected comparison programs) has to be at least three times the size of the HOPE participant group. Therefore, each college provided data for all individuals who were enrolled in the selected comparison programs between Fall 2011 and Spring 2015.

After reviewing the comparison data from all colleges, McREL evaluators determined college-level matching was the best approach for this study for several reasons. First, even though under the umbrella of HOPE all five colleges offered programs in the O&P field, as shown in Table B-1, program characteristics (e.g., number of credits, program length, program types, program curricula) are quite different across the colleges. Because of various program lengths and college enrollment terms (e.g., quarterly schedule versus semester schedule), the timeframe to include potential comparisons varied. Second, PSM does not allow for missing data. It is critical to have complete data for the key covariates that were identified in the first paragraph of this section. However, as discussed earlier, the key covariates were not collected consistently across the HOPE colleges. Cases without complete information would be removed from the impact study if the matching was conducted at the consortium level. The key covariates used in the matching process are discussed in more detail in the PSM Results and Balance Diagnostics section. Lastly, the sample size of HOPE participants varied across colleges. For colleges with a smaller sample size, the matching ratio can be increased to strengthen the study power (i.e., increase the sample size).

PSM was performed in the R Statistical Software Program using the MatchIT package. A logit model was used to determine propensity scores, on which nearest neighbor matching was utilized. A caliper of 0.01 was applied to strengthen the balance of the matching and replacement was not utilized as the improvement in balance did not outweigh the risk of biasing the model, particularly given that some controls were being selected upwards of 10 times. Table B-2 shows the covariates, matching ratio, and sample sizes for PSM by college. The results are reported anonymously.

Table B-2. Covariates, Matching Ratio, and Final Sample Study for the Impact Study

College	Covariates					Matching Ratio	Sample Size		
	Age	Gender	Minority	Program Type	Education Attainment		Potential Comparisons	HOPE Participants	Comparisons
College A	x	x	x			1:3	111	8	24
College B	x	x	x			1:5	258	18	90
College C	x	x				1:2	65	15	30
College D	x	x		x		1:1	143	31	31
College E	x	x			x	1:2	149	23	46
Total							**726**	**95**	**221**

Note. Gender was coded as 1 (male) and 0 (female); minority was coded as 1 (non-Caucasian) and 0 (Caucasian); enrollment status was coded as 1 (full-time) and 0 (part-time) upon enrollment; program type was coded as 1 (certificate), 2 (diploma), and 3 (AAS degree); educational attainment was coded as 1 (at least some college) and 0 (high school or GED).

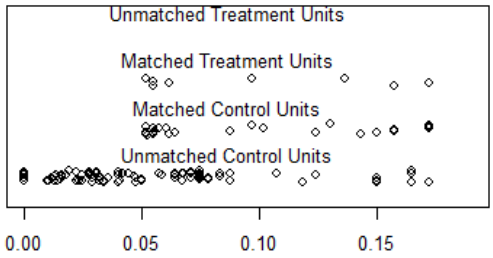
After the matching process was complete for each college, balance diagnostics were conducted to check the quality of the matches (i.e., baseline equivalence). It was expected that the selected comparison group would be similar to the participating group on all covariates being used in the matching process (Rubin, 2001). Several methods were used to check baseline equivalence. First, the distribution of propensity scores was examined to assess common support via a graphic diagnostic. Second, three numerical balance measures were used to check covariate balances at the individual level (Rubin, 2001):

- The ratio of the variances of the propensity scores in the two groups must be close to 1.0. Rubin (2001) suggests that the variance ratios should be between 0.5 and 2.0.
- The difference in the means of the propensity scores in the two groups being compared must be small. Rubin (2001) suggests that the standardized differences of means should be less than 0.25.
- For the percent of balance improvement, the larger the percent, the better the PSM results.

