

# *Northeast Resiliency Consortium*

## **Final Evaluation Report**

**September 2017**

**Submitted to Passaic County Community College**

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This evaluation report was funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. The report was created by the third-party evaluator and does not necessarily reflect the official position of the U.S. Department of Labor. The U.S. Department of Labor 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.

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DVP-PRAXIS LTD is an action-oriented consulting firm focused on higher education and the workforce. We specialize in mixed method formative and summative evaluation services to inform implementation and measure impact. We also provide strategic advising services for project development and implementation, and conduct research and policy analysis on critical issues facing higher education and the economy. We listen with a keen ear to client's needs, and leverage our experience and knowledge to support foundations, non-profit organizations, state agencies, and colleges and universities committed to improving postsecondary education and skills-development practices and public policies.

## **About Equal Measure**

Headquartered in Philadelphia, PA, Equal Measure provides evaluation and philanthropic services to social sector organizations. For more than 30 years, our clients have been major private, corporate, and community foundations, government agencies, and national and regional nonprofits. We have deep experience with network collaborative initiatives that improve educational outcomes, and build career pathways, for young adults to live better economic qualities of life. To that end, we have worked on an array of major national and regional programs for organizations such as the Citi Foundation, the Aspen Forum for Community Solutions, the James Irvine Foundation, Lumina Foundation, Strive Together, RISE for Boys and Men of Color, the W.K. Kellogg Foundation, and U.S. Department of Labor-funded grants in Wisconsin and the Northeast U.S.

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### The Northeast Resiliency Consortium

Driven by a series of natural and man-made disasters that took place in the northeast in 2012 and early 2013, including the shooting at Sandy Hook Elementary School, the Boston Marathon bombings, and Hurricane Sandy, seven community colleges in Connecticut, Massachusetts, New Jersey, and New York formed the *Northeast Resiliency Consortium* (NRC) to address the acute need for resilience in their communities, and were awarded a Round III TAACCCT grant from the U.S. Department of Labor. The NRC sought to take strategic action to build a highly skilled and qualified workforce to help mitigate their communities' short- and long-term vulnerabilities and risks, and build resilient workers, institutions, and communities. The NRC used this grant to expand and enhance its programs to close the skills gap in healthcare, information technology, hospitality, and environmental science. Through these training programs, the NRC would cultivate resiliency for participants to rapidly and effectively adapt and respond to internal or external opportunities, disruptions, or threats. Resiliency also refers to helping workers and employers develop advanced skills that facilitate adaptation to global competition, evolving technologies, and workforce demands.

The NRC prioritized efforts focused on credential completion and employment in sectors that are critical to the functioning of communities, including in healthcare, where remaining adept at responding to emergencies and crises is critical for survival; information technology, where data networks must remain functional during catastrophes; and environmental technologies, where resilient infrastructures can help states and communities prevent and recover from disasters. In total, NRC colleges offered 84 programs of study to participants, with 44 continuing education programs and 40 credit programs. The NRC aimed to serve more than 3,462 unique participants during the three-year period of the grant. Preliminary performance numbers indicate the consortium surpassed its original goal by 15% – serving 3,987 unique participants. This final evaluation report documents findings from the impact and implementation studies, with an emphasis on the consortium's approach to creating pathways from continuing education to credit programs, and colleges' provision of comprehensive career, personal, and academic support services to participants.

### Evaluation Design

The comprehensive evaluation of the NRC included regular, formative feedback on the implementation progress among the NRC colleges, a quantitative analysis of the impact of two core strategies on NRC participants on educational outcomes, and a comparative analysis of employment outcomes.

The **implementation evaluation** was designed to provide formative feedback on program implementation at each community college during the first two years of the initiative. Key elements of program implementation were documented and assessed – ranging from efforts to establish continuing education to credit pathways to sustaining and institutionalizing key grant-supported strategies like comprehensive support service upon conclusion of the TAACCCT grant. Key research questions for the implementation study included:

- *How were non-credit and credit-based curricula developed and implemented at each site, especially the connection between continuing education/workforce development programs and credit programs? Did progress vary across sectors? How were regional standards for Prior Learning Assessment developed and implemented across sites?*

- *What kinds of comprehensive support services were offered to participants? How were these services provided? How do these services differ from traditional services provided by sites and/or local partners? How were the core resiliency competencies developed and implemented across sites?*
- *How were employers engaged at each site and/or consortium-wide through local advisory councils? What were important contributions of employers, such as work-based learning opportunities or priority job placement for participants?*

Over the course of more than three years, the evaluation team engaged in several data collection activities to assess and document implementation among the NRC colleges. These data collection efforts included interviews with key stakeholders, such as college administrators, faculty, and support staff, as well as external stakeholders, such as employers and workforce groups. The team conducted qualitative interviews and focus groups either in-person during site visits or via telephone. Overall, the evaluation team conducted 17 in-depth site visits – visiting each NRC college at least twice and three colleges thrice during the grant, in sum interviewing more than 225 stakeholders. The evaluation team also conducted two rounds of in-depth structured interviews with each college. The team conducted approximately 95 phone interviews with the key consortium strategy partners engaged in the work. Finally, the evaluation team developed two on-line surveys that were administered to site leads. The first survey was developed as a pre-site visit assessment to ensure the evaluation team had a clear understanding of the strategies being implemented at each college. The second survey was developed to gather information on the continuing education to credit pathways that were created or modified under the grant.

At the outset of the NRC, the evaluation team conducted implementation interviews with stakeholders from each college, reviewed background documents, attended two consortium-wide meetings, and conducted a literature review. These activities informed the development of an overall evaluation framework to assess implementation progress. This early implementation data collection phase reaffirmed many assumptions embedded in the initial evaluation design, and provided greater clarity and specificity with respect to key lines of inquiry for the evaluation. The evaluation was further refined based on data collected during the first two years of the initiative to focus on three cross-cutting strategies that appeared most prevalent across the consortium colleges and that had the most potential for affecting student outcomes: pathways from continuing education to credit programs; comprehensive student support services; and expanded role for employers. Through subsequent implementation data collection, the evaluation team documented how these strategies were institutionalized and sustained by the colleges.

The participant **impact study** focused on continuing education participants, and examined six student-level outcomes: program completion, credential attainment, banking credits, transitioning to credit programs, employment, and earnings. The impact study addressed the two most common strategies implemented across the NRC consortium: comprehensive support services and articulated continuing education to credit pathways. The four research questions for the impact study are listed below:

- *Do participants who received comprehensive support services (career, personal, academic) complete programs, earn credentials, earn or bank credits, and/or transition to credit programs at higher rates than a matched group of participants who did not receive comprehensive support services?*
- *Do participants who enroll in articulated continuing education to credit pathways earn or bank credits, transition to credit programs, complete programs, and/or earn credentials at higher rates than a matched group of participants who did not enroll in articulated pathways?*

- *Are participants who were not employed at the start of their NRC program, and who received comprehensive support services or who enrolled in articulated continuing education to credit pathways, employed one quarter after program exit and retained in employment three quarters after program exit at higher rates than non-incumbent participants who did not experience these strategies?*
- *Are participants who were incumbent workers at the start of their NRC program, and who received comprehensive support services or who enrolled in articulated continuing education to credit pathways, have a higher rate of receiving an increase in earnings than incumbent participants who did not experience these strategies?*

To answer these research questions, the evaluation team obtained administrative data from each consortium college for the entire grant period (fall 2013 through summer 2017). The team also utilized data collected and entered by colleges into a centralized NRC participant database, which was managed by the consortium lead college. The team collected unemployment insurance (UI) data for the three states in which these data were available, and established data sharing agreements with each college, as well as with the state agencies and organizations that provided UI data.

The evaluation team used Propensity Score Matching (PSM) to generate a matched comparison group that allows for assessment of the impact of (1) enrolling in a *continuing education to credit pathway* and (2) receiving *comprehensive support services* on educational outcomes. PSM is an increasingly common approach to accounting for factors that may influence the receipt of treatment, and thus confound analysis of impact. By generating a comparison group that resembles the treatment group on all variables thought to affect likelihood of receiving treatment, researchers can mimic a randomized controlled trial. Although the sample members were not randomly assigned to the treatment and comparison groups, PSM allows researchers to infer – within bounds – that differences in outcomes between the two groups are the result of the treatment, and not the result of differences in individual characteristics. This approach aligns with the standards for non-experimental research studies generated by the Clearinghouse for Labor Evaluation and Research (CLEAR) and the Institute of Education Sciences What Works Clearinghouse (WWC). According to these sources, PSM can achieve a moderate rating from CLEAR as well as meet WWC standards with reservations.

The evaluation team conducted exploratory analyses of NRC strategies to examine educational outcomes of continuing education participants based on the support services received, including career, academic, and personal supports. The team also examined different types of continuing education to credit pathways.

Additionally, the evaluation team used a descriptive analysis to examine employment outcomes, as variation in data availability and access to employment records across the NRC consortium limited the ability to conduct more rigorous comparative analyses.

### **Implementation Findings**

The NRC prioritized its grant strategies on building a resilient workforce in sectors that are critical to the functioning of communities, including healthcare, information technology, hospitality, and environmental sciences. The colleges' approach to enhancing education and training opportunities spanned continuing education and credit-based programs, and included the provision of comprehensive career, personal, and academic support services. In addition, participating colleges sought to engage employers in new ways to ensure that programs would meet the need for skilled workers in high-demand industry sectors.

The summative implementation assessment for the Northeast Resiliency Consortium addressed key research questions around: 1) new and enhanced programs and curriculum; 2) support services; and 3) employer engagement. The implementation evaluation documented the following findings:

- NRC colleges offered 84 unique programs of study to participants, with 44 continuing education programs and 40 credit programs; in almost all programs, colleges sought to provide stacked and latticed credentials.
- NRC colleges implemented three primary approaches to new and modified curriculum and instruction:
  - Three colleges developed 25 new credit-based educational pathways that served participants and included shorter-term credentials that stacked to Associate degrees.
  - Six colleges developed 25 formal continuing education to credit program links, building on-ramps to credit programs of study from non-credit, shorter-term training opportunities.
  - Leveraging a consortium-wide focus on Prior Learning Assessment (PLA), all colleges modified institutional PLA policies, and in a few instances formally approved new PLA policies and processes, particularly for students taking continuing education courses.
- NRC colleges provided support services across three primary content areas: career, personal, and academic. Career supports include assistance in job or internship placement, interviewing skills, and resume development. Personal supports include assistance with life challenges that are interfering with academic progress, such as food security, housing issues, transportation, and childcare. Academic supports address content-specific assistance in courses or programs to help students master the skills and competencies needed to advance in the program and earn industry-recognized or postsecondary credentials.
  - The NRC Resiliency Competency Model facilitated the modification and development of support services among participating colleges.
  - Colleges delivered support services to groups of NRC participants both inside and outside the classroom.
  - Colleges delivered personalized, 1:1 support services to participants, though these were rarely required.
  - 70% of all NRC participants received at least one type of support service, with career supports being the most common, and academic the least common; 41% of all participants received comprehensive support services, which means they received supports in two or three content areas.
- NRC Colleges developed new relationships and leveraged existing relationships with employers, who were involved in NRC in various ways. Employers aided in development of NRC programs and provided work-based learning opportunities for NRC students.
  - Colleges created and strengthened sector-based employer advisory boards to guide the development of new and enhanced programs that met the requirements and needs of employers.
  - Colleges responded quickly to employers by modifying programs to provide urgently needed pipelines of entry-level workers.
  - Four colleges hired staff to focus on employer relations.
  - Colleges invited employers to campus events and career fairs to interview students, and to observe students demonstrating job-related competencies.

The summative implementation results indicate the curriculum and instructional practices implemented by NRC colleges will be sustained, while the delivery of comprehensive support services will not be sustained, including, with few exceptions, the career-related staff positions charged with expanding employer engagement.

### Participant Impact

The NRC impact study focused on continuing education participants, and examined the relationship between two primary NRC strategies – comprehensive support services (e.g., a combination of career, personal, and/or academic supports) and continuing education to credit pathways – and academic and employment outcomes that include program completion, credential attainment, credit accumulation, matriculation into credit programs, employment after training for previously unemployed participants, and gains in earnings for incumbent worker participants.

Although NRC colleges offered continuing education and credit programs for participants, 70% of participants enrolled in shorter-term continuing education training programs. More than half (57%) of these continuing education participants enrolled in continuing education and workforce development programs that had a transparent, articulated pathway to credit programs at the college. In addition, 50% of continuing education participants received comprehensive support services that entailed at least two of the following supports: career, personal, and academic.

The impact study documented these key findings:

- Continuing education participants who received comprehensive support services have better educational outcomes than the matched comparison group:
  - 82% of continuing education participants who receive comprehensive support services completed their programs, compared with 44% of the matched comparison group.
  - 74% of continuing education participants who receive comprehensive support services earned an industry-recognized or college awarded credential, compared with 37% of the matched comparison group.
  - 41% earned or banked credits from their continuing education program that can be applied to additional educational pursuits, compared with 24% of the matched comparison group.
  - 24% of continuing education participants who received comprehensive support services transitioned into a credit program, although this outcome was not statistically higher than the matched comparison group (20%).
- Participants enrolled in continuing education to credit pathway had similar program completion and credential attainment rates, significantly more banked credits, and higher transition rates into credit-based programs than the matched comparison group:
  - 75% of continuing education participants who enrolled in a continuing education to credit pathway completed their programs, compared with 76% of the matched comparison group.
  - 60% of continuing education participants who enrolled in a continuing education to credit pathway earned an industry-recognized or college awarded credential, compared with 56% of the matched comparison group.
  - 41% of continuing education participants who enrolled in a continuing education to credit pathway earned or banked credits that can be applied to additional educational pursuits, compared with 14% of the matched comparison group.

- 26% of continuing education participants who enrolled in a continuing education to credit pathway transitioned into a credit-based program, compared with 14% of the matched comparison group.
- 41% of continuing education participants who were unemployed when they enrolled in the NRC program, and who received comprehensive support services, were employed one quarter after program exit, and 67% were retained in employment three quarters after program exit. These results are higher than the 19% employment and 50% retention rates for participants who did not receive comprehensive support services.
- 36% of participants who were unemployed when they enrolled in the NRC program, and who enrolled in a continuing education to credit pathway, were employed one quarter after program exit, and 66% were retained in employment three quarters after exit. These results are higher than the 27% employment and 51% retention rates for participants who did not enroll in these pathways.
- 87% of incumbent workers who received comprehensive support services had an increase in earnings at some point after enrolling in an NRC continuing education program, which is significantly higher than the 76% of incumbent workers who had an increase in earnings and did not receive comprehensive support services.
- 81% of incumbent workers who enrolled in a continuing education to credit pathway had an increase in earnings at some point after enrolling in an NRC continuing education program, which is slightly higher than the 79% of incumbent workers who had an increase in earnings and did not enroll in a continuing education to credit pathway.

In sum, *comprehensive support services* and *continuing education to credit pathways* had significant positive impacts on the educational outcomes for NRC participants; and appear to positively influence employment outcomes and earnings gains.

### **An Assessment of Sustainability and Institutionalization of NRC Strategies**

The final evaluation report provides an assessment of the sustainability and institutionalization of the NRC work. As noted, the curriculum and instructional practices implemented by NRC colleges will be sustained, while the delivery of comprehensive support services will not be sustained, including, with few exceptions, the career-related staff positions charged with expanding employer engagement. The following factors were identified to explain why curriculum and instructional innovations were sustained, while comprehensive support services were not sustained.

#### ***Institutional Leadership and Commitment***

- Executive leaders supported the departmental processes to develop new curriculum and instructional approaches; these changes required administrators, faculty, and staff to engage in structured and intentional processes that were designed for curriculum to be formally approved and institutionalized.
- Executive leaders, divisional and departmental administrators, and project managers did not perceive grant-funded support services as a demonstration of a more effective model of support service delivery for the college to consider adopting institution-wide; rather, these comprehensive supports were implemented as a special service for grant participants, and thus a temporary enhancement.

- Executive leaders, divisional and departmental administrators, and project managers embraced the grant-funded outreach and relationship building with employers, especially the resulting expansion of work-based learning opportunities.

### ***Financial and Administrative Prioritization***

- Divisional and departmental administrators successfully transitioned grant-funded instructors who developed new credit curriculum, programs, and credentials into permanent positions at many colleges; thus, signaling that these new credit programs of study were an institutional priority.
- Executive leaders used the NRC grant to raise the stature of continuing education programs at the college and the importance of articulating transparent pathways between continuing education/workforce development programs and credit programs.
- Executive leaders, including senior-level divisional and departmental administrators, did not allocate institutional resources to sustain the support services positions funded through the grant.

### ***Transparent and Supportive Policies and Practices***

- Senior administrators clarified policies and practices to formalize links between continuing education programs, including internal articulation agreements and institutional Credit for Prior Learning procedures.
- Faculty embedded resiliency competencies into program courses by mapping course curriculum to the NRC resiliency model; yet, formal curriculum changes were rare, creating uncertainty about the institutionalization of resiliency competencies.
- Although senior administrative leaders praised the comprehensive support services provided during the NRC, they did not adapt the roles and responsibilities of existing support services staff at the college to align with the more in-depth, proactive, and program-specific services offered to NRC participants.

### ***Professional Development***

- Colleges provided professional development sessions for faculty about Prior Learning Assessment, though opportunities to engage administrators, faculty, and staff more generally around continuing education programs, formally linking these programs with credit programs, and the need for comprehensive support services were not widespread.

### ***Use of Data and Evidence***

- Project leaders collected data on NRC participants, including the support services they received and industry credentials earned, though colleges did not analyze these data to document the effectiveness of grant strategies or use data to advocate for sustaining grant-funded strategies and positions.

### **Implications for Education and Training Programs at Community Colleges**

The evaluative assessment of institutionalization and sustainability, as well as the implementation and impact findings documented in this final NRC evaluation report, point to four implications for

community colleges who want to expand opportunities for education and training to “non-traditional” student populations, leverage and align resources with the workforce development system, and strengthen relationships with employers.

1. Break down institutional siloes between continuing education/workforce development programs and credit programs.
2. Reallocate institutional resources and revamp support services, so that comprehensive support services are provided proactively to students that encompass career, personal, and academic supports.
3. Create formal and strategic partnerships with the workforce development system around WIOA - leveraging its emphasis on career pathways, and on providing integrated education and training programs.
4. Recommit to their community as an “anchor institution” with a priority to serve the local population, who are often the poorest members of their communities, and to align community assets with local employer needs.

## Introduction

Backed by a \$23.5 million, four-year grant awarded in 2013 from the U.S. Department of Labor, the Northeast Resiliency Consortium (NRC) expanded and enhanced programs to close the skills gap in healthcare, information technology, hospitality, and environmental science<sup>1</sup>. This grant was the result of a multi-state collaboration between community colleges in four states, industry groups, workforce development groups, and more than 25 employer partners who came together to develop and execute the NRC.

As a part of this initiative, the Department of Labor required a third-party evaluator to address program implementation and participant outcomes and impact. In this final evaluation report of the NRC, DVP-PRAXIS LTD and Equal Measure present the participant impact evaluation, which utilizes rigorous statistical methodology to examine program impact, and the summative qualitative assessment of implementation. In this report, the evaluation team focuses on the colleges' efforts to serve participants through the implementation of continuing education programs, as well as the provision of comprehensive career, personal, and academic support services during the Trade Adjustment Assistance Community College and Career Training (TAACCCT) Round 3 grant period. The report is organized around two distinct, though related, sets of analyses:

1. **The implementation study** examines how the NRC colleges developed and implemented the grant-funded training programs and comprehensive support services, including the operational strengths and weaknesses of the project that affected the institutionalization and sustainability of grant-supported strategies upon conclusion of the TAACCCT grant.
2. **The impact study** examines education outcomes for grant participants in continuing education programs, including program completion, credential attainment, credits earned or banked,<sup>2</sup> and transition to credit programs; as well as employment and earnings outcomes for previously unemployed participants and incumbent workers, respectively.

The evaluation questions are described in detail in the respective sections of the report.