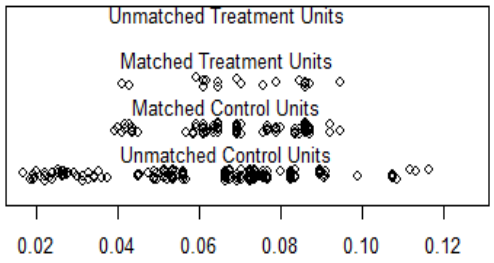
PSM Results and Balance Diagnostics

The distributions of propensity scores by group (i.e., potential comparisons [unmatched control units], participants [matched treatment units], and comparisons [matched control units]) are presented in Figure B-1 by college. These graphs suggest that the distributions of propensity scores were similar between the participants and selected comparisons. In turn, this suggests that PSM improved the similarity as measured by the propensity scores between these two groups.

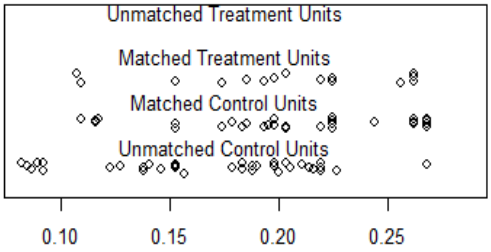
College A



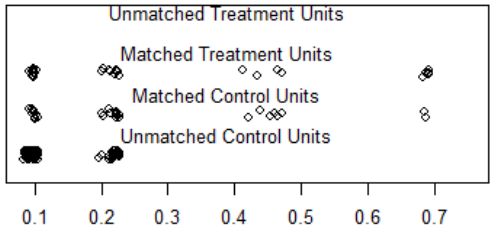
College B



College C



College D



College E

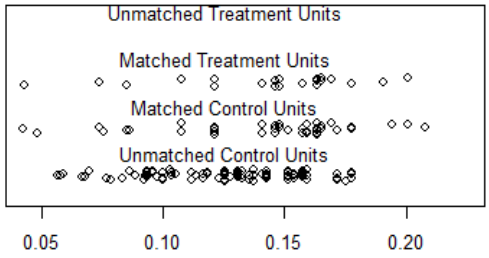


Figure B-1. Jitter Plots of the Distribution of Propensity Scores by Groups by College

Results of numeric balance measures by college are presented in Table B-3. Overall, the ratio of the variances of the propensity scores ranged between 0.59 and 1.00, which were within the range suggested by Rubin (2001). The analyses of standard mean differences suggest that the matching procedures have significantly minimized the group mean differences between the participant and comparison groups. Most importantly, after the PSM process, all covariates had a standardized mean difference smaller than 0.25, as suggested by Rubin (2001). The percent of balance improvement ranged from 4% to 100%, with few exceptions.[34] Taken together, these diagnostic criteria suggest that the participants and selected comparisons were similar by key covariates at baseline.

Table B-3. Numeric Balance Diagnostic Measures Before and After the PSM Process

Variables	Potential Comparison		Final Sample				Balance Diagnosis			
			Participant		Comparison		Variance Ratio	Standard Mean Differences		% Balance Improvement
	M	*SD*	*M*	*SD*	*M*	*SD*		Before	After	
College A										
Propensity Score	0.07	0.05	0.10	0.05	0.10	0.05	0.67	0.66	0.02	97.42
Age	31.78	11.33	25.75	6.50	25.88	6.77		0.93	0.02	97.93
Gender	0.60	0.49	0.38	0.52	0.38	0.50		0.44	0.02	100.00
Minority Status	0.05	0.21	0.00	0.00	0.00	0.00		-- [a]	-- [a]	100.00
College B										
Propensity Score	0.07	0.02	0.07	0.02	0.07	0.02	1.00	0.39	0.01	97.70
Age	28.03	9.02	25.22	5.31	25.26	5.51		0.53	0.01	98.81
Gender	0.68	0.47	0.67	0.49	0.68	0.47		0.02	0.02	4.44
Minority Status	0.13	0.34	0.17	0.38	0.17	0.37		0.09	0.00	100.00
College C										
Propensity Score	0.18	0.05	0.20	0.05	0.20	0.05	0.67	0.35	0.03	91.16
Age	29.71	11.26	26.20	10.63	25.57	9.31		0.33	0.06	81.94
Gender	0.66	0.48	0.60	0.51	0.63	0.49		0.12	0.07	45.83
College D										
Propensity Score	0.15	0.11	0.30	0.22	0.25	0.17	0.59	0.64	0.20	68.99
Age	32.20	12.05	29.94	10.65	29.97	9.99		0.21	0.003	98.57
Gender	0.72	0.45	0.48	0.51	0.55	0.51		0.47	0.13	72.71
Program Type	2.89	0.46	2.35	0.95	2.48	0.89		0.56	0.14	75.80