### Background on TAACCCT

In 2009, the American Recovery and Reinvestment Act amended the Trade Act of 1974 to authorize the Trade Adjustment Assistance Community College and Career Training Grant Program. In 2010, Congress appropriated \$2 billion over four years for the U.S. Department of Labor to fund the TAACCCT program. The Department of Labor is implementing TAACCCT in partnership with the U.S. Department of Education. The two departments believe that the TAACCCT program plays a major role in helping America's community colleges and other higher education institutions drive changes in designing and delivering programs that provide career pathways to good jobs for adult workers and meet employer needs for highly skilled workers in growth industries. The goal of the TAACCCT program is to expand targeted training programs for unemployed workers, especially those affected by foreign trade, and to move unemployed workers into high-wage, high-skill jobs in high-growth industry sectors. TAACCCT provided colleges and other eligible higher education institutions with funds to expand and improve their ability to deliver education and career training programs in a shorter time

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<sup>1</sup> Environmental Science includes environmental/energy and green-building sustainability. For simplicity, the team uses the term environmental science throughout the report.

<sup>2</sup> *Credits banked* refers to the awarding of credits upon completion of a continuing education program that students can apply to an articulated credit program once they matriculate at the college. Banking credits is a type of credit for prior learning, and is discussed in Section 3 of this final report.

period that are suited for workers eligible for training under the TAA for Workers program, and that prepare program participants for high-skilled, high-wage employment. Additionally, the TAACCCT grant aimed to increase the number of workers who earned certificates, degrees, and other industry-recognized credentials.

In the first three rounds of TAACCCT grants, approximately \$1.5 billion was awarded to more than 800 institutions of higher education. TAACCCT Round 3 awarded approximately \$450 million in grants to single and consortium applicants.<sup>3</sup> The Northeast Resiliency Consortium was one of these grantees, composed of seven community colleges in Connecticut, Massachusetts, New Jersey, and New York. As part of this comprehensive effort, these community colleges joined with nationally recognized leaders in education, industry groups, workforce development boards, and employers to provide short-term continuing education programs and improve credit-based educational pathways aligned with labor market demand.

*“Community colleges play a vital role in equipping our nation’s students with the skills they need to meet the demands of today’s careers. This program is not about tinkering – it’s about transformation. This is not about getting more students to enroll – it’s about getting more students to graduation day and into good jobs.”*

*-Former U.S. Secretary of Education  
Arne Duncan*

Aligning short-term education and training programs along a pathway with industry-recognized credentials that demonstrate skills and knowledge demanded by employers was an expectation of the TAACCCT Round 3 grants, as specified in the U.S. Department of Labor Employment and Training Administration’s Solicitation for Grant Application. In addition, the Round 3 solicitation emphasized the importance of employer engagement and the need for comprehensive support services to improve the success of students in educational pathways that lead to jobs in high-demand industry sectors such as healthcare and information technology. As noted, this final evaluation report documents findings from the impact and implementation studies, with an emphasis on the consortium’s approach to creating pathways from continuing education to credit programs, and colleges’ provision of comprehensive career, personal, and academic support services to participants.

The report includes the following sections:

**Section 1:** The Northeast Resiliency Consortium

**Section 2:** Evaluation Design: Implementation and Impact

**Section 3:** Implementation Assessment

**Section 4:** Participant Outcomes and Impact Study

**Section 5:** Assessment of Institutionalization and Sustainability for NRC Strategies

The Technical Appendices include additional information about the impact study, the evaluation framework, and the outcomes and indicators tool used to guide the implementation analysis.

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<sup>3</sup> [https://www.doleta.gov/taaccct/pdf/TAACCCT\\_One\\_Pager.pdf](https://www.doleta.gov/taaccct/pdf/TAACCCT_One_Pager.pdf)

## Section 1 – The Northeast Resiliency Consortium

### The Need for Resiliency

Driven by a series of natural and man-made disasters that took place in the northeast in 2012 and early 2013, including the shooting at Sandy Hook Elementary School, the Boston Marathon bombings, and Hurricane Sandy, seven community colleges across four states in the Northeast region of the United States formed the NRC, led by Passaic County Community College in partnership with Achieving the Dream (ATD), to act on a shared commitment to build a more adaptive, resilient workforce in industries central to preventing, responding to, and recovering from disasters and crises.

Early on, the term “resiliency” stemmed from the idea of preparing for, preventing, and responding to disasters and crises. The NRC sought to take strategic action to build a highly skilled and qualified workforce to help mitigate its communities’ short- and long-term vulnerabilities and risks, and build resilient workers, institutions, and communities.<sup>4</sup> The NRC would cultivate resiliency by developing and improving training that would help participants rapidly and effectively adapt and respond to internal or external opportunities, disruptions, or threats. Resiliency also refers to helping workers and employers develop advanced skills that facilitate adaptation to global competition, evolving technologies, and workforce demands. The NRC prioritized efforts focused on credential completion and employment, and focused on building a resilient

*“Resiliency is an individual’s persistent development and application of knowledge, skills, and resources that effectively help one adapt to change and overcome adversity.”*

– The NRC Competency Model (2.0)

workforce in sectors that are critical to the functioning of communities, including in healthcare, where remaining adept at responding to emergencies and crises is critical for survival; information technology, where data networks must remain functional during catastrophes; and environmental technologies, where resilient infrastructures can help states and communities prevent and recover from disasters.

Prior to the grant award, the NRC’s four states experienced high numbers of certified TAA petitions, a result of the trade-impacted restructuring of the American economy across several industry sectors and multiple occupations. In 2011 alone, a total of 160 petitions were certified across these four states, representing 15% of the nation’s TAA certifications. An estimated 15,088 workers were affected, yet only 4,976 of the TAA-eligible workers took advantage of training during that time.<sup>5</sup> Strategically, the NRC targeted three of the fastest growing industries and occupations in the region, and coupled programming with necessary supports to create new opportunities for trade-impacted workers.

In addition to the shared experience of recent crises and natural disasters, all seven NRC colleges are also part of Achieving the Dream (ATD), a comprehensive non-governmental reform movement for student success. Achieving the Dream brings expertise in institutional change and building pathways to the participating colleges. ATD played a critical role throughout the grant, providing technical

### Northeast Resiliency Consortium Colleges

- Atlantic Cape Community College (NJ)
- Passaic County Community College (NJ)
- Bunker Hill Community College (MA)
- Capital Community College (CT)
- Housatonic Community College (CT)
- Kingsborough Community College (NY)
- LaGuardia Community College (NY)

<sup>4</sup> Northeast Resiliency Consortium Technical Proposal (2012) Appendix A

<sup>5</sup> Ibid

assistance and coaching to the NRC colleges, as well as supporting networking, knowledge development, and the dissemination of promising practices so the entire ATD network benefits from the NRC's work and learning. Most NRC colleges also benefitted from prior experience in TAACCCT grants that provided important institutional understanding of the necessary capacities to carry out the TAACCCT work, and the unique opportunity to build on previous strengths and strategies.

### The NRC Approach

The NRC established four goals for the TAACCCT grant that were identified through a gap analysis. The NRC also proposed using seven strategies supported by research studies to achieve these goals. The four goals and their embedded strategies are summarized below:

- **Accelerating Skill, Competency, and Credential Acquisition for Trade-Impacted Workers through Innovative Approaches and Solutions:** The NRC identified three strategies to accelerate skill, competency, and credential acquisition: (1) continuing education and credit-based educational pathways that lead to in-demand certificates and degrees; (2) regional Prior Learning Assessment (PLA) standards; and, (3) the adaptation of a contextualized developmental math program developed by the Carnegie Foundation for the Advancement of Teaching and Learning called Quantway/Statway.
- **Utilizing Advanced Technology to Support Student Learning and Program Completion:** The NRC planned to deploy a range of tools to increase access to classes and accelerate learning, including adaptive learning programs, digital tutors, and gaming technology to improve competency acquisition.
- **Engaging Employers and Strategic Partners to Improve Skill Acquisition, Program Completion, and Employment Outcomes:** The NRC intended for employers to become deeply engaged throughout the project by participating in leadership and advisory councils, vetting academic curricula, partnering with the colleges to provide work-based learning opportunities, and facilitating employment of participants upon certificate and degree completion.
- **Providing Comprehensive Outreach, Assessment, and Student Supports:** The NRC proposed several support services for participants, including intensive outreach, screening, and assessment for program entry; resiliency supports; career coaching and planning; and utilization of an integrated planning advisory system to help monitor student progress.<sup>6</sup>

During the first two years of the grant, the evaluation team explored and assessed the four goals and the seven strategies that the consortium and individual colleges proposed to implement as a part of the grant. In the Interim Evaluation Report (December 2015), the team observed that the NRC made considerable implementation progress to accelerate skill, competency, and credential acquisition, and to provide comprehensive student support services<sup>7</sup>. During this time, less progress had been made in using advanced technology and engaging employers.

Based on these interim implementation findings, the evaluation team continued to raise questions and gather data on advanced technology and employer engagement, but focused the remaining evaluation on the five NRC strategies listed below:

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<sup>6</sup> Ibid

<sup>7</sup> Price, D., Sedlak, W. Childress, L., and Roach, R. (2015) Northeast Resiliency Consortium Interim Evaluation Report

1. **Continuing education and credit-based pathways** that provide a sequence of credentials that can be accumulated to build an individual's qualifications, and help individuals move along a career pathway into a credit-based program or up a career ladder to different and potentially higher-paying jobs.
2. **Resiliency competencies and supports** that include the alignment and use of the NRC-developed resiliency competencies to provide supports for participants and deliver these supports in different ways, such as embedding them into required coursework or offering them as stand-alone workshops.
3. **Career development supports** provided by dedicated support services staff, such as an employer relations specialist, a recruitment and retention specialist, or a job developer hired to support NRC participants through one-on-one engagement and workshops.
4. **Prior Learning Assessment** that included changes to colleges' policies and practices to provide more systematic Prior Learning Assessment processes for students, as well as the awarding of credit for prior learning for continuing education students who transition into credit-bearing programs.
5. **Productive persistence and contextualized lessons** that colleges used to help students become more academically successful, to persist when faced with challenges (tenacity), and to do so efficiently and effectively within an NRC program.

The evaluation team hypothesized that participants in programs that incorporated these strategies would have better credential attainment and employment outcomes, and, where applicable, would earn more college credits.

The team used the next 12 months of the evaluation to gather additional data on these areas of focus. Additional data collection and analysis from the field yielded broad-based support for all but one of these strategies. Productive persistence and contextualized lessons were not as robust a strategy as originally conceived, and thus are not areas of focus in the final evaluation report. The evaluation team gathered additional data on expanded employer engagement, and, upon further analysis, expanded the career development supports strategy to become more inclusive of the range of comprehensive supports students received.

In summary, the evaluation team honed the implementation study to concentrate on a smaller set of significant strategies that represented the best potential for impact on participant outcomes. These strategies include: enhanced or newly established continuing education to credit pathways (including PLA); comprehensive career, personal, and academic student support services (including resiliency competencies); and expanded employer engagement.

### **NRC Participants and Programs**

The NRC aimed to serve more than 3,462 unique participants during the three-year period of the grant. Preliminary performance numbers indicate **the consortium surpassed its original goal by 15% – serving 3,987 unique participants.**<sup>8</sup>

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<sup>8</sup> This count is based on the evaluation team's review of the NRC participant database, and is different from the preliminary numbers reported in the Final Annual Performance Report, because our analysis includes only participants who were noted as enrolled in a grant-funded program of study. The NRC participant database includes

Table 1 provides demographic information of NRC participants. Across the consortium, participants are older students, with an average age of 30.67, and are racially and ethnically diverse: 31% are Black or African American, 29% are White, 10% are Asian, and 9% reported multiple races. In addition, more than one-fourth identified as Hispanic (any race). Slightly less than half of participants reported a high school diploma or less as their highest credential prior to enrolling in the NRC (40% of participants received a high school diploma and 6% received a GED), and these participants were younger, on average, than the overall participant group (average age=28.30). Participants were almost evenly split between men and women.

**Table 1: Demographics of NRC Participants**

<b>All Participants (n=3,987)</b>		
<b>Gender</b>		
	Female	52%
	Male	48%
<b>Race</b>		
	Asian	10%
	Black or African American	31%
	White	29%
	Multiple races	9%
	Other	5%
	Unknown	16%
<b>Ethnicity</b>		
	Hispanic (any race)	27%
	Not Hispanic (any race)	55%
	Unknown	18%
<b>Age</b>		
	Less than 25 years old	42%
	25 years old or older	58%
	Average age	30.67
<b>Highest Credential Earned Prior to NRC</b>		
	GED	6%
	HS diploma	40%
	Certificate or some college	34%
	2-year degree	9%
	4-year degree or higher	9%
	Unknown	1%
<b>Other</b>		
	Veteran	5%

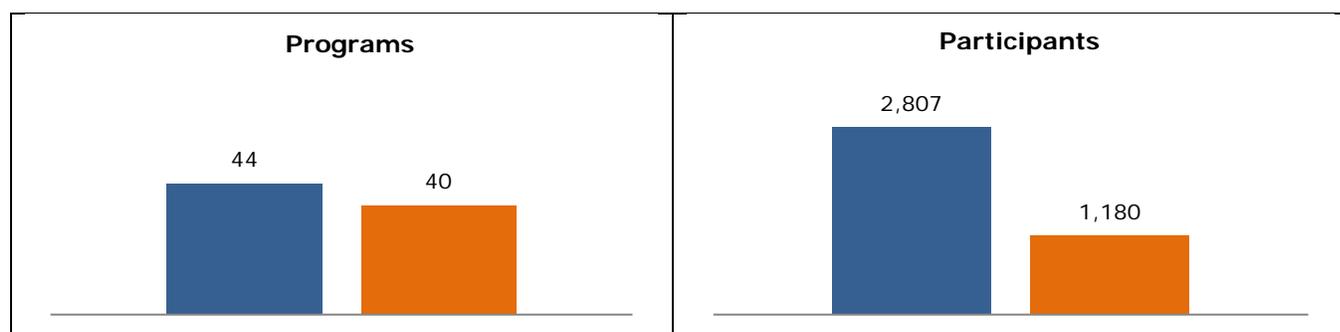
*\*Totals may not equal 100% due to rounding*

NRC colleges worked with employers and industry associations to identify regional needs and gaps to meet local market demands, which resulted in 84 continuing education and credit programs offered during the grant period (see Appendix E). As shown in Figure 1, slightly more than half of all NRC programs were in continuing education, and these programs served 70% of NRC participants.

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117 NRC participants who are in “grant modified courses only” and who cannot be linked to an industry sector through other course/program information.

**Figure 1: NRC Continuing Education and Credit Programs and Participants**



### Focus on Continuing Education and Workforce Development

The NRC created a multi-pronged approach to improving the educational and employment outcomes of low-skilled adults that accounted for regional and state labor market needs. This multi-pronged approach focused on *continuing education and workforce development programs*<sup>9</sup>, which provided in-demand short-term training opportunities for participants that yielded industry-recognized, competency-based credentials, and in many cases served as the principal on-ramp to credit-based programs. Recent data from the National Student Clearinghouse show the magnitude of non-credit programs nationally: 41% of total postsecondary headcount enrollment is in non-credit programs, which is about five million students.<sup>10</sup> In fact, at many two-year colleges, non-credit education students outnumber credit students.<sup>11</sup>

During the NRC, six of the seven consortium colleges delivered 44 continuing education and workforce development programs that served 2,807 participants.<sup>12</sup> Most of these programs were in the healthcare sector, with many colleges offering Community Health Worker, Emergency Medical Technician, Certified Nursing Assistant, and Certified Medical Assistant programs. By design, continuing education and workforce development programs were primarily short-term, and many yielded industry-recognized credentials and core competencies required for participants to gain entry-level employment or move up a career ladder with an existing employer.

Data on NRC participants indicate that continuing education and workforce development students are remarkably different from credit students on several characteristics. As Figure 2 shows, a greater proportion of these participants is female, 25 years or older, and Black, compared with credit participants. In contrast, more credit students are White, male, and younger than 25. The other notable difference is in prior credential received: more than 50% of continuing education and workforce development participants had earned only a GED or high school diploma prior to starting the NRC program, compared with 51% of credit participants who had completed some college or received a certificate. Given these differences, the evaluation team conducted separate quantitative analyses for continuing education and workforce development NRC participants, and for credit NRC

<sup>9</sup> Throughout the evaluation report, we use non-credit and continuing education and workforce development programs interchangeably, given that continuing education and workforce development programs are generally offered as non-credit

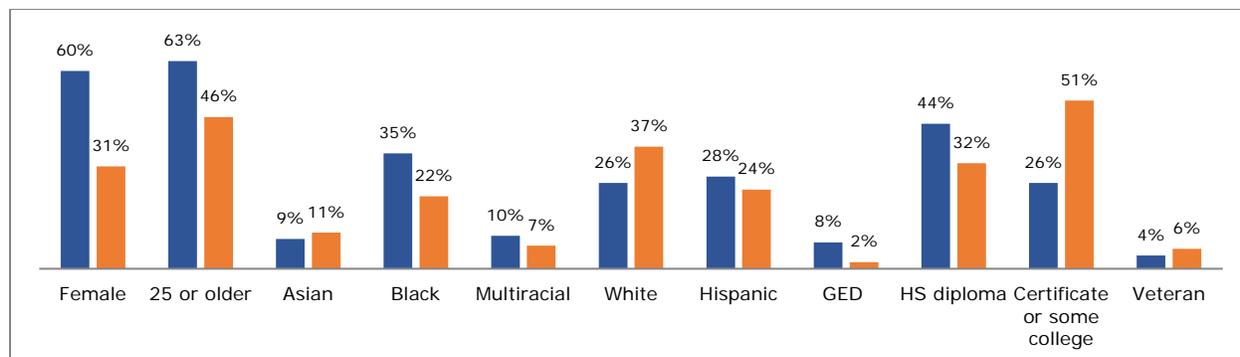
<sup>10</sup> National Student Clearinghouse. (2016). Term Enrollment Estimates Fall 2016

<sup>11</sup> Van Noy, M., Jacobs, J., Korey, S., Bailey, T., and Hughes, K. L. (2008). *Noncredit enrollment in workforce education: State policies and community college practices* [Report]. Washington, DC: American Association of Community College and Community College Research Center

<sup>12</sup> Bunker Hill Community College focused almost exclusively on new and modified credit programs during the NRC, and did not serve participants in continuing education/workforce development programs. Housatonic and Capital Community Colleges served participants in both continuing education and credit programs.

participants. The former group of NRC participants are examined in the main report, and the latter are examined in Appendix B.

**Figure 2: Continuing Education/Workforce Development and Credit Participant Demographics**

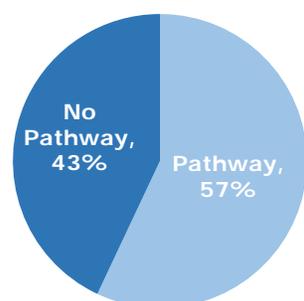


To improve success rates for students in these short-term programs, and to create clear on-ramps with credit programs, NRC colleges provided two key strategies for participants.

First, they **created and formalized links between continuing education/workforce development programs and credit programs** by addressing institutional and programmatic articulation agreements to provide credits for continuing education and workforce development students who matriculate into credit-based programs at their respective colleges. Emerging research literature on career pathways suggests these types of programs can yield better education and employment opportunities for students, especially low-skilled adults who need new skills to compete for jobs in a high-tech economy.<sup>13</sup>

Figure 3 shows that more than half of continuing education and workforce development participants enrolled in programs that provided college credits and a transparent pathway from non-credit to credit programming. These pathways reflected diverse institutional policies around credit for prior learning that are discussed in Section 3 in more detail.

**Figure 3: Continuing Education Pathway Participation**

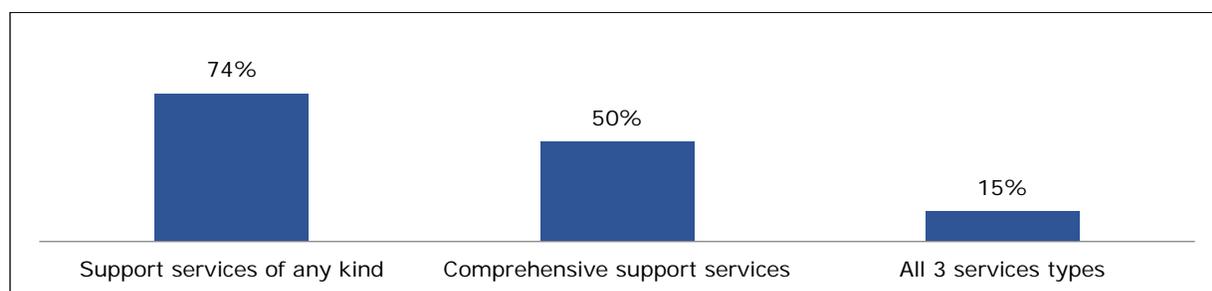


<sup>13</sup> See for example, Alssid, J. L., Gruber, D., Jenkins, D., Mazzeo, C., Roberts, B., and Stanback, R. (2002, August). Building a career pathways system: Promising practices in community college-centered workforce development. New York: Workforce Strategy Center; and, Helmer, M., & Blair, A. (2011, February). Courses to employment: Initial education and employment outcomes findings for students enrolled in Carreras en Salud Healthcare Career Training 2005– 2009. Washington, DC: The Aspen Institute

Second, colleges **provided comprehensive student support services** to participants that addressed career, personal, and academic issues. Research suggests that the *frequency* and *intensity* of supports matters for student outcomes, with more intensive, longer-term supports having greater benefits than low-intensity, one-time services; supports that are more *intrusive* and *individualized* also tend to be more effective.<sup>14</sup>

Figure 4 shows the magnitude of these strategies: 74% of continuing education and workforce development participants received support services of some kind, and half experienced comprehensive services that included at least two of the following types: career, personal, and academic; 15% of continuing education and workforce development participants received support services across all three areas.