[34] Three variables, including enrollment status, gender, and educational attainment seemed to cause some imbalance when performing the PSM process. However, given that these factors are associated with the main outcomes of interest, these variables were retained in the matching process. Regardless, overall, after the matching, participants and the selected comparisons were still similar on these characteristics.

Variables	Potential Comparison		Final Sample				Balance Diagnosis			
			Participant		Comparison		Variance Ratio	Standard Mean Differences		% Balance Improvement
	M	*SD*	*M*	*SD*	*M*	*SD*		Before	After	
College E										
Propensity Score	0.13	0..03	0.15	0.04	0.14	0.04	1.00	0.33	0.01	98.37
Age	28.30	7.46	26.17	8.82	26.20	8.18		0.24	0.003	98.98
Gender	0.62	0.49	0.61	0.50	0.70	0.47		0.02	0.17	-- [b]
Educational Attainment	0.97	0.18	0.96	0.21	0.94	0.25		0.05	0.10	-- [b]

[a] The standard mean difference was calculated based on the pooled standard deviations. When the standard deviation from either group was 0, standard mean difference cannot be calculated.

[b] PSM did not improve the baseline equivalence on the variable. Yet, overall, participants and the selected comparisons were still similar on these characteristics.

Appendix C:
Technical Report of Study 2 Impact Findings

This appendix provides a detailed technical report of the findings for Study 2. Findings are reported by each of the three outcomes.

Program completion. As shown in Table C-1, program completion rate varied by college, ranging from 3% to 23%.

Table C-1. Program Completion Rate by Group by College

College	HOPE Participants			Comparisons			% Completion Rate Difference
	Number of Participants	Number of Completers	Program Completion Rate	Number of Comparisons	Number of Completers	Program Completion Rate	
College A	8	7	87.5%	24	20	83.3%	4.2%
College B	18	12	66.7%	90	47	52.2%	14.5%
College C	15	7	46.7%	30	7	23.3%	23.4%
College D	31	8	25.8%	31	7	22.6%	3.2%
College E	23	22	95.7%	46	35	76.1%	19.6%

Logistic regressions were conducted to understand the extent to which the differences in program completion rates were statistically different between the participants and comparisons. Multiple imputations were performed for College D. As shown in Table C-2, before the covariates and group status were entered in the analytical model, the overall correct classification rate was between 55% and 84%. By including the covariates and group status in the impact model, the overall correct classification rate was between 57% and 87%. Overall, the correct classification rate was improved between 2% and 5% by including the covariates and the group status as predictors of the outcome (i.e., program completion status) except for College A. Similar findings were revealed when interpreting Nagelkerke R^2, which is an indicator of the percentage of variation in program completion status that was explained by the covariates and the group status. A lower Nagelkerke R^2 means the group status and covariates included in the impact model were weak predictors of the outcome. Overall, the impact model explains roughly 0.4% to 42.3% of the variation in program completion status across all colleges.

Results of logistic regressions indicated that the difference in program completion rate was not statistically significant between participants and comparisons (i.e. Group) across all colleges, as presented in Table C-2. However, some covariates were significant predictors of program completion status. Specifically, within College C and College E, individuals who had at least some college experience upon enrollment were 6.30 and 25.72 times, respectively, more likely than those with a high school diploma or GED to complete their program of study. Within College D, male students were 0.09 times less likely than female students to complete their program of study, and

students from minority racial/ethnic backgrounds were 12.58 times more likely than their Caucasian peers to complete their program of study.

Table C-2. Program Impact on Program Completion Status by College

Covariates	Logistic Regression Estimate				Overall Percentage of Correct Classification			Nagelkerke R^2
	B	*SE*	*p*	Odds Ratio	Before	After	Difference	
College A [a]								
Group	0.34	1.20	0.779	1.40	84.4%	84.4%	0.0%	0.4%
College B [b]								
Group	0.60	0.55	0.276	1.82	54.6%	56.5%	1.9%	3.9%
Program type	0.55	0.40	0.168	1.73				
College C [c]								
Group	1.03	0.72	0.154	2.80	68.9%	73.3%	4.4%	23.5%
Education attainment	1.84	0.86	0.032	6.30				
College D [d]								
Group	0.58	0.77	0.454	1.78	75.8%	80.6%	4.8%	39.8%-42.3%
Gender	-2.40	0.87	0.006	0.09				
Minority	2.53	0.89	0.005	12.58				
Education attainment	1.31	0.89	0.139	3.71				
College E [e]								
Group	2.18	1.22	0.074	8.88	82.6%	87.0%	4.4%	26.6%
Education attainment	3.25	1.40	0.021	25.72				

Note. Group was coded as 1 (HOPE participants) or 0 (comparisons). Program type was coded as 1 (AAS degree) or 0 (non-AAS degree). Education attainment was coded as 1 (at least some college) or 0 (high school or GED). Gender was coded as 1 (male) or 0 (female). Minority was coded as 1 (non-Caucasian) or 0 (Caucasian). Multiple imputation was performance for College D to impute missing data for education attainment status and minority status.

[a] Minority status was not included in the impact model because all participants and selected comparisons were Caucasian. The following covariates were dropped from the impact model because their p values were greater than 0.20: age, gender, minority status, education attainment. Because education attainment was dropped from the impact model, multiple imputation became unnecessary.

[b] Age, gender, minority status and education attainment were dropped because their p values were greater than 0.20.

[c] The following covariates were dropped from the impact model because their p values were greater than 0.20: age, gender and minority status. Also, because minority status was dropped from the impact model, multiple imputation became unnecessary.

[d] The following covariates were dropped from the impact model because their p values were greater than 0.20: age and program type. The imputed datasets were analyzed and the pooled estimates were reported in this table.

[e] The following covariates were dropped from the impact model because their p values were greater than 0.20: age, gender and minority status. Because minority status was dropped from the impact model, multiple imputation became unnecessary.

Completion of More Than One Credential or Degree. This outcome was only examined with College B sample because College B identified more than one programs of study that were appropriate for the impact study. Also, participants enrolled in these programs had the opportunities to earn multiple certificates and degrees due to the stacked and latticed nature of the programs. Overall, of those who completed at least one program of study, 33% (4 out of 12) of HOPE grant participants completed more than one certificate or degree; yet, 51% (24 out of 47) of the comparisons completed more than one certificate or degree.

Logistic regression was conducted to understand the extent to which the difference in completing more than one certificate or degree was statistically different between the participants and comparisons. As shown in Table C-3, the overall correct classification rate increased from 53%

to 64% by adding group status and program type in the impact model. Additionally, this impact model explained 10% of the variation in completion of more than one certificate or degree outcome.

Results of logistic regressions indicated that the difference in completion of more than certificate or degree rate was not statistically significant between participants and comparisons (i.e., Group) as presented in Table C-3.

Table C-3. Program Impact on Completion of More than One Certificate or Degree: College B

Covariates	Logistic Regression Estimate				Overall Percentage of Correct Classification			Nagelkerke R^2
	B	*SE*	*p*	Odds Ratio	Before	After	Difference	
Group	-0.90	0.70	0.197	0.41	52.5%	64.4%	11.9%	0.10
Program type	1.01	0.58	0.082	2.75				

Note. Group was coded as 1 (HOPE participants) or 0 (comparisons). Program type was coded as 1 (AAS degree) or 0 (non-AAS degree). The following covariates were dropped from the impact model because their p values were greater than 0.20: age, gender, minority status, education attainment.