**Figure 4: 74% of Continuing Education/Workforce Development Participants Received Support Services**



NRC colleges focused on continuing education and workforce development programs, because they provide opportunity for non-traditional students, such as immigrants and non-native speakers, as well as for working and unemployed adults who are seeking skills and short-term training programs to improve their job and employment opportunities. Given the prioritization of continuing education and workforce development programs, and the fact that more than two-thirds of NRC participants enrolled in these short-term programs, as well as the magnitude of these two strategies among participants, the impact study focused on NRC participants in continuing education and workforce development programs. Outcomes for credit program participants, who also experienced support services, are provided in Appendix B.

<sup>14</sup> Community College Research Center (2013). *What We Know About Nonacademic Student Supports*. Community College Research Center, Teachers College, Columbia University

## Section 2 – Evaluation Design: Implementation and Impact

The comprehensive evaluation of the NRC included regular, formative feedback on the implementation progress among the NRC colleges, and a quantitative analysis of the impact of two core strategies on NRC participants on educational and employment outcomes. In this section, the team describes the methodology and approach to the evaluation.

### Implementation Study

The team designed the implementation evaluation to provide formative feedback on program implementation at each community college during the first two years of the initiative. The team documented and assessed key elements of program implementation, ranging from efforts to develop and establish continuing education to credit pathways to sustaining and institutionalizing key grant-supported strategies like comprehensive support service upon conclusion of the TAACCCT grant. Key research questions for the implementation study included:

- *How were non-credit and credit-based curricula developed and implemented at each site, especially the connection between continuing education/workforce development programs and credit programs? Did progress vary across sectors? How were regional standards for Prior Learning Assessment developed and implemented across sites?*
- *What kinds of comprehensive support services were offered to participants? How were these services provided? How do these services differ from traditional services provided by sites and/or local partners? How were the core resiliency competencies developed and implemented across sites?*
- *How were employers engaged at each site and consortium-wide through local advisory councils? What were important contributions of employers, such as work-based learning opportunities or priority job placement for participants?*

At the outset of the NRC, the evaluation team conducted implementation interviews with stakeholders from each college, reviewed background documents, attended two consortium-wide meetings, and conducted a literature review. These activities informed the development of an evaluation framework to assess implementation progress. This early implementation data collection phase reaffirmed many assumptions embedded in the initial evaluation design, and provided greater clarity and specificity with respect to key lines of inquiry for the evaluation. A high-level conceptual graphic created for the evaluation outlined key areas of inquiry, phases of implementation, and underlying high-level evaluation questions for each phase. This graphic provided a summary overview for the *process over time* by which colleges might move from exploration and early implementation to sustainability, and highlighted some of the necessary factors and infrastructure to do so (Appendix C). Using this initial graphic as a guide, the evaluation team developed an outcomes and indicators tool to assess progress and better understand and document some of the contextual factors that influenced implementation (Appendix D). Both the conceptual graphic and outcomes and indicators make up the evaluation framework.

As noted, the initial evaluation framework focused on the four goals outlined by the NRC and the seven key strategies that reflected the work that the consortium and individual colleges indicated they were implementing or considering implementing as part of the grant. In addition, the evaluation team examined five implementation factors that affect progress and institutionalization and sustainability of

NRC programs and the seven strategies. The list of five implementation factors was influenced by research literature and findings from previous evaluations in this field.<sup>15</sup> As the initiative progressed, the evaluation team remained focused on the five implementation factors, but further honed and consolidated the strategies to highlight those that were most robust and widely implemented across the NRC colleges (Table 2).

**Table 2: Summary Evaluation Framework – Key Strategies and Implementation Factors**

Key NRC Strategies	Five Cross-Cutting Implementation Factors
<ul style="list-style-type: none"> <li>Comprehensive student support services, including resiliency supports</li> <li>Continuing education to credit pathways, including Prior Learning Assessments</li> <li>Expanded employer engagement</li> </ul>	<ul style="list-style-type: none"> <li>Institutional leadership and commitment</li> <li>Financial and administrative prioritization</li> <li>Transparent and supportive policies and practices</li> <li>Professional development</li> <li>Use of data and evidence</li> </ul>

Over the course of three plus years, the evaluation team engaged in several data collection activities to assess and document implementation efforts among the NRC colleges. These data collection efforts included interviews with key stakeholders, such as college administrators, faculty, and support staff, as well as external stakeholders such as employers and workforce groups. The team conducted qualitative interviews and focus groups either in-person during site visits or via telephone:

- Site visits:** The evaluation team conducted 17 in-depth site visits – visiting each NRC college at least twice and three colleges thrice during the grant, in sum interviewing more than 225 stakeholders. During the site visits, the team conducted in-depth interviews with grant staff, college leadership, faculty, student support services staff, employers, and external partners. The team designed site visits to yield important information about the systems and processes each college and its partners undertook during implementation, and to document implementation progress of the key strategies. The purpose of the initial site visits in 2015 was to collect qualitative data on program implementation, and to draft and share formative feedback memos. Subsequent site visits in fall 2016 and spring 2017 were structured to understand issues related to institutionalization and sustainability and inform the summative implementation assessment. The third set of site visits to a select set of NRC colleges in 2016 was geared toward collecting information on the resiliency support services offered at the colleges. Two-person teams conducted all site visits, spending one and a half to two days onsite.

**Implementation Data Collection Methods**

- Document and Literature Review (2014)
- Initial Implementation Phone Interviews (2014)
- Site Visits (2015)
- Phone Interviews (2015)
- Resiliency Site Visits (2016)
- Resiliency Phone Interviews (2016)
- Site Visits (2016-2017)
- Online Surveys (2016-2017)
- Observations of NRC Meetings (Ongoing)

<sup>15</sup> See for example, Price, D., McMaken, J., and Kioukis, G. (2015). *Case Informed Lessons for Scaling Innovation at Community and Technical Colleges*. Available at <http://www.equalmeasure.org/ideas/report/case-informed-lessons-for-scaling-innovation-at-community-and-technical-colleges>; and, Kezar, A. (2011). "What is the Best Way to Achieve Broader Reach of Improved Practices in Higher Education?" in *Innovation in Higher Education*, 36, pp. 235-247.

- **Phone interviews:** The evaluation team conducted two rounds of in-depth structured interviews with each college, and additional phone interviews with those colleges that did not participate in a resiliency site visit. The team conducted approximately 95 phone interviews with the key consortium strategy partners. The first round of interviews conducted in 2014 helped the evaluation team develop a baseline understanding of work at each college, which assisted in the development of the evaluation framework. The evaluation team conducted a second round of interviews in late summer and fall 2015 with the colleges and key partners. This second round of interviews was designed to capture updated information about program and consortium strategy implementation status. In fall 2015, the evaluation team spoke with consortium strategy leads to learn more about the work they were designing to support the NRC. As noted, in spring 2016, the evaluation team conducted phone interviews to learn more about the implementation of resiliency support services.
- **Surveys:** The evaluation team developed two online surveys administered to site leads. The first survey was developed as a pre-site visit assessment to ensure the evaluation team had a clear understanding of the strategies implemented at each college. The second survey was developed to gather information about the continuing education to credit pathways that were created or modified under the grant.

The data collected through the initial site visits and phone interviews during the first two years of the initiative helped refine the implementation study. For example, fieldwork generated a deeper understanding of college efforts to develop pathways from continuing education to credit programs, in some cases creating the appropriate infrastructure to articulate continuing education with credit-based programs. As reported in the Interim Evaluation Report (December 2015), during the first two years of the grant, the NRC colleges made considerable implementation progress to accelerate skill, competency, and credential acquisition, and to provide comprehensive student support services to NRC participants.

Based on these early observations, the evaluation team sharpened its implementation data collection to focus on three cross-cutting strategies that appeared most prevalent across the consortium colleges, and that had the most potential for affecting student outcomes: pathways from continuing education and workforce development programs to credit programs; comprehensive student support services; and expanded roles for employers. Through subsequent implementation data collection, the evaluation team sought to document how the colleges institutionalized and sustained these strategies.

### Impact Study

The participant impact study focused on continuing education and workforce development participants, and examined six student-level outcomes: program completion, credential attainment, credits earned or banked, transition to credit programs, employment, and earnings.<sup>16</sup> The impact study addressed the two most common strategies implemented across the NRC consortium: comprehensive support services and articulated continuing education to credit pathways. The four research questions for the impact study are listed below.

1. *Do participants who received comprehensive support services (career, personal, academic) complete programs, earn credentials, earn or bank credits, and/or transition to credit programs at higher rates than a matched group of participants who did not receive comprehensive support services?*

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<sup>16</sup> *National Resiliency Consortium: TAACCCT Round 3 Detailed Evaluation Plan*. Submitted to the U.S. Department of Labor by Equal Measure and DVP-PRAXIS LTD, May 14, 2014

2. *Do participants who enroll in articulated continuing education<sup>17</sup> to credit pathways earn or bank credits, transition to credit programs, complete programs and/or earn credentials at higher rates than a matched group of participants who did not enroll in articulated pathways?*
3. *Are participants who were not employed at the start of their NRC program, and who received comprehensive support services or who enrolled in articulated continuing education to credit pathways, employed one quarter after program exit and retained in employment three quarters after program exit at higher rates than non-incumbent participants who did not experience these strategies?*
4. *Are participants who were incumbent workers at the start of their NRC program, and who received comprehensive support services or who enrolled in articulated continuing education to credit pathways, have a higher rate of receiving an increase in earnings than incumbent participants who did not experience these strategies?*

To answer these research questions, the evaluation team obtained administrative data from each consortium college for the entire grant period (fall 2013 through summer 2017). The team also used data collected and entered by colleges into a centralized NRC participant database, which was managed by the consortium lead college. The team collected unemployment insurance (UI) data for the three states in which these data were available,<sup>18</sup> and established data sharing agreements with each college, as well as with the state agencies and organizations that provided UI data.

The evaluation used Propensity Score Matching (PSM) to generate a matched comparison group that allows for assessment of the impact of (1) enrolling in a *continuing education to credit pathway* and (2) receiving *comprehensive support services* on educational outcomes. PSM is an increasingly common approach to accounting for factors that may influence the receipt of treatment, and thus confound analysis of impact. By generating a comparison group that resembles the treatment group on all variables thought to affect likelihood of receiving treatment, researchers can mimic a randomized controlled trial. Although the sample members were not randomly assigned to the treatment and comparison groups, PSM allows researchers to infer – within bounds – that differences in outcomes between the two groups are the result of the treatment, and not the result of differences in individual characteristics.<sup>19</sup> This approach aligns with the standards for non-experimental research studies generated by the Clearinghouse for Labor Evaluation and Research (CLEAR) and the Institute of Education Sciences What Works Clearinghouse (WWC).<sup>20</sup> According to these sources, PSM can achieve a moderate rating from CLEAR as well as meet WWC standards with reservations. See Appendix A for detailed information about the PSM approach.

The evaluation team conducted a series of exploratory analyses of NRC strategies to examine educational outcomes of continuing education participants based on the support services received, including career, academic, and personal supports. Different types of continuing education to credit pathways were also examined.

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<sup>17</sup> For the remainder of the report, for simplicity, we use “continuing education” programs to refer to continuing education and workforce development programs

<sup>18</sup> Due to state mandate, Massachusetts was unable to provide UI data

<sup>19</sup> Guo, S. and Fraser, M. (2010). *Propensity Score Analysis: Statistical Methods and Applications*. Los Angeles: Sage Publications; and, Austin, P.C. (2011). An introduction to Propensity Score Methods for Reducing the Effect of Confounding in Observational Studies. *Multivariate Behavioral Research*, 46(3), 399-424

<sup>20</sup> Clearinghouse for Labor Evaluation and Research. *Causal Evidence Guidelines*, Version 2.1, December 2015 Institute of Education Services, What Works Clearinghouse. WWC Standards Brief for Baseline Equivalence, n.d.

Additionally, the evaluation team conducted a descriptive analysis to examine employment outcomes, as variation in data availability and access to employment records across the NRC consortium limited the ability to conduct more rigorous matched comparison analyses.

## Section 3 – Implementation Assessment

The NRC focused its grant strategies on building a resilient workforce in four sectors that are critical to the functioning of communities: healthcare, information technology, hospitality, and environmental sciences. The colleges' approach to enhancing education and training opportunities spanned continuing education/workforce development programs and credit-based programs, and included the provision of comprehensive career, personal, and academic support services. In addition, participating colleges engaged employers in new ways to ensure that grant programs would meet employer needs in high-demand industry sectors.

The summative implementation assessment for the Northeast Resiliency Consortium addresses key implementation research questions in three areas of inquiry: 1) new and enhanced programs and curricula; 2) support services; and 3) employer engagement. The implementation assessment research questions were as follows:

- *How were non-credit and credit-based curricula developed and implemented at each site, especially the connection between continuing education/workforce development programs and credit programs? Did progress vary across sectors? How were regional standards for Prior Learning Assessment developed and implemented across sites?*
- *What kinds of comprehensive support services were offered to participants? How were these services provided? How do these services differ from traditional services provided by sites and/or local partners? How were the core resiliency competencies developed and implemented across sites?*
- *How were employers engaged at each college and/or consortium-wide through local advisory councils? What were important contributions of employers, such as work-based learning opportunities or priority job placement for participants?*

As noted, the seven NRC colleges used continuing education to credit pathways and comprehensive career, personal, and academic support services to accelerate skill, competency, and credential acquisition. In addition, the NRC colleges enhanced employer engagement to improve acquisition of skills needed by employers, with the goal of improving employment outcomes for participants.

In this section, the results of the summative implementation study are provided, and are organized around the three lines of inquiry described above. For each area of inquiry, the key strategies are described and an evaluative assessment of implementation is provided, including a discussion of strengths and challenges as well as factors that facilitated or hindered implementation progress and success.

### Curriculum and Instruction

*How were non-credit and credit-based curricula developed and implemented at each college? How were continuing education to credit articulations and pathways developed? How were regional standards for Prior Learning Assessment developed and implemented across sites?*

NRC colleges offered 84 unique programs of study to participants, with 44 continuing education programs and 40 credit programs. Some of these programs were newly created, while others were enhanced to provide more aligned industry-focused skills and competencies. In almost all programs,

colleges sought to provide stacked and latticed credentials that met the U.S. Department of Labor's definition: *"a credential is considered stackable when it is part of a sequence of credentials that can be accumulated over time to build up an individual's qualifications and help them to move along a career pathways or up a career ladder to different and potentially higher-paying jobs."*<sup>21</sup> Latticed credentials mutually support each other by enabling progress toward a degree and certification at the same time.

The evaluation team identified three primary approaches to new and modified curriculum and instruction implemented by NRC colleges: (1) the creation of new credit-based educational pathways; (2) the creation of transparent and articulated links between continuing education and credit programs; and (3) the development of regional Prior Learning Assessment standards. Each of these areas are documented below.

**Four NRC Colleges developed or enhanced 25 unique credit-based educational pathways, most of which included shorter-term credentials that stacked to Associate degrees.**

Colleges developed credit programs in healthcare, information technology, environmental sciences, and hospitality. Stacked and latticed pathways were most prevalent in the Information Technology sector (16 of the 25 unique programs of study). Below are examples of new stacked and latticed credit programs developed under NRC:

- **Atlantic Cape Community College** developed a new Health Sciences Pathways degree as a way for students not accepted into the college's nursing program to further prepare for that program, as well as to provide opportunities to start healthcare careers in areas other than nursing.
- **Bunker Hill Community College** developed a new Environmental Science AS degree, which stacks from a one-year certificate program in Energy and Sustainability Management that was developed under an earlier TAACCCT grant. Bunker Hill also developed a new Data Management "Fast-Track" certificate, a 16-credit, eight-week program which stacks to an existing Database Support Specialist certificate, then to a Database Programming and Administration A.S. degree. Both existing credit programs of study were enhanced through the grant because of the changes made to the Data Management certificate. BHCC also developed

**Consortium Strategy: Resiliency Competency Mapping**

Through guidance from the consortium, all NRC colleges embedded the resiliency competencies to the curriculum in at least one NRC course or program of study to test the resiliency competency model. Using a curriculum alignment table and outcomes matrix (which is similar to lesson planning with embedded learning goals or outcomes), faculty members participating in this pilot mapped existing curriculum to the resiliency competencies, and in some cases modified or enhanced instruction to ensure students are practicing resiliency skills.

At Bunker Hill Community College, resiliency competencies were fully integrated into two grant-modified courses: CIT 113 and ENV 110. These are introductory courses that reach large numbers of students within and outside NRC programs. The CIT 113 course includes assignments that teach students to incorporate adaptability, critical thinking, reflective learning, and collaboration.

These skills are applied to topics such as interpreting the role that statistics play in shaping opinions, and to real-world situations of uncertainty where students must deduce key pieces of information that are intentionally withheld from them to complete an assignment.

<sup>21</sup> Department of Labor Training and Employment Guidance Letter #15-10. <https://wdr.doleta.gov/directives/attach/TEGL15-10.pdf>

a 46-credit Paramedic certificate, which offers the same Paramedic Studies training as the Associate degree, but can be completed in a shorter amount of time. Students can choose to take an additional 15 credits of general education courses to earn the Paramedic A.S. degree.

- **Capital Community College** developed new credit pathways in Cybersecurity and Mobile Applications, developing a short-term certificate and an A.S. degree for these programs. The Cybersecurity program includes an eight-course, 24-credit certificate that stacks to the A.S. degree in Computer Networking (Cybersecurity option). The Mobile Applications program includes a nine-course, 27-credit certificate that stacks to the A.S. degree in Computer Networking (Mobile Applications Developer option).
- **Housatonic Community College** developed a new 60-credit A.S. degree program for Medical Assisting, a new Paramedic A.S. degree, and an eight-course, 28-credit certificate in Healthcare Careers Pathways that can be applied to other healthcare programs in the Connecticut State Community College system. HCC also embedded short-term specialization certificates in its Computer Information Sciences Degree that align with several industry certifications.

**Six NRC colleges developed formal continuing education to credit program linkages, effectively building on-ramps to credit programs of study from non-credit, shorter-term training opportunities.** Colleges pursued different approaches to articulating continuing education programming with credit programs, including third party certification, Prior Learning Assessment, and implementing matriculation requirements.

**Table 3: Continuing Education to Credit Pathway Types by Institution**

	Matriculation only	Internal PLA	Matriculation + PLA	External PLA
Atlantic Cape		X		
Capital			X	
Housatonic			X	X
Kingsborough	X			
LaGuardia			X	
Passaic County	X			

As Table 3 indicates,<sup>22</sup> the approach to continuing education to credit pathways varied across colleges based on institutional policies and priorities, and included four types: matriculation only, internal PLA only, external PLA only, and a combination of matriculation and either internal or external PLA. As will be documented in Section 4, linking continuing education and credit programs is an effective strategy to increase “banked” credit accumulation and to improve transition rates into credit-based programs. Exploratory analysis suggests that awarding credits automatically upon matriculation, based on the

<sup>22</sup> Bunker Hill Community College did not enroll any participants in continuing education programs with non-credit to credit pathways during the grant

completion of a continuing education program, is a promising practice (see college spotlight on Kingsborough Community College).

Each pathway type is described in more detail below:

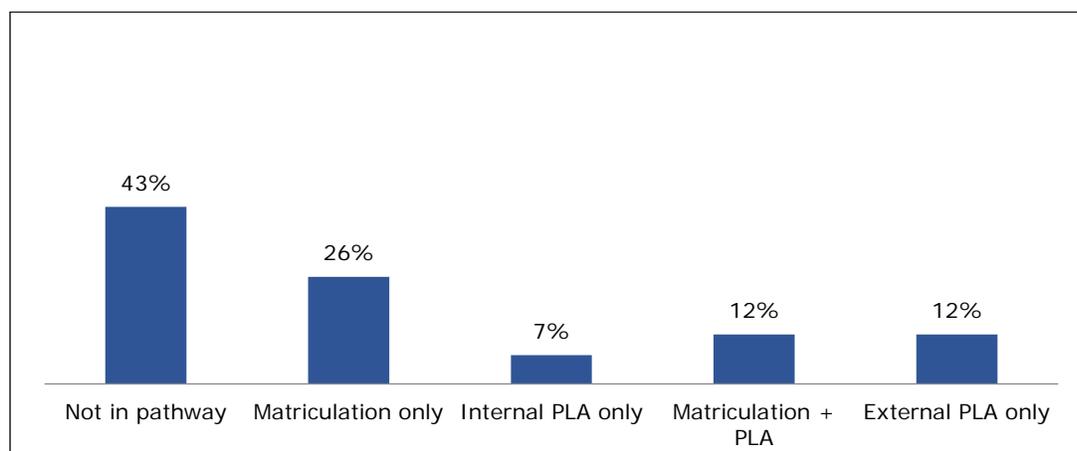
1. **Matriculation** of continuing education to credit pathways refers to continuing education and workforce development programs that have internal articulation agreements with credit programs that allow students to receive credit for their non-credit training after matriculating in a college-level credit-granting program at the same institution. No other assessment is required.
  - ✓ **Kingsborough Community College** leveraged a pre-existing “credit banking” articulation for participants who complete certain non-credit programs of study and enroll in corresponding credit programs. This institutional policy of awarding credits to students automatically upon matriculation is highlighted in the “College Spotlights” section below. During the NRC, the Center for Economic and Workforce Development aligned the Certified Clinical Medical Assistant (CCMA) and Community Health Worker (CHW) programs. CHW students can receive certifications through CCMA that help them in the job market, while CCMA students can bank credits that translate to the CHW program once matriculated.
  - ✓ **Passaic County Community College** provided participants who completed the continuing education Culinary Arts program and transition to a new Culinary AAS degree or baking certificate with up to seven credits; and offered four credits for participants who completed the Community Health Worker certificate and matriculated into the credit-based Community Healthcare Navigator program. In addition to these NRC articulations, continuing education to credit articulation was established for a non-NRC program: students who complete a non-credit real estate course can apply six credits to a business course if they matriculate.
2. **Internal PLA** of continuing education to credit pathways enables credit to be granted for continuing education students after some sort of assessment, such as portfolio review, challenge exam, or the achievement of an industry certification earned based on coursework at the college.
  - ✓ **Atlantic Cape Community College** created a new credit degree called “Health Sciences Pathways” after data from Thomas Edison State University suggested this might be an opportunity for students who applied for ACCC’s nursing program, but did not get accepted. Students who complete an ACCC continuing education program and pass specific industry-recognized certification exams are eligible to receive credits in this new credit-based healthcare program.
3. **External PLA** of continuing education to credit pathways relies on third-party organizations to review non-credit programs and award equivalency credits. Although there is not an additional student assessment, the student must request this review, provide the necessary paperwork, and pay a fee to the third-party entity. Once equivalency credits are awarded, the student can transfer these credits to the institution.
  - ✓ **Housatonic Community College** partnered with Charter Oak State College to conduct external evaluations of curricula for three healthcare programs of study (Patient Care Technician, Certified Nursing Assistant, and Community Health Worker).

Students who complete these continuing education programs can submit their credentials and a small fee to Charter Oak, and receive 3-6 credits that can be transferred to Housatonic.

4. **Matriculation + PLA** of continuing education to credit pathways requires a combination of either internal or external PLA and matriculation to a credit program at the college. In these pathways, students must matriculate to receive credits, and in some cases, credit for the continuing education training is awarded only after a student has completed a certain number of credits in the program.
  - ✓ **Capital Community College** awards six credits for completers of the Community Health Worker program after they apply for evaluation through Charter Oak State College and matriculate at Capital. Students who complete a 50-hour internship (rather than the typical 35 hours) receive an additional three credits once they matriculate into any social science credit program. Additionally, NRC participants who completed the continuing education Mobile Applications programs can receive 3-4 credits if they pass a challenge exam that was developed during the grant.
  - ✓ **LaGuardia Community College** had an existing articulation between the Emergency Medical Technical (EMT) and Paramedic programs, where EMT students who complete an internal PLA evaluation and matriculate into the Paramedic program can receive nine credits toward the program. This is a common articulation, because an EMT certification is often a requirement for entry into Paramedic programs.
  - ✓ **Housatonic Community College** provided students who completed the continuing education Computer Support Networking and Computer Support Repair programs – and who pass the industry-recognized certification exam – with 3-4 credits toward the Computer Information Systems A.S program once they take nine credits to show commitment to the program.

Figure 5 shows the type of pathways NRC participants experienced: 57% of continuing education NRC participants were in a program with a transparent and formalized continuing education to credit articulation, including 26% who were in a matriculation-only pathway, 12% who were in a Matriculation + PLA pathway, 12% who were in an External PLA-only pathway, and 7% who were in an Internal PLA-only pathway.

**Figure 5: Continuing Education to Credit Pathway Type Participation**



### **Consortium Strategy: Regional PLA Standards**

The NRC developed regional Prior Learning Assessment standards that colleges assessed against existing policies and processes. Regional Prior Learning Assessment standards were developed through an iterative process among the NRC consortium leads, college faculty and staff, and national experts. These PLA standards are intended to expand opportunities for students to receive credit for prior learning.

At several colleges, these regional PLA standards went under review by college leaders and administrators, and most colleges are confident that the standards will align with their existing standards, or will be approved as *new* standards for the college. Although some colleges expressed concern about institutional barriers (e.g., faculty resistance and limited institutional resources) to moving forward with the regional PLA standards, in general colleges are adapting and aligning the regional PLA standards within their unique institutional contexts.

As part of the implementation of PLA standards, colleges worked with nationally recognized experts and received on-campus training for faculty and staff. These sessions were often attended by faculty and staff not directly working on the NRC grant at their colleges.

**Leveraging a consortium-wide focus on Prior Learning Assessment, colleges modified and formally approved institutional PLA policies.** Colleges differed in their PLA approaches and modifications, but most colleges leveraged the consortium’s focus on PLA to advance policies within their own institution. Examples of this include:

- **Capital Community College** and **Passaic County Community College** formally accepted the Regional PLA Standards developed through the NRC at their institutions.
- **Passaic Community College** changed a policy to allow individual faculty members to administer challenge exams and award credit for prior learning, a decision that once required approval by a vice president. In addition, the college created a PLA coordinator position, and embedded it into the academic division to serve as a formal bridge between the non-credit and credit divisions at the college.
- **LaGuardia Community College** now conducts an annual review of its internal continuing education to credit articulations, and has moved from quasi-formal agreements to clear,

formal Memorandums of Understanding between the college's continuing education division and academic programs.

### College Spotlight – Kingsborough Community College (NY)

#### Credit Banking

Kingsborough Community College used “credit banking” as part of its NRC programming. Credit banking is a formal program-level agreement that allows students to “bank” credits after completing continuing education and workforce development programs. Once the student matriculates into the articulated KBCC program, they are awarded these credits, generally as elective credits toward a major in the respective department. In some cases, these credits can apply to specific courses or modules within the program (e.g., EMT students who matriculate into the paramedic program get six credits that compose the EMT portion of the paramedic program of study). The Center for Economic and Workforce Development (CEWD) facilitated and negotiated these agreements for NRC programs of study in the departments of tourism and hospitality and healthcare. This practice existed prior to the NRC, and during the grant CEWD worked with the registrar to formalize these agreements and protect against potential institutional changes that could affect credit banking.

Five NRC programs at KBCC have credit banking: Certified Alcohol and Substance Abuse Counseling, Emergency Medical Technician, Community Health Worker, Food Service Upgrade, and Culinary Arts. These programs were well-established prior to the NRC grant. In many cases, the continuing education programs have credit-granting degree counterparts, with identical curricula taught by the same faculty. This helped facilitate the credit banking agreements for these NRC programs.

Administratively, credit banking occurred in two ways across these programs: either with an arrangement with the bursar's office and academic affairs; or through the program design (either as a dual enrollment program – non-degree or degree – or through entering with credits through a past certification). The agreement to engage in credit banking happens either between two programs that offer non-credit options through CEWD, or between programs in a department that has both CEWD and continuing education programs of study. Credit banking has been more successful and quickly implemented by departments that CEWD has strong pre-existing relationships with, such as the Tourism and Hospitality department.

Interviewees reported that credit banking provided students more confidence and encouragement to continue their education (either immediately after completion or after some career building), and particularly, to continue that education at KBCC, which is beneficial for KBCC's enrollment and could build broader support for credit banking as an institution-wide policy.

## College Spotlight – Atlantic Cape Community College (NJ)

### Leveraging Industry Certifications and Credit for Prior Learning

Atlantic Cape Community College (ACCC) decided to use nationally recognized industry certifications as the basis for credit equivalencies, rather than the continuing education program curriculum taught at the college. Generally, these industry certifications are needed for employment, and the programs are designed to prepare students for these exams.

After passing industry-recognized healthcare certification exams, students are eligible for credit in a newly created health sciences pathways program at ACCC (starting in Fall 2018). This program was created in response to the high student demand for the nursing program, and provides either more preparation for students who were not initially accepted to reapply for the Nursing program, or an opportunity to apply their prior learning for a different healthcare program. Thomas Edison State University evaluated several industry certifications, which mapped to ten different NRC healthcare programs at ACCC. The number of credits earned for passing the certification exam ranges from 3-17 credits, and varies by the type of certification received. Most programs do not articulate at a course-by-course level and would come in as general elective credits in the health sciences pathways program. There are a couple exceptions – specifically, the EMT credits will slot into that portion of the Paramedic program once the program begins, and the Medical Terminology certificate also fills a specific course requirement.

This policy change to articulate credits from continuing education programs was formalized near the end of the grant period, so students have yet to take advantage of this articulation policy. Currently enrolled students who were informed of the opportunity expressed interest, and ACCC plans to follow up with students who completed continuing education programs during the NRC to let them know about the new health sciences pathway and the credits they can earn if they matriculate into the program.

### Factors Affecting Implementation Success: Curriculum and Instruction

The NRC offered 84 programs of study in healthcare, information technology, environmental sciences, and hospitality – 44 continuing education programs of study and 40 credit programs of study. NRC colleges made considerable implementation progress developing new programs with stackable credentials, and creating formal linkages between continuing education and credit programs. Below are some factors that have facilitated or hindered the implementation success of this strategy:

1. **Administrative and departmental leaders demonstrated commitment to creating new stacked and latticed credential pathways, including the formal articulation of continuing education programs with credit-based programs of study.** Colleges formalized the articulation of credits for completing some continuing education programs, either within a department or across different departments on campus. Some colleges did not have extensive stacked and latticed credentials before, and used the NRC grant as an opportunity to develop these pathways. Administrative leadership expressed the importance of continuing education to credit pathways and a desire to continue and expand these pathways in the future.
2. **Collaboration between continuing education instructors and credit-based program faculty helped facilitate and hasten development of new stacked and latticed pathways.** At many colleges, grant-funded faculty were involved in developing new NRC programs, which will be sustained beyond the grant. In addition, grant-funded staff and

faculty worked with permanent, full-time faculty members to establish stacked and latticed credentials, both from continuing education to credit and from short-term credit certificates to degrees. In some cases, the same instructors taught both continuing education and credit courses, and the content taught in both offerings were nearly identical, facilitating the approval of credit for completing continuing education programming. This articulation seemed to vary by sector – IT programs and well-established healthcare programs tended to be more readily and quickly accepted than nascent healthcare and environment programs, and may be related to the presence of numerous industry-recognized certification exams that are viewed as critical to any professional entering these industries. In some cases, departments also developed new credit programs that accept credits articulated from NRC continuing education programs.

3. **Limited awareness of Prior Learning Assessment is one reason that few students have taken advantage of these opportunities.** Although there was a lot of work around Prior Learning Assessment during the NRC, few participants used these opportunities outside of the articulated continuing education to credit pathways. In addition to bureaucratic processes that delayed the approval of PLA, a main reason NRC staff and faculty cited for limited participant take-up is *poor marketing*. Students were not made aware that these opportunities existed or how to qualify for these credits (and go through additional administrative actions, if necessary). Although PLA opportunities are listed in some catalogs and program descriptions, and NRC staff and instructors announced these opportunities to students in classes, not all students who may be eligible for these credits are aware of these opportunities.

### Comprehensive Support Services

*What kinds of comprehensive support services were offered to participants? How were these services provided? How do these services differ from traditional services provided by sites and/or local partners? How were the core resiliency competencies developed and implemented across sites?*

NRC colleges delivered support services across three primary content areas: career, personal, and academic. **Career** supports include assistance with job or internship placement, interviewing skills, and resume development. **Personal** supports include assistance with life challenges that could be interfering with academic progress, such as food security, housing issues, transportation, and childcare. **Academic** supports address content-specific assistance in courses or programs to enable students to master the skills and competencies needed to advance in the program and earn industry-recognized or postsecondary credentials.

**The NRC Resiliency Competency Model<sup>23</sup> facilitated the modification and development of support services among participating colleges.** Support services staff tended to operationalize resiliency through skills and knowledge such as personality types, working styles, managing time and stress, and self-care. These supports map well to the competencies of adaptability, self-awareness, and reflective learning, which are detailed along with the other competencies in the call-out box on the following page. At Kingsborough Community College, a support service staff member developed a workshop on self-care, which focused on the competencies of adaptability and self-awareness. During the workshop, tangible skills and practices were introduced and then related to the idea of being

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<sup>23</sup>[http://achievingthedream.org/sites/default/files/initiatives/resiliency\\_competency\\_model\\_with\\_creative\\_commons.pdf](http://achievingthedream.org/sites/default/files/initiatives/resiliency_competency_model_with_creative_commons.pdf)

resilient. Resiliency was presented as a set of personal skills that can be learned and are helpful for any life setting, including in college and careers.

### **Providing Support Services Using the NRC Resiliency Competency Model**

The NRC defines resiliency as *“an individual’s persistent development and application of knowledge, skills, and resources that effectively help one adapt to change and overcome adversity.”* Building from this definition, NRC leadership and college staff worked with Achieving the Dream to develop five key resiliency competencies, defined below:

- **Critical thinking:** *purposeful use of reasoning to identify strengths and weaknesses of alternative approaches in diverse situations;*
- **Adaptability:** *successful adjustment to a variety of positive and negative conditions and circumstances;*
- **Self-awareness:** *clear understanding of one’s qualities, characteristics, strengths, and weaknesses, and how they impact one’s self and others;*
- **Reflective learning:** *integration and application of prior and current learning to new situations; and*
- **Collaboration:** *works with others to achieve a goal.*

NRC grant-funded staff provided support services to NRC participants around these resiliency competencies, especially the “adaptability” and “self-awareness” competencies. These resiliency supports were delivered through workshops on different topics that would be helpful for students in their academic and professional careers, such as cultural competency, study skills, time management, and stress management. Workshops were delivered in various ways across college and programs of study: either in-class during the term, out-of-class during the term, or as part of an orientation or required “bridge” prior to the program starting.

Furthermore, NRC colleges applied the resiliency competency model to additional populations and programs outside of the NRC programs, and showcased these efforts and their impact through a series of resiliency case studies. The case studies reveal a wider applicability of the competencies and an effort to develop a more robust way of working that has potential implications for sustainability of the model.

**NRC Colleges delivered support services to NRC participants inside and outside the classroom.** Support services staff provided workshops and seminars for students on topics such as interview preparation, time management, study skills, and self-care. These workshops were delivered in group settings either in the classroom during scheduled lecture times or required pre-program orientation, or outside of class in voluntary sessions. Whether these workshops were delivered in-class or out-of-class varied by college, program, or sometimes even by instructor. Colleges reported that services provided through required in-class or pre-program sessions reached more students than those provided through out-of-class sessions. For example, at Housatonic Community College, NRC staff delivered a resiliency workshop at freshman orientation seminars, and visited NRC classes to deliver career readiness workshops and provide students information about internship opportunities. At Kingsborough Community College, students received comprehensive support services in-class through a pre-program bridge and weekly professional development sessions.

**NRC Colleges offered personalized, 1:1 support services to participants, though these were rarely mandatory.** NRC-grant funded staff members provided 1:1 supports to participants that were personalized and exclusive to NRC students, such as resume development, job placement, career advising, and personal wrap-around counseling and referrals. Some programs, such as the Culinary Arts program at Kingsborough Community College, the Community Health Worker program at

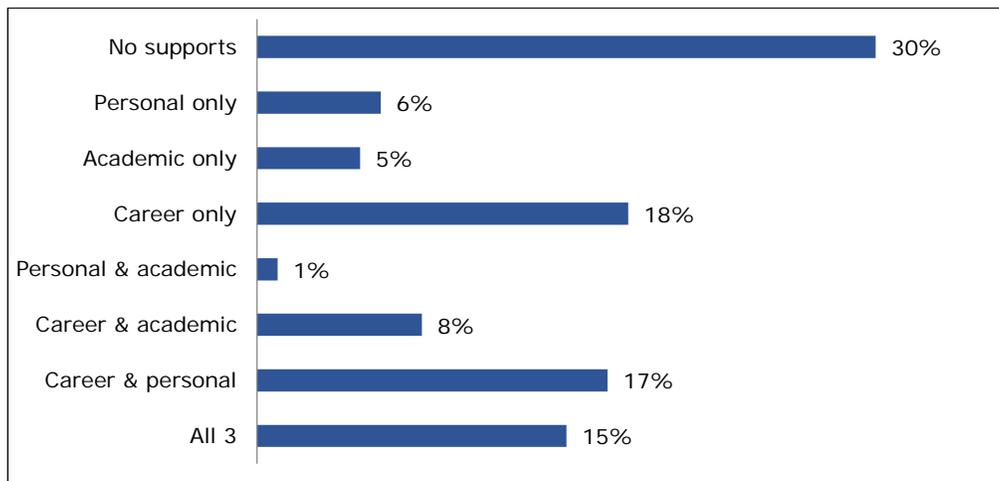
Housatonic Community College, and the SAVE-EMT program at LaGuardia Community College had more specific and in-depth supports that were generally more personalized and intensive than supports for other programs at their respective colleges. In addition, at Passaic Community College and Bunker Hill Community College, a support service staff member performed needs assessments or conducted enhanced intake processes with students on a 1:1 basis, generally with the help of a support services technology such as Edmentum or Career Coach. Although most of these services were not required, some support service staff who provided these services proactively followed up with students or identified students who may be in need more than others.

Table 4 provides several examples of specific support services within each of the three content areas, as well as their availability for NRC participants at each college.

**Table 4: Support Service Offerings by Content Area**

	ACCC	BHCC	CCC	HCC	KBCC	LGCC	PCCC
<i>Career:</i>							
Resume development	X	X	X	X	X	X	X
Interviewing skills	X	X	X	X	X	X	X
Job placement assistance	X	X	X	X	X	X	
<i>Personal:</i>							
Personal counseling	X	X	X		X	X	X
Skill-building workshops and/or orientation activities related to resiliency	X		X	X	X	X	X
<i>Academic:</i>							
Additional or exclusive tutoring/study sessions for NRC participants					X	X	
Textbook and/or materials lending	X				X		
Connections to on-campus and/or off-campus supports	X	X			X	X	X

**Figure 6: Percentage of NRC Participants Receiving Support Services (N=3,987)**

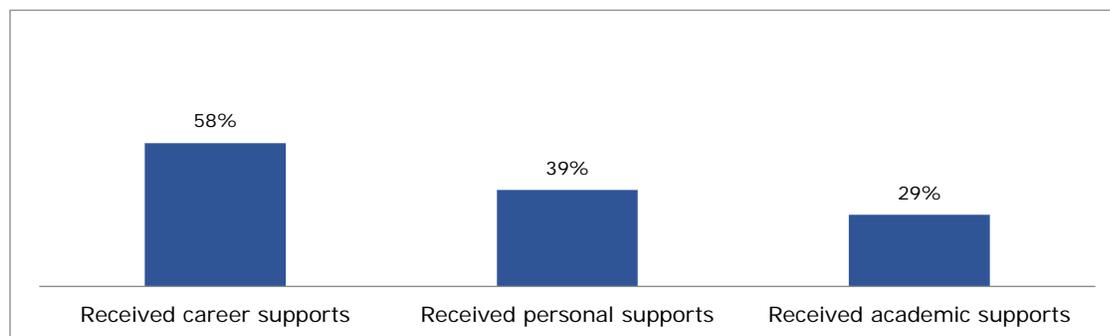


**70% of all NRC participants received at least one type of support service, with career supports being the most common, and academic the least common.** Figures 6 and 7 show the percentage of participants who received various types and combinations of support services. 41% of all participants received **comprehensive support services**, which means they received supports in two or three content areas; and 15% received support services within all three content areas.