Furthering Education. As shown in Table C-4, the furthering education rate varied by college, ranging from 2% to 57%.

Table C-4. Furthering Education Rate by Group by College

College	HOPE Participants			Comparisons			% Furthering Education Rate Difference
	Number of participants completing a program	Number of completers furthering education	Participants' furthering education rate	Number of comparisons completing a program	Number of completers furthering education rate	Comparisons' furthering education rate	
College A	7	2	28.6%	20	9	45.0%	-16.4%
College B	12	8	66.7%	47	36	76.6%	-9.9%
College C	7	1	14.3%	7	5	71.4%	-57.1%
College D	8	1	12.5%	7	1	14.3%	-1.8%
College E	22	10	45.5%	35	0	0.0%	45.5%

Logistic regressions were conducted to understand the extent to which the differences in furthering education rates were statistically different between the participants and comparisons. As shown in Table C-5, before the covariates and group status were entered in the analytical model, the overall correct classification rate was between 57% and 87%. By including the covariates and group status in the impact model, the overall correct classification rate was between 59% and 88%. Overall, the correct classification rate was improved between 5% and 22% by including the covariates and the group status as predictors of the outcome (i.e., furthering education status) with few exceptions. Specifically, the correct classification rate remained unchanged for College A and College D. When examining the Nagelkerke R^2 for these two colleges, the impact model only explained 3% and 0.1% of the variance in furthering education status for College A and College D, respectively, which

suggest that group status was a weak predictor of the outcome. In contrast to other colleges, the correct classification rate for College B decreased after including group status and age in the analytical model, which also suggests that these two variables were weak predictors of the outcome.

Results of logistic regressions indicated that the difference in the furthering education rate was not statistically significant between participants and comparisons across all colleges except College C, as presented in Table C-5. That is, within College C, HOPE grant participants were 0.07 times less likely than the comparisons to continue on for further education after completing their program of study (β = -2.71, SE = 1.37, p = 0.047, odds ratio = 0.07). Additionally, group membership explained 40% of the variance in the furthering education status.

Table C-5. Program Impact on Furthering Education Status by College

Covariates	Logistic Regression Estimate				Overall Percentage of Correct Classification			Nagelkerke R^2
	B	*SE*	*p*	Odds Ratio	Before	After	Difference	
College A [a]								
Group	-0.72	0.95	0.450	0.49	59.3%	59.3%	0.0%	3.0%
College B [b]								
Group	-0.55	0.73	0.445	0.58	74.6%	72.9%	-1.7%	8.1%
Age	-0.09	0.05	0.094	0.92				
College C [c]								
Group	-2.71	1.37	0.047	0.07	57.1%	78.6%	21.5%	40.3%
College D [d]								
Group	-0.15	1.52	0.919	0.86	86.7%	86.7%	0.0%	0.1%
College E [e]								
Group	21.32	-- [f]	0.997	1.81	82.5%	87.7%	5.2%	60.7%
Gender	1.72	0.98	0.080	5.60				

Note. Group was coded as 1 (HOPE participants) or 0 (comparisons). Gender was coded as 1 (male) or 0 (female). Multiple imputation was not needed for all datasets.

[a] Minority status was not included in the impact model because all participants and selected comparisons were Caucasian. The following covariates were dropped from the impact model because their p values were greater than 0.20: age, gender, minority status, education attainment. Because education attainment was dropped from the impact model, multiple imputation became unnecessary.

[b] The following covariates were dropped from the impact model because their p values were greater than 0.20: gender, minority status, education attainment and AAS status.

[c] The following covariates were dropped from the impact model because their p values were greater than 0.20: age, gender, minority status, and education attainment.

[d] The following covariates were dropped from the impact model because their p values were greater than 0.20: age, gender, minority status, education attainment, and program type.

[e] The following covariates were dropped from the impact model because their p values were greater than 0.20: age, minority status and education attainment. Because minority status was dropped from the impact model, multiple imputation became unnecessary.

[f] Because all individuals who continued for further education were from the participant group, the standard error was extremely large.