Figure 7 illustrates the breakdown of supports by content area:

- 58% of NRC participants received **career** supports, which included individualized career counseling; resume development and interview skills workshops; and assistance with job and internship placement. These supports were often provided by grant-funded employer relations specialists or recruitment and retention specialists.
- 39% of NRC participants received **personal** supports, which included personal counseling; referrals to wrap-around supports on- and off-campus; and workshops to build resiliency skills, such as stress management and self-care.
- 29% of all NRC participants received **academic** supports, which included additional tutoring (that was exclusive to NRC participants at four colleges); textbook lending and financial support; additional study sessions; support for math and writing; and “boot camps” to help students prepare for entrance exams necessary to enter some programs.

**Figure 7: Percentage of NRC Participants Receiving Support Service by Content Areas**



Across the NRC colleges, 1,634 NRC participants received comprehensive support services, which as documented in Section 4, yield significantly higher educational and employment outcomes for participants. Three colleges with promising approaches to comprehensive support services are spotlighted below.

### **College Spotlight – Bunker Hill Community College (MA)**

#### **Intrusive, Personalized One-on-One Resiliency Advising**

At Bunker Hill Community College, grant-funded staff provided proactive support to NRC participants around career development skills, internships, and job placement. A support services team included one career coach, who provided advising to students throughout the program, and two employer relations coordinators, who helped provide job placement and developed relationships between the college and employers. Approximately 139 NRC participants at BHCC received 1:1 career-related support services during the grant.

The career coach engaged students throughout the duration of the program. She conducted needs assessments with students and helped them develop goals at the beginning of the program, then helped students develop resumes and interviewing skills. As students neared program completion, the career coach passed them on to one of two employer relations coordinators, who would then connect students with job opportunities. The career coach was an integral part of the support services team at BHCC – if a student came to an employer relation coordinator without having consulted with the career coach, they would be sent back to the career coach for preparation first. The career coach was highly regarded by staff and students, and the employer relations specialists mentioned that they relied on the career coach to identify students nearing completion to engage with job searching services.

Although students, faculty, and staff praised the career coach, pointing to the assistance she provided students in completing their programs and preparing for employment, *this position will not be sustained post-grant*. The main reason that this position will not be sustained is a lack of financial commitment to invest in program-specific support service positions, which are deemed too expensive to sustain. A slim higher education budget in Massachusetts was mentioned as a contributor to this decision.

## College Spotlight – Kingsborough Community College (NY)

### Pre-Program Bridge and Weekly Resiliency Workshops

Kingsborough Community College instituted a mandatory three- to five-day pre-program bridge and series of weekly workshops for a subset of its NRC programs of study. The pre-program bridge introduced students to the supports available on campus, provided training on academic management software (Blackboard), encouraged students to build academic and career goals, and covered personal resiliency topics and college-success skills. Students also completed an individual service plan, in which they identified services they may need, and the NRC coordinator conducted one-on-one follow-up with students after the bridge to connect students with the services identified.

Once the program began, program counselors led weekly one-hour professional development sessions that covered employment, college success, time management, stress management, self-care, and other resiliency-building topics. These sessions took place immediately before class one day each week. Students also received one hour of math and writing support each week in a similar format. Additionally, students had access to job developers who helped students revise resumes and apply for internships. Project staff reported that students have gone *“even farther than we, or they, expected,”* and pointed to the enhanced supports as a key factor in students' success. And, NRC program instructors recognized that *“the support systems that exist in the program each work separately and together to help students in a different way...the supports that they get really help them hone in on their weaknesses and build their strengths...strength building is a huge component of this.”*

The pre-program bridge and resiliency workshops provided a “bundle” of career, personal, and academic supports to participants, contributing to their positive education and employment outcomes. The pre-program bridge and the resiliency workshops will not be formally expanded college-wide. However, the permanent counselor who led resiliency activities during the second half of the grant intends to integrate resiliency into a first-year experience course that she teaches to ESL students. She also developed a new self-care workshop, which draws upon the resiliency competencies, and intends to continue delivering these workshops to students that she supports. The Center for Economic and Workforce Development, which managed and led the NRC grant at KBCC, intends to use these resiliency supports and competencies in other grant programs, including the CUNY Fatherhood Institute and America's Promise.

## College Spotlight – LaGuardia Community College (NY)

### Integrated Academic, Career, and Personal Resiliency Supports

LaGuardia Community College served NRC participants in the Supporting Adults through Vocational EMT Training program (SAVE EMT), in which students received integrated basic skills instruction as well as career preparation and personal resiliency supports. The program is based on Washington State's I-BEST model, and all enhanced supports are fully embedded in the program. Additionally, students in this program participate in a three-week pre-program "vestibule," which serves as an extended orientation that enables students to try out the program and determine whether it is a good fit with their interests and academic and career goals. Program instructors, the basic skills instructor, and NRC case managers co-lead the vestibule and, according to college stakeholders, *"help make the technical material more accessible to students who have not always done well in a traditional academic setting."* Program leaders make the EMT content more accessible to students through a combination of providing basic skills instruction; requiring one-on-one meetings with the basic skills instructor; offering group sessions on study skills, time management, and goal setting; and implementing nightly homework in conjunction with a homework tracker tool. Students are required to set short-term and long-term goals in the first few days of the vestibule, which they then review at the end of the vestibule and at the end of the program.

Once the SAVE EMT program begins, the basic skills instructor leads class one day each week and, in addition to providing enhanced academic support and addressing college success strategies, helps students build resiliency through mandatory weekly one-on-one advising sessions. This enhanced support was recognized by students as "critical" to success in the program. Additionally, NRC case managers lead two-hour career development workshops most weeks, meet with students individually at least once early in the program, and occasionally lead sessions on other topics (e.g., study skills).

Impact analyses conducted as part of the third-party evaluation documents that more SAVE EMT participants – students who would not otherwise be accepted into the EMT program because their placement test scores were too low – complete their program and receive higher EMT state examination scores than do traditional EMT students (whose placement test scores met the acceptance threshold). In other words, SAVE EMT students start the program at an academic disadvantage relative to traditional EMT students, yet more complete the program and receive higher certification test scores than a matched comparison group of traditional EMT students. This suggests that the integrated supports provided to SAVE EMT students had a meaningful impact on student completion rates and certification test scores, and that this strategy may help academically disadvantaged students not only meet, but exceed, the performance of students who began the program with higher test scores, but did not receive comprehensive supports.

Despite the success of the SAVE EMT program in providing opportunities for low-skilled adults, *it will not be sustained unless LaGuardia Community College receives other grants to continue funding it.* The I-Best approach is effective, but is perceived as too expensive for the college to offer independent of grant funds. This is due to expense of team-teaching, extensive support services, and the additional time of the EMT instructor.

## Factors Affecting Implementation Success: Support Services

Overall, NRC colleges provided multiple and varied types of career, personal, and academic supports to participants. Many of these supports were deeper and more personalized for NRC students than were available to general students at these colleges, and as noted, there were some services that were exclusive to NRC students. Most often, these comprehensive support services were provided by grant-funded staff or permanent staff who were partially funded through the grant to dedicate additional time to NRC. Below are some factors that facilitated the implementation of this strategy:

1. **NRC's initial focus on resiliency from the onset of the grant, and the colleges' buy-in and commitment to this concept, led to a wide variety of support services provided to NRC participants.** Although originally defined or thought of slightly differently by various colleges, faculty and staff developed methods to introduce students to resiliency and the five competencies that encompass the concept. This included pre-program bridges or vestibules; mandatory and voluntary workshops; and coursework. Staff members at some colleges created workshops or seminars that embedded resiliency competencies or the idea of resiliency in them. Some colleges will continue or expand portions of resiliency in other grant programs, orientations, and first-year experience programs.
2. **Support services staff whose positions were dedicated to serving NRC participants or providing additional services to NRC participants were critical to the success of these supports.** Generally, at these colleges, counselors and other support service staff have heavy caseloads of students, thus making it difficult to provide in-depth services for large numbers of students who may need them. Through NRC grant funding, colleges hired support services staff who exclusively served NRC participants, or funded permanent support staff to spend a portion of their time exclusively serving NRC participants. This includes four colleges who hired employer relations specialists and/or retention and employment specialists who focused on career services for NRC students. This allowed for support staff to provide more in-depth and personalized support to NRC students that they might not have been able to if they had the caseload of general support staff at the college.

## Enhanced Employer Engagement

*How were employers engaged at each college and consortium-wide through local advisory councils? What were important contributions of employers, such as work-based learning opportunities or priority job placement for participants?*

The NRC intended for employers to be deeply engaged throughout the grant by participating on advisory councils, vetting academic curricula, partnering with the colleges to provide work-based learning opportunities, and facilitating employment of participants upon certificate and degree completion.

**Colleges developed new relationships and leveraged existing relationships with employers, who were involved in NRC in various ways, from aiding in development of NRC programs to providing work-based learning opportunities for NRC students.** NRC colleges developed new relationships with employers or leveraged existing relationships – some relationships are long-standing and institutional, while others were cultivated and developed by certain individuals, such as employer relations staff or faculty members. Colleges engaged employers in several ways during the grant:

- **Colleges created and strengthened sector-based employer advisory boards to guide the development of new and enhanced programs that met the requirements and needs of employers.** Advisory boards and councils were generally sector-based and included local employers. These councils were involved in curriculum review, program design, and developing work-based learning opportunities. For example, Atlantic Cape Community College established a new advisory committee, and Capital Community College expanded its information technology advisory council and an advisory board for the Community Health Worker program. Bunker Hill Community College utilized a business and industry leadership team that was established during an earlier TAACCCT grant to review curriculum and provide suggestions for IT and medical technology programs. The input from this team helped the college adapt its curriculum to include offerings and teach skills that were more relevant to the current state of the industry. Housatonic Community College developed a TAACCCT advisory board, which consisted of several local employers. These employers have offered internships, provided interview feedback, and hired students.
- **Colleges leveraged existing and new relationships with employers to expand and develop internships and clinical sites for their NRC grant-funded programs.** In many cases, particularly for existing healthcare programs, internships and clinical sites have long been integrated into these programs, and continued through the NRC grant. New internship and clinical opportunities for students were also developed during the NRC, though these tended to be smaller-scale and informal (i.e., students are taken in ad-hoc as demand is needed, as opposed to committing to a certain number of slots filled per term or year). At Capital Community College, the grant-funded job development and placement coordinator developed a 35-hour internship for the Community Health Worker program and brokered these internships for several students at a few different employers, which is shorter than the typical internship is at the college.
- **Colleges invited employers to campus events and career fairs to interview students and to observe students demonstrating job-related competencies.** Employers were engaged in and helped support typical career preparation activities for students, such as career fairs and campus visits. Through the NRC grant, Atlantic Cape Community College developed and held a “Demo Day,” where students in various NRC healthcare programs of study set up stations and performed routine skills and procedures for employers who attended. Employers noted they were impressed with students who exhibited their skills, and in a couple instances, took these students for internships or for clinical rotations. Bunker Hill Community College altered its job fair approach to become smaller and sector-specific. Called “Tech Nights,” these sector-specific events drew interest from students and employers, and led to additional internships and employment for NRC participants.

**NRC colleges responded quickly to employer demand by modifying programs to provide urgently needed pipelines of entry-level workers.** Through their knowledge of the field and their networks, faculty or department chairs sought to meet the increased demand for certain careers related to their programs of study, and modified existing programs to meet these needs. For example, in anticipation of a mass hire due to an upcoming citywide ferry expansion, the Maritime Technology department at Kingsborough Community College offered an accelerated 12-day program based on its four-semester maritime program, and ran two cohorts of this shortened program to help meet this anticipated entry-level job demand. Some of these students have already gained employment in the field, and several students have transitioned into the full degree program. Passaic County Community College launched a new Imaging Academy that was developed in response to a request from Hackensack University Medical Center to PCCC’s Radiography program. To date, more than 200 students have completed or are currently doing internships at local hospitals and imaging centers. At

Atlantic Cape Community College, a major hospital in the area wanted its customer service representatives to advance their healthcare careers, but the current course and program schedule interfered with work; in response, ACCC offered a “hybrid” form of its Medical Assistant program to better meet the needs of these incumbent workers.

**Four NRC colleges hired staff to focus specifically on employer relations.** Generally, these staff members developed new relationships and cultivated existing relationships with employers in the NRC sectors or programs of study offered at their college. These staff members also helped place students into internships, clinical rotations, or jobs. Capital Community College hired an employer relations specialist, who developed new internships for the Community Health Worker program, while Housatonic Community College hired a career development coordinator who actively engaged employers to make them aware of NRC programs and students at their college, and who worked with students to connect them to internships and job opportunities at these employers. Overall, employers, faculty, and administrators valued the contributions of these staff members; however, most of these grant-funded staff will not be sustained post-grant.

**Local workforce system partners were not very involved in the NRC, with a few exceptions.** Although workforce partners made a small number of referrals to NRC programs, in general the workforce system was not involved in the design or development of NRC programs, and did not systematically support its clients to enroll in these programs. A notable exception was at Passaic County Community College that leveraged the TAACCCT grant to solidify a co-located space for the continuing education and workforce development division along with the county one-stop and offices of the state Department of Labor and Workforce Development (See College Spotlight on the next page). Another exception is the workforce board for Atlantic County and its engagement with AtlantiCare, a large hospital chain in the region, and the college. These partners communicated about the high-demand for healthcare workers and collaborated by providing referrals to and from the workforce system, notifying the college and workforce system of job opportunities with AtlantiCare, providing student internships at affiliated hospitals, and offering additional training opportunities at the college.

## College Spotlight – Passaic County Community College (NJ)

### Formalizing Links between College Education and Training Programs, and State Workforce Development Agencies

As part of the NRC grant, Passaic County Community College solidified a co-located space on campus where the college's Department of Continuing Education and Workforce Development is in the same building as the local Workforce Development Board, the county One-Stop and unemployment offices, and the New Jersey Department of Labor and Workforce Development. This shared location has enabled the college to strengthen its relationship with the workforce development system; for example, staff and leaders from the college and workforce development system co-develop an agenda for monthly meetings to share best practices, and discuss ways to integrate their programming, avoid redundancies, and create financial savings.

Senior leaders at PCCC attribute this strengthened relationship to TAACCCT, and report it has enabled new coordination between the college and workforce development system around career pathways. PCCC leaders collaborated with the workforce development board to create an integrated strategic plan required under the new Workforce Investment Opportunity Act legislation. Thus, the WIOA state plan is intentionally linked with the college's Adult Basic Education and English as a Second Language programs, as well as the college's career pathways offerings.

Additionally, the co-location and resulting communication and engagement between the college and workforce development system has yielded new opportunities for PCCC's customized and contract training division to provide opportunities for incumbent worker training programs with New Jersey based firms.

## College Spotlight – Housatonic Community College (CT)

### Establishing a Career Services Office to Institutionalize Employer Relations

Housatonic Community College hired a grant-funded career development coordinator to provide career-related support services to students, particularly around job and internship placement. The coordinator engaged employers to make them aware of HCC programs and students, seeking internships as well as potential job interviews. During the NRC, the coordinator met with more than 200 healthcare and IT NRC students on a one-to-one basis to counsel them about their potential career paths and connect them with job and internship opportunities. HCC lacked a formal Career Services Center – although faculty and staff engaged with employers and students on an *ad hoc* basis – so the NRC career development coordinator created his own practices to support students and to engage with employers about job and work-based learning opportunities.

Near the end of the NRC grant, HCC established an office of career services, internships, and experiential learning, co-led by the grant-funded career development coordinator and an additional career services staff who had worked with credit programs at the college. Once the grant ends, the NRC-funded career development coordinator will continue in his role, transitioning from grant-funded staff to permanent, college-funded staff. The two coordinators will provide career supports and job placement assistance for students across the college. This new office centralizes internship placements and work-based learning opportunities for continuing education and credit students, in addition to career services.

## Factors Affecting Implementation Success: Employer Engagement

Through the NRC grant, colleges included employer and workforce system partners in various aspects of the work, from forming and expanding advisory boards, assisting with internship and job placement, and coordinating referrals. NRC colleges tended to either utilize grant-funded employer relations staff who developed and cultivated relationships, or continued to harness pre-existing relationships. Below are two factors that affected the implementation of this strategy:

1. **Grant-funded staff members dedicated to job development and employer engagement helped create new internship and clinical opportunities for students, and strengthened the college's relationships with employers.** Job developers and employer relations specialists dedicated to NRC built relationships with new employer partners, as well as deepened and sustained relationships with existing employers. These grant-funded staff helped develop new internship opportunities across programs in multiple sectors, including programs created through NRC and pre-existing programs. These dedicated staff members were cited by administrators, faculty, and staff as key contributors to the creation of new and revamped internships for NRC participants.
2. **Faculty members' ties to employers and knowledge about shifts in the local economy led to modified, shorter-term training programs to meet local demand.** Faculty members in many departments at these community colleges are current or former practitioners in their respective fields. Many of them are in tune with the trends in local industry and have connections with local employers. Through their knowledge of the field and their networks, faculty or department chairs adapted existing curriculum and programs to offer shorter-term training that addressed employer demand for entry-level workers.

## Section 4 – Participant Outcomes and Impact Study

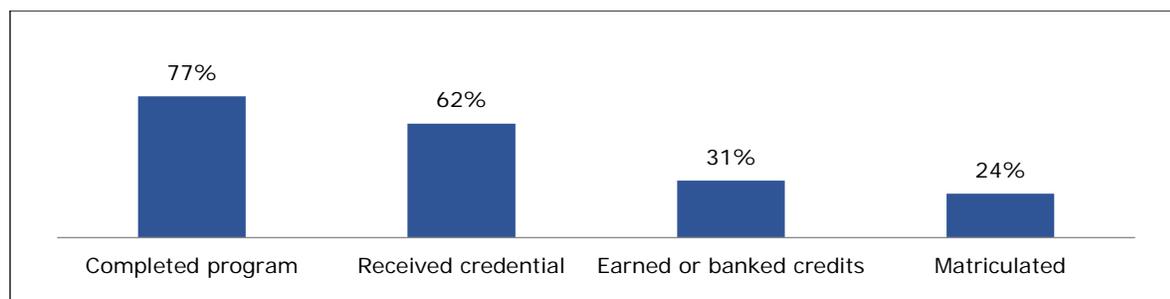
In this section of the report, the evaluation team shares participant outcomes, along with the results of an impact study on educational outcomes and a comparative study on employment outcomes.

### NRC Participant Outcomes

NRC colleges offered continuing education and credit grant programs, and, as noted, 70% of NRC participants enrolled in shorter-term continuing education and workforce development training programs. More than half (57%) of these continuing education participants enrolled in non-credit programs that had a transparent, articulated pathway to credit programs at the college and 50% of continuing education participants received comprehensive support services that entailed receipt of at least two of the following types of supports: career, personal, and academic.

As Figure 8 shows, **77% of continuing education participants completed their program and 62% earned a credential of some kind.** In addition, about one-third earned or banked credits and about one-fourth transitioned into a credit-bearing college-level program.

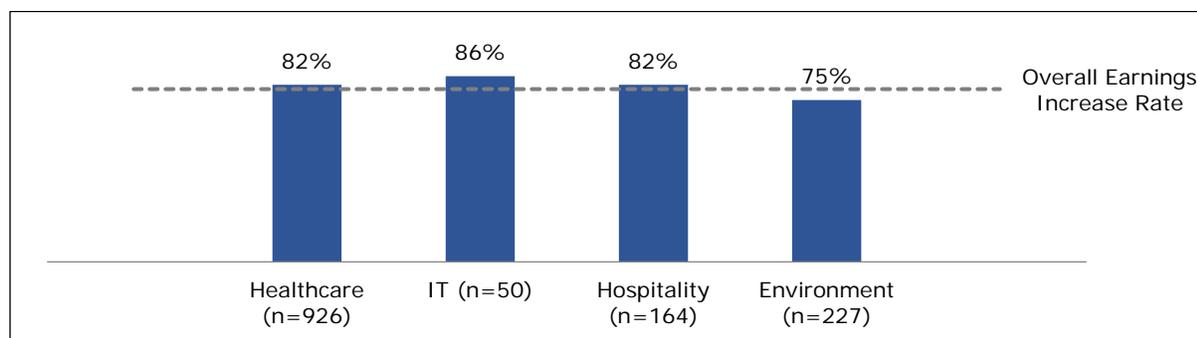
**Figure 8: Continuing Education Educational Outcomes**



Consistent with the Department of Labor’s TAACCCT reporting guidelines, the evaluation examined employment outcomes separately for incumbent workers and previously unemployed participants.<sup>24</sup> For incumbent workers, the employment outcome is the receipt of an earnings increase at any point after the first term in the NRC; for previously unemployed participants, the employment outcome is employment attainment during the first quarter after program exit, as well as retention in employment three quarters after program exit.

**80% of incumbent workers who started an NRC continuing education program received an increase in earnings at some point after enrolling.** While it is not possible to know whether participants received an increase in earnings in their current job or if they took a new, higher-paying position, this result suggests that employers valued the training NRC participants received. Additional exploration of this outcome – presented in Figure 9 – shows similar outcomes across program sectors, with the smaller number of NRC participants in continuing education Information Technology programs receiving earnings increases at a slightly higher rate than participants in other sectors. IT has an established series of industry-recognized certifications and credentials that employers value, and, thus, when individuals receive these certifications, an increase in earnings is a likely result.

**Figure 9: Continuing Education Earnings Increase Rate for Incumbent Workers by Program Sectors**

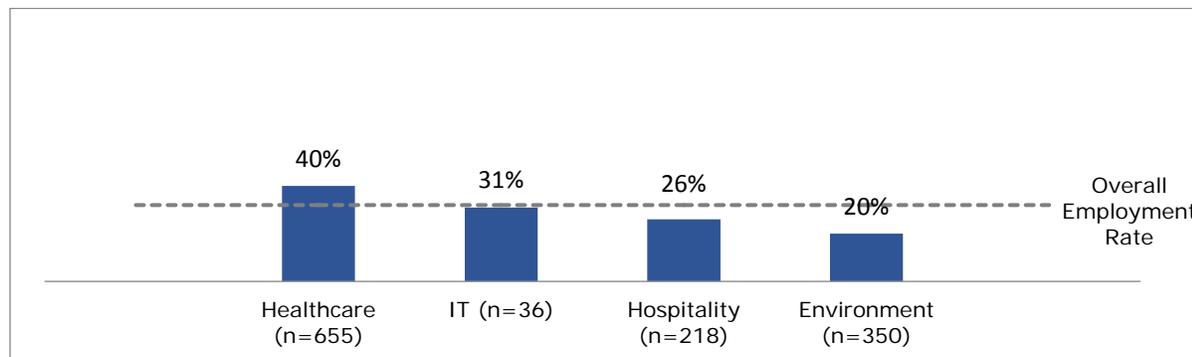


**32% of previously unemployed participants who enrolled in an NRC continuing education program were employed one quarter after program exit.** This employment rate varied across program sectors (see Figure 10), with 40% of participants in healthcare programs gaining employment one quarter after program exit, 31% of participants in IT programs gaining employment,

<sup>24</sup> Employment outcomes are presented for a subset of the overall participants. The analytic sample for continuing education employment analysis is 2,739, because of missing UI data from 68 participants from New Jersey. Additionally, due to the aggregate nature of employment data for New Jersey participants, the analytic sample for the sector-specific continuing education employment analyses is 2,626.

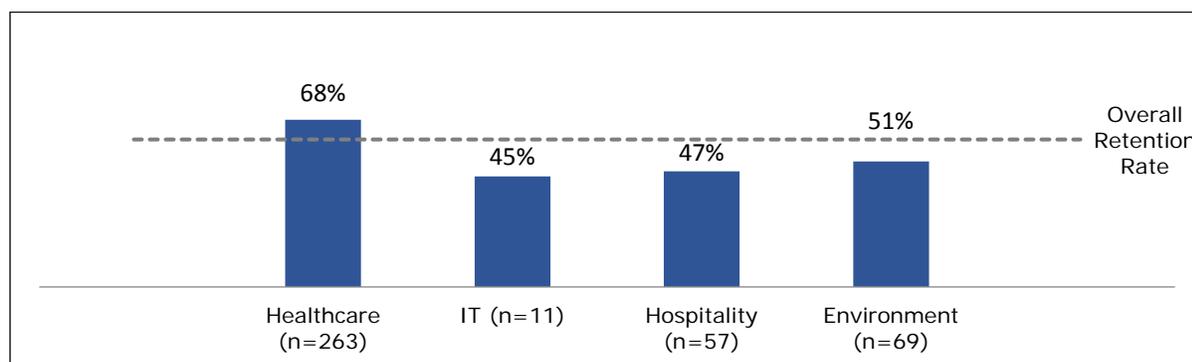
26% of participants in hospitality programs gaining employment, and 20% of participants in environmental programs gaining employment.

**Figure 10: Continuing Education Employment Rate for Previously Unemployed Participants by Program Sectors**



Of the previously unemployed continuing education participants employed one quarter after program exit, 60% were retained in employment three quarters after exit. As Figure 11 shows, the employment retention rate is highest for participants in healthcare programs and lowest among participants in IT programs. Only healthcare program participants were retained in employment at a higher rate than the overall 60%. Among all continuing education non-incumbent participants (n=1,328), 19% were employed one quarter after program exit and retained employment three quarters after program exit.

**Figure 11: Continuing Education Employment Retention Rate for Previously Unemployed Participants by Program Sectors**



### Impact Study on Educational Outcomes

The NRC impact study is focused on continuing education and workforce development participants, and examines the relationship between two primary NRC strategies – (1) comprehensive support services (e.g., a combination of career, personal, and/or academic supports) and (2) continuing education to credit pathways – and the following educational outcomes: program completion, credential attainment, credit accumulation, and matriculation into credit programs. The impact study on educational outcomes addressed two research questions:

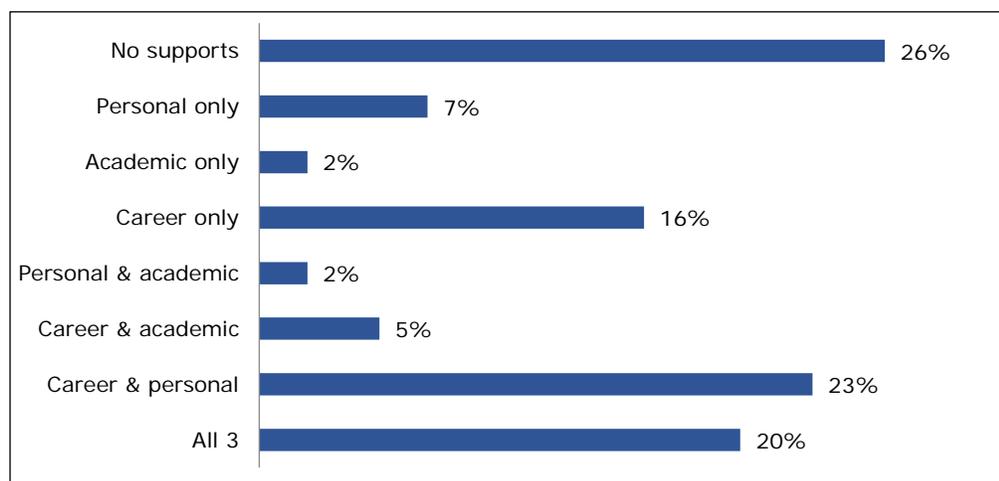
1. Do participants who receive comprehensive support services (a combination of career, personal, and/or academic) complete programs and/or earn credentials at higher rates than a matched group of participants who did not receive comprehensive support services?
2. Do participants who enroll in articulated continuing education to credit pathways earn or bank credits, transition to credit programs, complete programs and/or earn credentials at higher rates than a matched group of participants who did not enroll in articulated pathways?

The evaluation team used Propensity Score Matching to conduct the quasi-experimental academic outcomes impact study, and a series of descriptive analyses to examine additional outcomes. As described in Section 2, PSM generates a matched comparison group along a series of variables that may affect likelihood of receiving treatment. This predictive matching allows evaluators to account for potentially confounding variables and more confidently infer that the difference in outcomes is a product of treatment. See Appendix A for more information about the PSM process, including post-estimation analyses that were conducted for each outcome and the baseline equivalence values for each variable used in the PSM models. Education and employment outcomes for credit program participants are provided in Appendix B.

### Comprehensive Support Services

The most wide-ranging NRC strategy among continuing education programs was the development or expansion of comprehensive student support services. Across the consortium, colleges introduced new support services or enhanced existing supports in three content areas: career, personal, and academic. As presented in Figure 12, three quarters of NRC continuing education participants received at least one support service, with 25% receiving *only* one type of support service (i.e., 7% personal supports, 2% academic supports, and 16% career supports); and half receiving comprehensive services in at least two content areas (i.e., 2% personal and academic, 5% career and academic, 23% career and personal, and 20% in all three content areas).

**Figure 12: Support Service Provision to Continuing Education Participants (N=2,807)**



Recent literature suggests support service dosage and intensity can play a role in the impact of support services on student outcomes,<sup>25</sup> and there is increasing interest in understanding how

<sup>25</sup> Karp, M.M., and West Stacey, G. (2013). *What We Know About Nonacademic Student Supports*. Community

integrated or “bundled” services may enhance the support service experience for students and improve student outcomes.<sup>26</sup> Given these trends, the impact evaluation examined differences in outcomes between NRC participants who received comprehensive support services (supports in two or more content areas) and participants who received only one type of support service or did not receive any support services.

***Do continuing education participants who receive comprehensive support services complete programs, earn credentials, earn or bank credits, or transition into credit programs at higher rates than a matched group of participants who did not receive comprehensive support services?***

As Figure 12 shows, 50% of continuing education participants received comprehensive support services. Across all four academic outcomes examined, continuing education participants who received comprehensive support services have better outcomes than the matched comparison group:

- ✓ 82% of continuing education participants who received comprehensive support services completed their programs, compared with 44% of the matched comparison group;
- ✓ 74% of continuing education participants who received comprehensive support services earned an industry-recognized or college awarded credential, compared with 37% of the matched comparison group; and
- ✓ 41% earned or banked credits from their continuing education program that can be applied to additional educational pursuits, compared with 24% of the matched comparison group.
- ✓ Although 24% of continuing education participants who received comprehensive support services transitioned into a credit program, this outcome was not statistically higher than the matched comparison group (20%).

These results are described in more detail below:

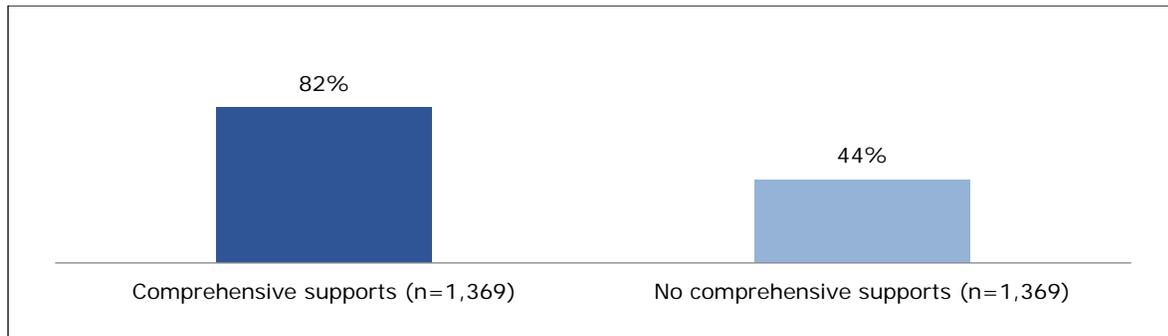
1. **Continuing education participants who received comprehensive support services completed their program at almost twice the rate of participants in the matched comparison group.** The difference in program completion rates between participants who received comprehensive support services and the matched comparison group is large and statistically significant. As Figure 13 shows, 82% of participants who received comprehensive support services completed their program, while only 44% of those who did not receive comprehensive support services completed their program. This result indicates that provision of support services across two or more content areas has a large and positive impact on program completion.

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College Research Center, Teachers College, Columbia University

<sup>26</sup> For more on integrated or bundled services, see: Price, D.V., Roberts, B., Kraemer, S., and Chaplot, P. (2017). *Meeting basic needs and improving financial stability for community college students: Lessons from the Working Students Success Network implementation evaluation*. Indianapolis: DVP-PRAXIS LTD.

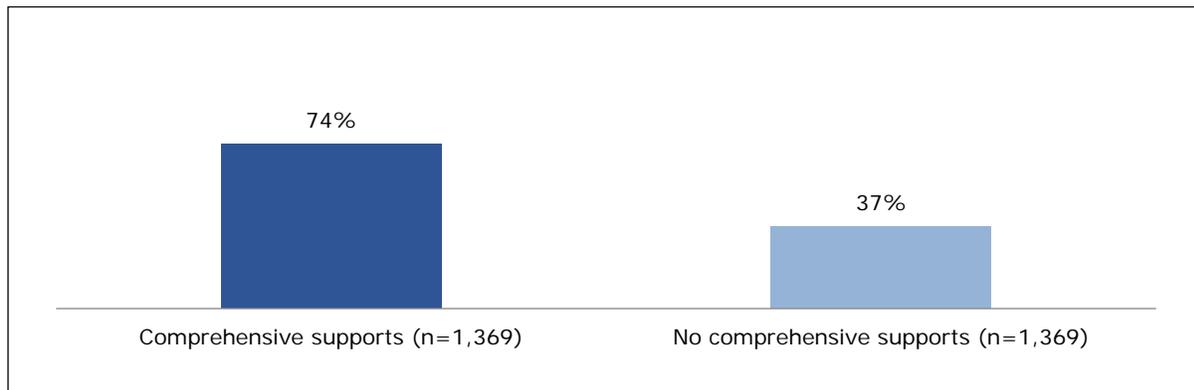
**Figure 13: Continuing Education Program Completion by Comprehensive Support Services**



\*ATT= 38% (p=.000)

- More than twice as many continuing education participants who received comprehensive support services earned a credential as the matched comparison group.** As shown in Figure 14, there is a very large and statistically significant difference in credential attainment rate between participants who receive comprehensive support services and the matched comparison group: 74% received a credential of some kind, while only 37% of the matched comparison group earned a credential. A common approach to providing comprehensive supports was to embed the services into the NRC continuing education programs, and in many of these cases the embedded comprehensive supports were designed to help students prepare for the industry exam. This result suggests that the NRC approach to embedding comprehensive support services helped students earn an industry-recognized credential in addition to completing their program.

**Figure 14: Continuing Education Credential Attainment by Comprehensive Support Services**

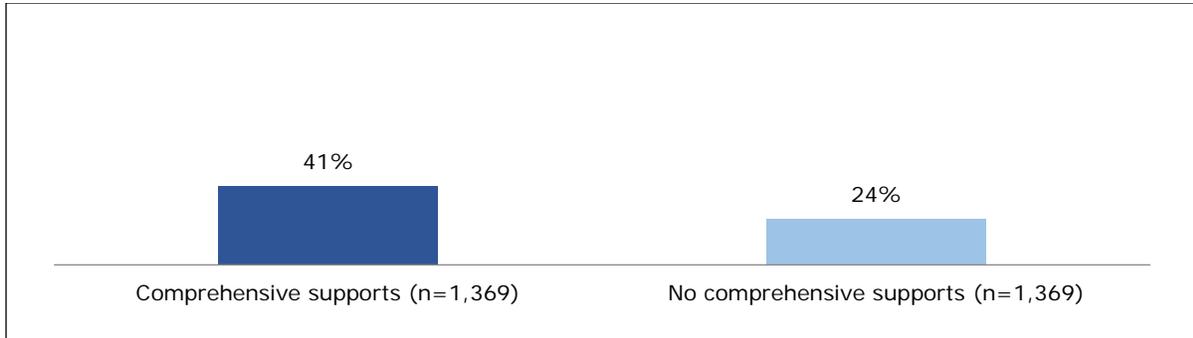


\*ATT= 37% (p=.000)

- Almost twice as many comprehensive support service recipients earned or banked at least one credit as the matched comparison group.** As noted in Section 3, 57% of continuing education participants enrolled in a program with an articulated pathway to credit programs. These pathways are intended to ease the transition into credit programs by awarding credits for successful completion of continuing education programs; therefore, the PSM model controlled for participation in a continuing education to credit pathway (Appendix A). As Figure 15 shows, this result indicates that receiving comprehensive support services

has a positive impact on earned or banked credits, even after accounting for participation in an articulated continuing education to credit pathway.

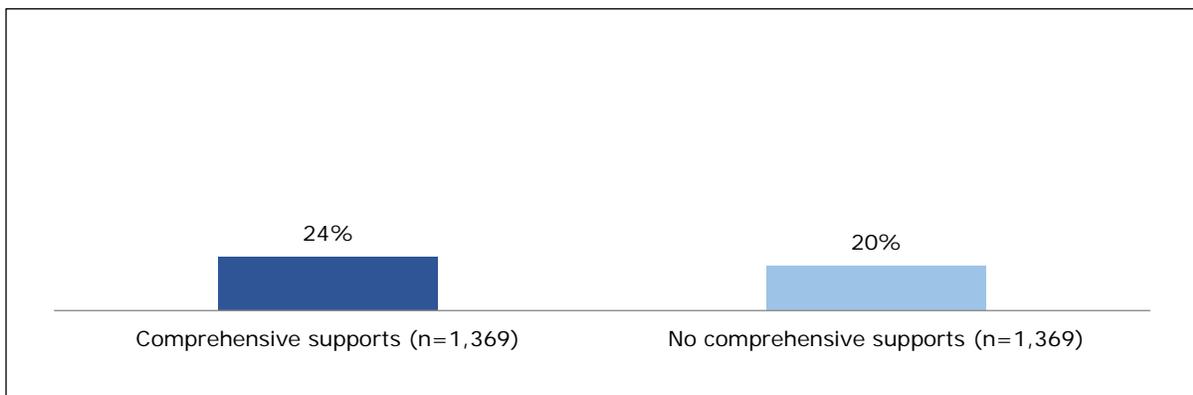
**Figure 15: Continuing Education Credit Accumulation by Comprehensive Support Services**



\*ATT=17% (p=.000)

- Continuing education participants who received comprehensive support services transitioned to credit-bearing programs at a similar rate as participants in the matched comparison group.** Figure 16 shows that 24% of participants who received comprehensive support services continued their education in a credit-granting program, compared to 20% of the matched comparison group. This four percentage-point difference is not statistically significant. Although continuing education participants who received comprehensive services earned or banked credits at a higher rate, they did not enroll in college-level credit-bearing programs at a higher rate. This finding, in combination with the previous result, suggests that many continuing education students are banking credits but have not transitioned into a credit program.

**Figure 16: Continuing Education Transition to Credit-bearing Programs by Comprehensive Support Services**

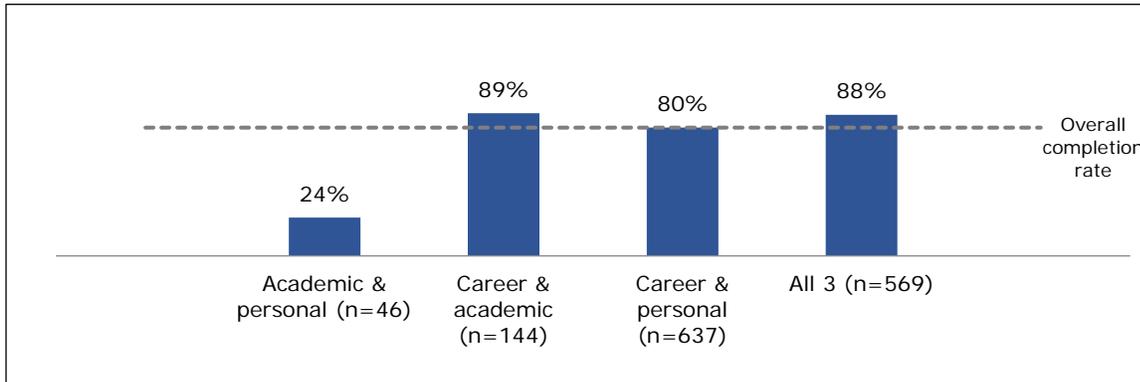


\*ATT=4% (p=.196)

To learn more about the relationship between comprehensive support services and educational outcomes, follow-up exploratory analyses were conducted to examine the program completion and credential attainment outcomes for each support service combination. As Figure 17 shows, participants who received career services in combination with one or two other support service types had better outcomes than participants who did not receive career services. Moreover, these data show that 89% and 88% of continuing education participants who received career and academic supports,

or career, academic, and personal supports, respectively, completed their program; these completion rates are higher than the overall 80% program completion rate for participants who received comprehensive support services.

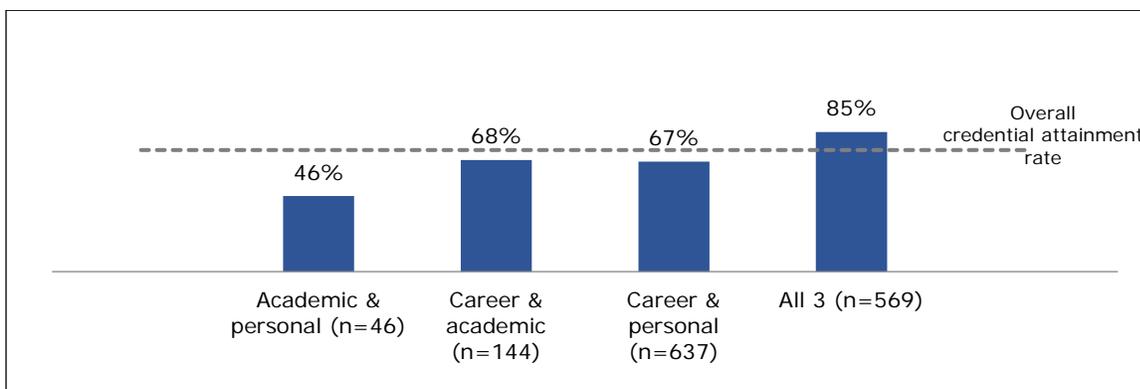
**Figure 17: Continuing Education Program Completion by Comprehensive Support Service Type**



\*A&P < C&A, A&P, & All 3 (p = .000)

Exploratory analysis of the relationship between comprehensive support services and credential completion further points to the value-add of combining career services with academic and personal supports. Figure 18 shows that 85% of participants who received career, personal, and academic support services earned a credential, compared with 68% of participants who received career and academic supports, 67% who received career and personal supports, and 46% who received academic and personal supports. These data suggest that integrating career, academic, and personal supports together may be more helpful than any combination of two support service types.

**Figure 18 Continuing Education Credential Attainment by Comprehensive Support Service Types**



\*All 3 > A&P, A&C, & P&C (p = .000)

### Continuing Education to Credit Pathways

In addition to providing comprehensive support services, NRC consortium colleges developed or expanded continuing education to credit pathways – either through internal articulation agreements, Prior Learning Assessment, matriculation, or a combination of these approaches. As discussed in

Section 3, 57% of continuing education NRC participants enrolled in a continuing education to credit pathway.

***Do participants who enroll in continuing education to credit pathways complete programs, earn credentials, earn or bank credits, or transition into credit programs at higher rates than a matched group of participants who did not enroll in these pathways?***

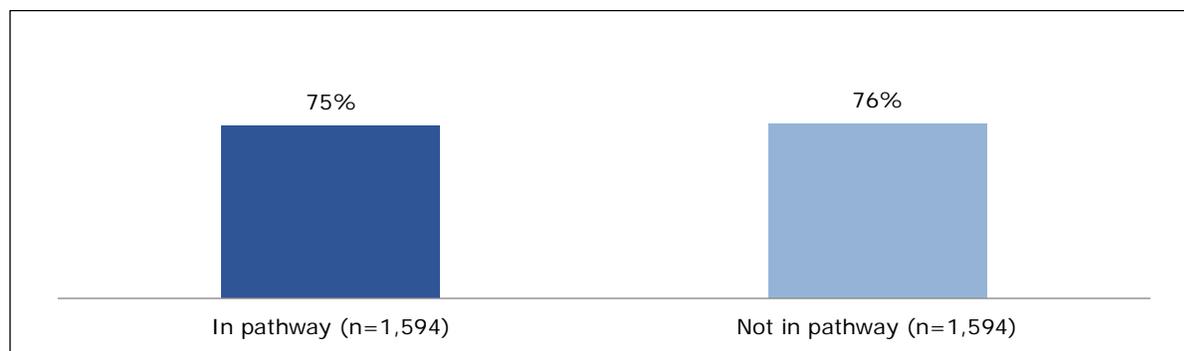
The impact analyses indicate that participation in a transparent continuing education to credit pathway yields more banked credits and higher transition rates into credit-based programs, but does not result in better program completion or credential attainment among continuing education participants:

- ✓ 75% of participants who enrolled in a continuing education to credit pathway completed their programs, compared with 76% of the matched comparison group;
- ✓ 60% of participants who enrolled in a continuing education to credit pathway earned an industry-recognized or college awarded credential, compared with 56% of the matched comparison group;
- ✓ 41% of participants who enrolled in a continuing education to credit pathway earned or banked credits that can be applied to additional educational pursuits, compared with 14% of the matched comparison group; and
- ✓ 26% of participants who enrolled in a continuing education to credit pathway transitioned into a credit-based program, compared with 14% of the matched comparison group.

The results are described in more detail below:

1. **Participants in continuing education to credit pathways completed programs at a similar rate to participants in the matched comparison group.** Figure 19 shows that program completion rates for the two groups differ by only 1%. These comparable rates, while very high, indicate that linking continuing education programs with credit programs along a transparent pathway does not result in higher program completion rates.

**Figure 19: Continuing Education Program Completion by Continuing Education to Credit Pathway Participation**

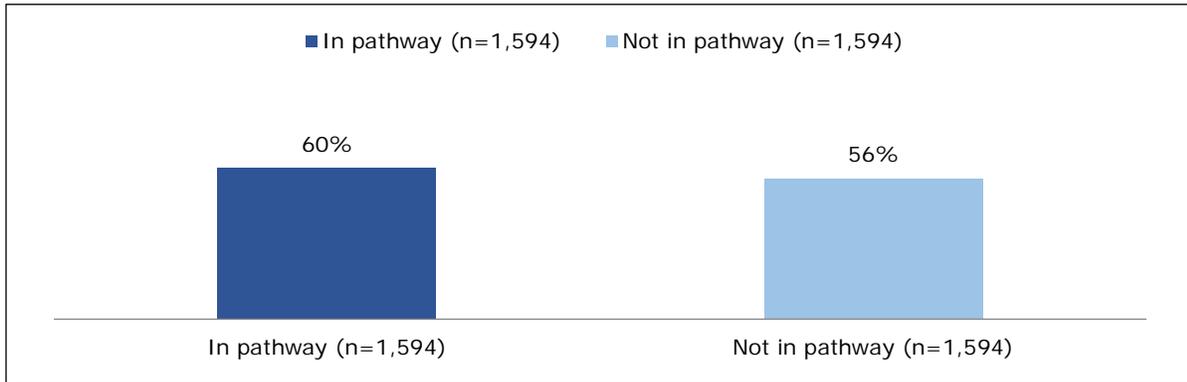


\*ATT=-1% (p=.822)

2. **Participants in continuing education to credit pathways received credentials at a similar rate to participants in the matched comparison group.** As Figure 20 shows, 60% of pathway participants received a credential, compared to 56% of the matched comparison

group; however, this difference is not statistically significant. This result indicates that linking continuing education programs with credit programs along a transparent pathway does not result in more industry-recognized or college awarded credentials.

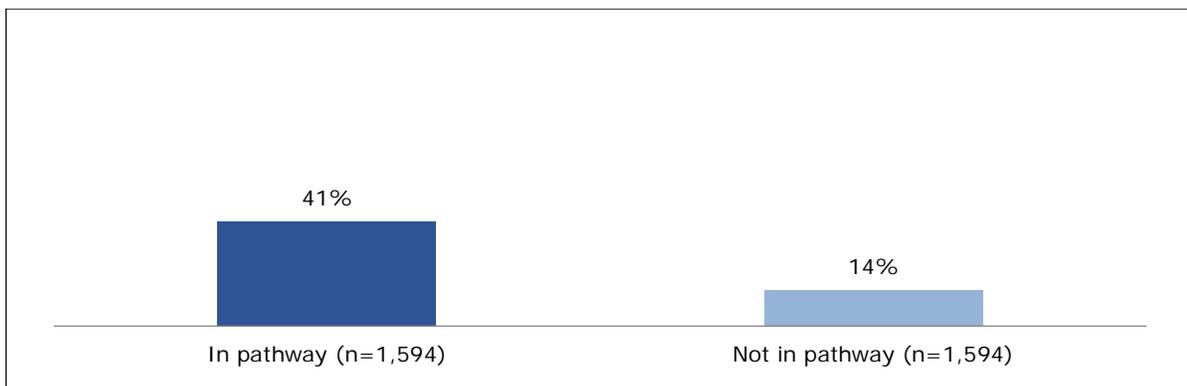
**Figure 20: Continuing Education Credential Attainment by Continuing Education to Credit Pathway Participation**



\*ATT=4% (p=.205)

- Participants in continuing education to credit pathways earned or banked credits at three times the rate of participants in the matched comparison group.** Figure 21 shows that 41% of participants in a continuing education to credit pathway earned or banked at least one credit, compared with only 14% of participants in the matched comparison group. As discussed in Section 3, providing credit for continuing education training, either through credit banking or internal or external PLA, is a core part of the NRC approach to developing continuing education to credit pathways. This result suggests that the NRC approach to continuing education to credit pathways has had a dramatic impact on continuing education students' ability to earn credit, and facilitates transition to credit-bearing programs.

**Figure 21: Continuing Education Earned or Banked At Least One Credit by Continuing Education to Credit Pathway Participation**

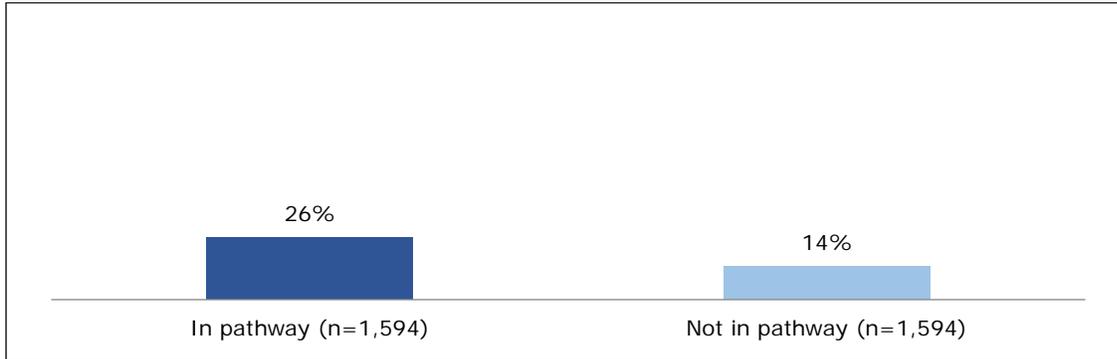


\*ATT=27% (p=.000)

- Continuing education participants in continuing education to credit pathways transition to credit-bearing college-level programs at twice the rate of matched comparison group participants.** Figure 22 shows that 26% of continuing education to credit pathway participants enrolled in a credit-bearing college-level program and attempted at least

one credit at their institution of study. In contrast, only 14% of the matched comparison group transitioned to a credit-granting college-level program. This result indicates that participation in a continuing education to credit pathway facilitates transition to college-level programs, at least at the same institution.

**Figure 22: Continuing Education Transfer to College-level Credit-bearing Programs by Continuing Education to Credit Pathway Participation**

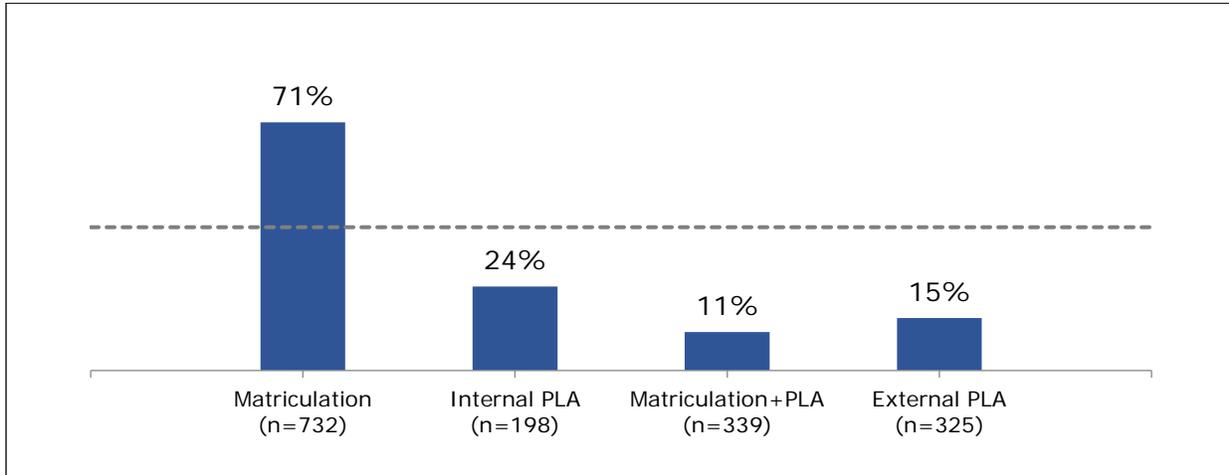


\*ATT=12% (p=.000)

Exploratory analyses were conducted for the two educational outcomes the impact study found to have significant positive outcomes for participants in continuing education to credit pathways: earned or banked credits and transition to a credit-bearing college-level program. As discussed in Section 3, NRC colleges implemented four different approaches for continuing education to credit pathways:

- 26% of continuing education participants were in a “matriculation only” pathway, which means there is an internal articulation agreement with credit programs that allows students to receive credit for their continuing education training after matriculating in a college-level credit-granting program at the same institution. No other assessment is required.
- 12% of continuing education participants were in a pathway that required matriculation and an internal or external Prior Learning Assessment. This external PLA was typically conducted by a third-party that awarded credits for the continuing education program that a student could transfer to their current institution; while the internal PLA was conducted through a challenge exam administered by credit program faculty.
- 12% of continuing education participants were in a pathway that required an external Prior Learning Assessment, which as described above, generally consists of another college awarding credit equivalencies for the continuing education program that a student could transfer to a credit program at the college.
- 7% of continuing education participants were in a pathway that required an internal Prior Learning Assessment; for example, a college would award credits retroactively for a student who completed a continuing education program at the institution if they passed an industry certification exam.

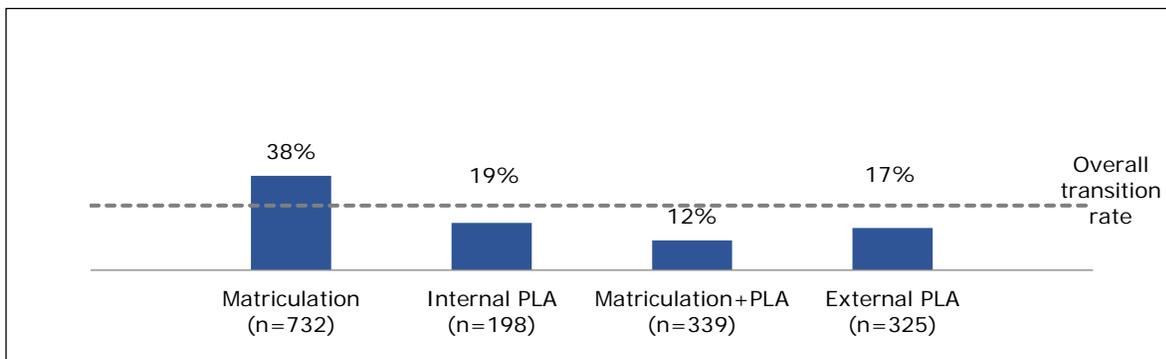
**Figure 23: Continuing Education Earned or Banked At Least One Credit by Continuing Education to Credit Pathway Type**



\*Matriculation > Internal PLA, External PLA, & Matriculation+PLA ( $p=.000$ )

Figures 23 and 24 suggest that the “matriculation only” pathway is the most effective approach colleges can pursue if they want to increase the percentage of continuing education students who earn or bank credits, and want to improve transitions from continuing education programs into credit-bearing programs. For example, 71% of continuing education participants in “matriculation only” pathways earned or banked credits – almost three times the rate of any other approach. Similarly, 38% of continuing education participants in “matriculation only” pathways transitioned into a credit-based program, which is at least twice as high as any other approach. These data suggest that eliminating unnecessary barriers, such as challenge exams and portfolio reviews (e.g., internal PLA) or third-party services that award credit equivalencies (e.g., external PLA) can facilitate credit accumulation and transitions into credit-bearing programs for students who begin in continuing education.

**Figure 24: Continuing Education Transition to College-level Credit-bearing Program by Continuing Education to Credit Pathway Type**



\*Matriculation > Internal PLA, External PLA, & Matriculation+PLA ( $p=.000$ )

## A Comparative Analysis of Employment Outcomes

Data limitations introduced severe restrictions to the analysis of employment outcomes. In addition to Massachusetts not providing UI data due to state legislation, New Jersey was unable to provide unit record employment data. Moreover, due to the aggregate nature of the New Jersey data, a change to the analysis plan led to results not being provided for the group of participants that received comprehensive support services. Therefore, the employment outcomes presented for comprehensive support services includes records for students in New York and Connecticut only, and the analysis is restricted to a simple comparison of means. While New Jersey data are included in the employment outcomes for enrollment in a continuing education to credit pathway, these data are also restricted to a simple comparison of means.

As noted previously, the Department of Labor's TAACCCT reporting guidelines require employment outcomes to be examined separately for incumbent workers and previously unemployed participants. For incumbent workers, the employment outcome is the receipt of an earnings increase at any point after the first term in the NRC; for previously unemployed participants, the employment outcome is employment attainment during the first quarter after program exit, as well as retention in employment three quarters after program exit. In this subsection, the evaluation team provides employment outcomes for incumbent workers, and previously unemployed participants, respectively, who received comprehensive support services or who enrolled in a continuing education to credit pathway.

The analysis examines employment one quarter and three quarters after program exit for previously unemployed participants, and gains in earnings for incumbent worker participants any time after program enrollment. The research questions are:

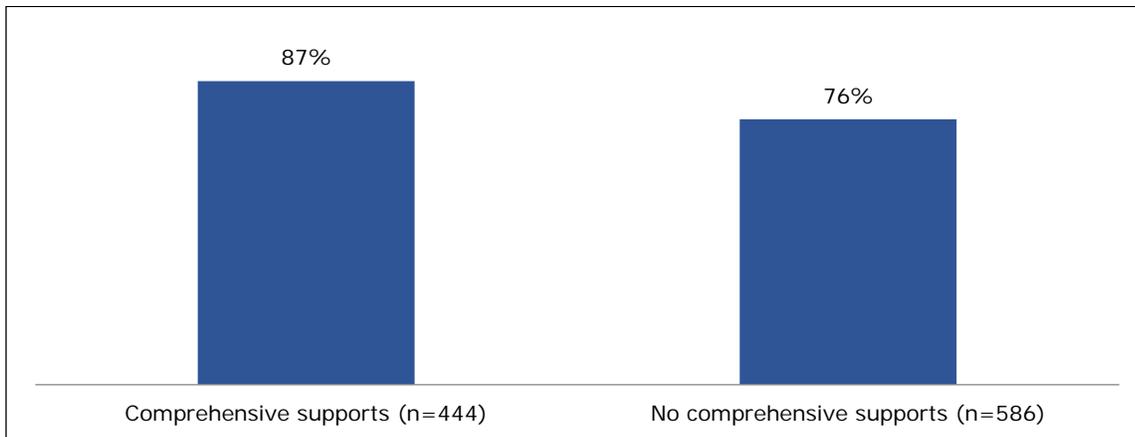
1. *Do continuing education participants who were incumbent workers at the start of their NRC program, and who received comprehensive support services, have a higher rate of receiving an increase in earnings than incumbent participants who did not receive comprehensive support services?*
2. *Do continuing education participants who were incumbent workers at the start of their NRC program, and who enrolled in continuing education to credit pathways, have a higher rate of receiving an increase in earnings than incumbent workers who did not enroll in a pathway?*
3. *Are continuing education participants who were unemployed at the start of their NRC program and who received comprehensive support services employed one quarter after program exit and retained in employment three quarters after program exit at higher rates than unemployed participants who did not receive comprehensive supports?*
4. *Are continuing education participants who were unemployed at the start of their NRC program, and who enrolled in a continuing education to credit pathway, employed one quarter after program exit and retained in employment three quarters after program exit at higher rates than unemployed participants who did not enroll in these pathways?*

***Do continuing education participants who were incumbent workers at the start of their NRC program, and who received comprehensive support services, have a higher rate of receiving an increase in earnings than incumbent participants who did not receive comprehensive support services?***

NRC colleges in Connecticut and New York enrolled 1,030 incumbent workers in continuing education programs, and 43% of these incumbent workers received comprehensive support services. Figure 25

shows that **87% of incumbent workers who received comprehensive support services had an increase in earnings at some point after enrolling in an NRC continuing education program, which is significantly higher than the 76% of incumbent workers who had an increase in earnings and did not receive comprehensive support services.** These data suggest a combination of career, personal, and/or academic supports can help incumbent workers gain the skills needed to increase their earnings.

**Figure 25: Continuing Education Earnings Increase among Incumbent Workers by Comprehensive Support Services**

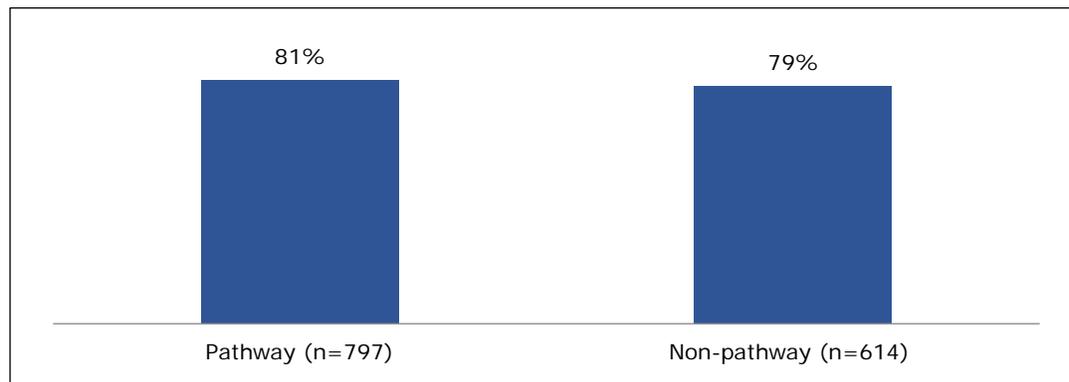


\*p=.000

***Do continuing education participants who were incumbent workers at the start of their NRC program, and who enrolled in continuing education to credit pathways, have a higher rate of receiving an increase in earnings than incumbent workers who did not enroll in a pathway?***

NRC colleges in Connecticut, New Jersey and New York enrolled 1,411 incumbent workers in continuing education programs and 56% of these incumbent workers received comprehensive support services. Figure 26 shows that **81% of incumbent workers who enrolled in a continuing education to credit pathway had an increase in earnings at some point after enrolling in an NRC continuing education program, which is slightly higher than the 79% of incumbent workers who had an increase in earnings and did not enroll in a continuing education to credit pathway.** These data suggest that continuing education to credit pathways – while shown earlier to have an impact on transitioning into a credit-program – do not result in significantly higher rates of increased earnings for incumbent workers.

**Figure 26 Continuing Education Earnings Increase among Incumbent Workers by Continuing Education to Credit Pathway Participation**



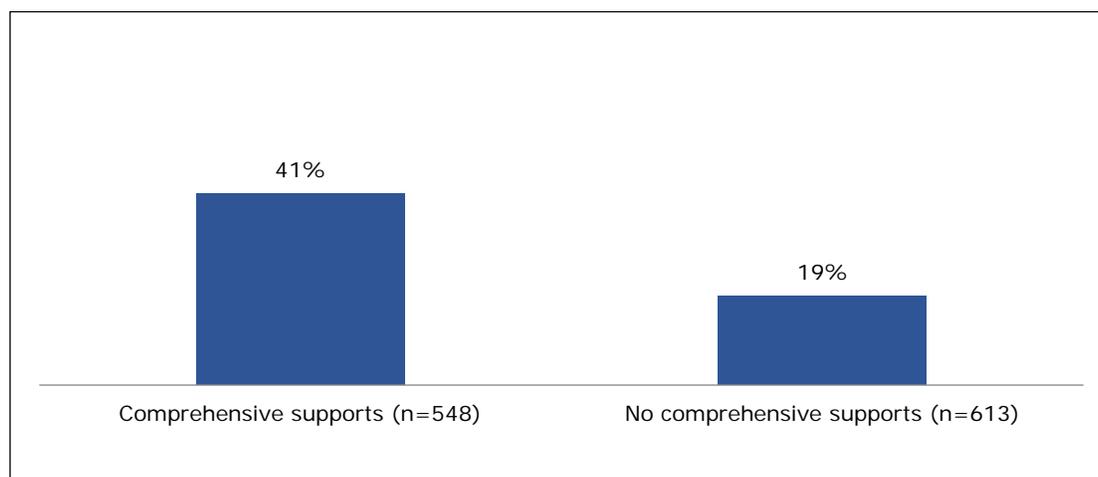
\*p=.247

*Are continuing education participants who were unemployed at the start of their NRC program and who received comprehensive support services employed one quarter after program exit and retained in employment three quarters after program exit at higher rates than unemployed participants who did not receive comprehensive supports?*

NRC colleges in Connecticut and New York enrolled 1,161 participants in continuing education programs who were unemployed at the start of their NRC program, and 47% of these unemployed participants received comprehensive support services.

**Continuing education participants who were unemployed when they enrolled in the NRC program, and who received comprehensive support services, were employed at a higher rate than those who did not receive comprehensive support services.** Figure 27 shows that 41% of previously unemployed participants who received comprehensive support services were employed one quarter after exiting the continuing education program, compared with 19% of previously unemployed participants who did not receive comprehensive support services. As noted, comprehensive support services often included career supports, which likely had a meaningful impact on employment for participants.

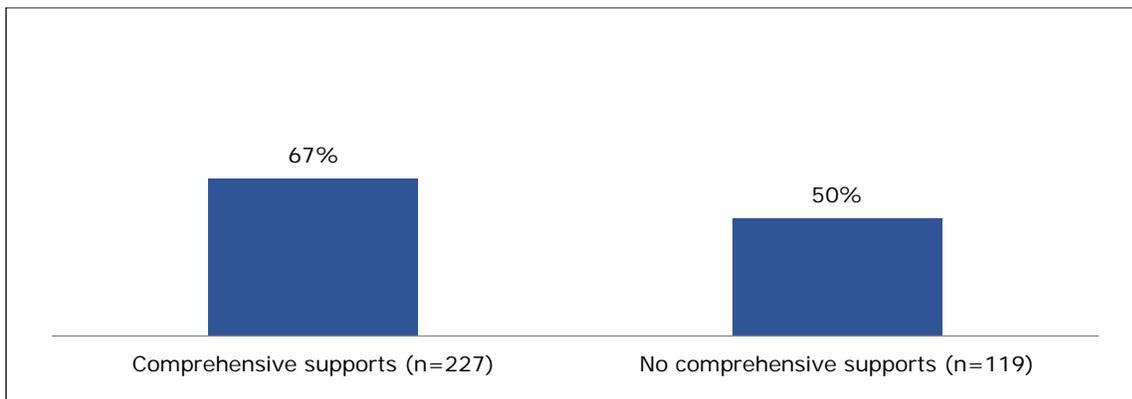
**Figure 27: Continuing Education Employment Rate among Previously Unemployed Participants by Comprehensive Support Services**



\*p=.000

**Continuing education participants who were unemployed when they enrolled in the NRC program, and who received comprehensive support services, were retained in employment at a higher rate than those who did not receive comprehensive support services.** Figure 28 shows that 67% of previously unemployed participants who were employed one quarter after program exit, and who received comprehensive support services while enrolled in their NRC continuing education program, were still employed three quarters after program exit, compared to only 50% of previously unemployed participants who were employed one quarter after program exit and who did not receive comprehensive support services.

**Figure 28: Continuing Education Employment Retention among Previously Unemployed Participants by Comprehensive Support Services**



\*p=.000

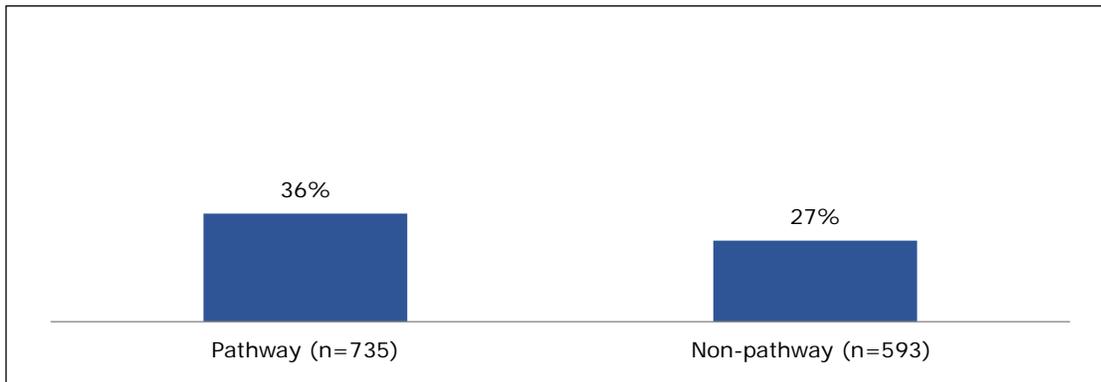
Similarly, among the overall previously unemployed participant group in Connecticut and New York (n=1,161), 28% of those who received comprehensive supports were employed one and three quarters after program exit, while only 10% of participants who did not receive comprehensive services were employed and retained in employment. These results, while exploratory in nature, are promising: providing comprehensive support services, especially career services, to participants as part of their education and training program appears to increase both employment and retention rates.

***Are continuing education participants who were unemployed at the start of their NRC program, and who enrolled in a continuing education to credit pathway, employed one quarter after program exit and retained in employment three quarters after program exit at higher rates than unemployed participants who did not enroll in these pathways?***

NRC colleges in Connecticut, New Jersey, and New York enrolled 1,328 participants in continuing education who were unemployed at the start of their NRC program, and 55% of these previously unemployed participants enrolled in continuing education to credit pathways.

**Continuing education participants who were unemployed when they enrolled in their NRC program, and who enrolled in a continuing education to credit pathway, became employed at a slightly higher rate than previously unemployed participants not enrolled in pathways.** Figure 29 shows that 36% of previously unemployed participants who enrolled in a continuing education to credit pathway were employed one quarter after program exit, compared with 27% of previously unemployed participants who did not enroll in a pathway.

**Figure 29: Continuing Education Employment Rate among Previously Unemployed Participants by Continuing Education to Credit Pathway Participation**

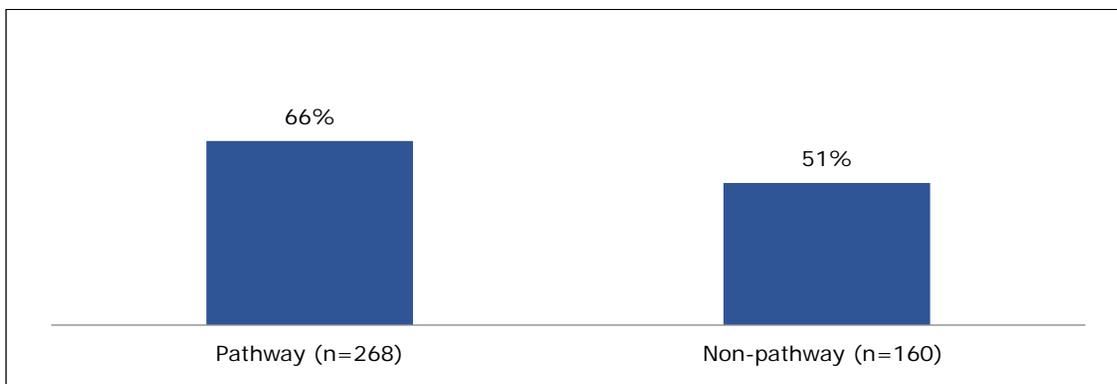


\*p=.000

**Continuing education participants who were unemployed when they enrolled in their NRC program, and who enrolled in a continuing education to credit pathway, were retained in employment at a higher rate than previously unemployed participants not in pathways.**

Figure 30 shows that 66% of previously unemployed participants who enrolled in a continuing education to credit pathway, and were employed one quarter after program exit, were still employed three quarters after program exit; this rate is statistically higher than the 51% of previously unemployed workers who were employed one quarter after program exit, but did not enroll in a continuing education to credit pathway. Put another way, among the overall previously unemployed participant group in Connecticut, New Jersey, and New York (n=1,328), 24% of continuing education participants in pathways were employed and retained in employment, compared with only 14% of participants not in a pathway.

**Figure 30: Continuing Education Employment Retention among Previously Unemployed Participants by Continuing Education to Credit Pathway Participation**



\*p=.003

**Summative Findings on the Impact of Comprehensive Support Services and Continuing Education to Credit Pathways on Educational and Employment Outcomes for NRC Participants**

The impact analysis for continuing education NRC participants paints a compelling picture for providing comprehensive support services, including career, personal, and academic supports. These integrated

supports yielded higher program completions, more industry-recognized and college awarded credentials, and higher banked or earned credits for participants. Additionally, a comparative analysis of employment outcomes suggests that comprehensive support services resulted in higher employment and retention rates for previously unemployed participants, and higher rates of increased earnings for incumbent workers.

Similarly, the impact analysis for continuing education NRC participants paints a promising picture for providing transparent and articulated continuing education to credit pathways, especially for increasing the receipt of banked credits and for improving transitions into credit programs. The comparative analysis of employment outcomes further suggests that continuing education to credit pathways can yield higher employment and retention rates for previously unemployed participants, and higher rates of increased earnings for incumbent workers. These results indicate that colleges can incorporate continuing education to credit pathways without negatively affecting program completion and credential attainment rates, and can significantly improve credit accumulation and transitions into credit programs.

## Section 5 – Assessment of Institutionalization and Sustainability for NRC Strategies

As described in this report, the NRC implemented 84 programs of study, primarily in healthcare and information technology, and enrolled almost 4,000 participants in these programs over the course of the grant. The evaluation documented the approaches colleges took to implement strategies related to curriculum and instruction; support services; and employer engagement; and identified several factors that affected the implementation success of each strategy. In this section, an assessment of sustainability and institutionalization is provided for the curriculum and instruction, and comprehensive support services strategies pursued by the NRC colleges. The analysis is based on five cross-cutting factors that reflect an evaluation framework to address organizational processes that influence institutionalization and sustainability:<sup>27</sup>

- **Institutional Leadership and Commitment** refers to the incorporation of sustainable support for programs and strategies into a college's institutional planning and accountability processes. Colleges demonstrating robust leadership and commitment aligned programs and strategies with institutional priorities, established clear leadership structures for implementation and accountability that extends beyond grant staff, and communicated that program and strategies will become standard practice after the grant ends.
- **Financial and Administrative Prioritization** refers to the financial and administrative resources provided to faculty and staff to generate widespread support for programs and strategies. Colleges demonstrating financial and administrative prioritization have communicated regularly and publicly about the priority of programs and strategies for the institution; provided the necessary staffing, space, and technology for faculty and staff to incorporate programs and strategies into their responsibilities; allocated financial resources to departmental and divisional budgets to support programs and strategies; and prioritized hiring processes for new positions in support of programs and strategies.
- **Transparent and Supportive Policies and Practices** refer to the enactment of policies and practices to support program and strategy implementation and sustainability. Colleges demonstrating transparent and supportive policies and practices enacted policies and practices to support programs and strategies, and included a broad range of stakeholders to design and vet these policies and practices. In addition, faculty and staff are aware of and understand these programs and strategies – and encourage students to participate. Faculty and staff also incorporate the communication and support of programs and strategies into their job responsibilities.
- **Professional Development** refers to the ongoing and regular opportunities provided to faculty, staff, and administrative leaders to learn about and support programs and strategies. Colleges demonstrating professional development identified individuals needing professional development, as well as college personnel or partner organizations to deliver professional development; differentiated professional development opportunities by roles and responsibilities; and increased the number of administrators, faculty, and staff participating in professional development opportunities that support program and strategy implementation and sustainability.

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<sup>27</sup> See Appendix D for the evaluation outcomes and indicators framework, including the factors for institutionalization and sustainability. See also Price, D., Sedlak, W. Childress, L., and Roach, R. (2015) Northeast Resiliency Consortium Interim Evaluation Report.

- **Use of Data and Evidence** refers to the ongoing and systematic use of program and strategy evaluation for continuous improvement. Colleges demonstrating the effective use of data and evidence developed clear procedures for systematically tracking students and reporting on outcomes to assess programs and strategies; conducted surveys, interviews, and focus groups to improve program and strategy implementation; shared data and evidence with college stakeholders and external partners to build support for program and strategy implementation and sustainability; and invited feedback from students, faculty, and staff about programs and strategies.

### Summative Conclusion about the Institutionalization and Sustainability of NRC Strategies

As documented in this final report, *comprehensive support services* and *continuing education to credit pathways* had significant positive impacts on the educational outcomes for NRC participants; and appear to positively influence employment outcomes and earnings gains. The summative implementation results indicate the curriculum and instructional practices implemented by NRC colleges will be sustained, while the delivery of comprehensive support services will not be sustained, including the career-related staff positions charged with expanding employer engagement.

Despite the widespread acknowledgement by administrators, faculty, and staff of the value of comprehensive support services, sustaining these support services were not prioritized during the NRC. Policies and practices were not adapted around the provision of support services at the college – including how college staff engage employers – nor were professional development opportunities provided for grant-funded and existing support services staff at the college. In general, colleges neither used data to examine the effectiveness of grant-funded strategies nor used data to inform the decision-making process around sustainability. This limited use of data did not affect the sustainability of new programs and instructional practices, though may have undermined efforts to sustain comprehensive support services, which are perceived as too expensive to provide in the way they were offered to participants during the NRC grant.

By comparison, new and modified curriculum and instructional practices will be institutionalized and sustained, including internal articulation of continuing education and credit programs. This outcome was achieved because of the leadership and commitment of executive, divisional, and departmental leaders, as well as the buy-in of program faculty at the colleges. NRC colleges exhibited the financial and administrative prioritization of these new curriculum and instructional practices, and enacted new policies and practices to support credit programs and continuing education to credit linkages. Professional development sessions offered about Prior Learning Assessment and resiliency competencies were helpful in exposing these concepts to faculty and administrators in both NRC and non-NRC programs of study.

The following five factors influenced the institutionalization and sustainability of curriculum and instructional strategies, and the provision of comprehensive support services. For each factor, the evaluation team assessed how it facilitated or hindered sustainability and institutionalization of the core NRC strategies.

#### Institutional Leadership and Commitment

**Executive leaders supported the departmental processes to develop new curriculum and instructional approaches; these changes required administrators, faculty, and staff to**

**engage in structured processes that were designed for curriculum to become formally approved and institutionalized.**

- Colleges created new shorter-term credentials within existing Associate degree programs, and developed new credit pathways that stacked and latticed several shorter-term credentials along an educational pathway to an Associate degree.
- Colleges formalized continuing education and credit pathways through internal articulation agreements with credit programs, and through the formal adoption of Credit for Prior Learning practices.

**Executive leaders, divisional and departmental administrators, and project managers did not perceive grant-funded support services as a demonstration of a more effective model of support service delivery for the college to consider adopting institution-wide; rather, these comprehensive supports were implemented as a special service for grant participants, and thus a temporary enhancement.**

- Faculty and staff across the NRC colleges recognized the importance and value that these support services brought to their students, which were generally more intensive and personalized than what is offered to the general student population. Yet, buy-in from administrative leaders, especially those with authority over student services, was not obtained, hindering the sustainability of these positions and the adoption of the more comprehensive delivery of integrated services as an institution-wide practice.

**Executive leaders, divisional and departmental administrators, and project managers embraced the grant-funded outreach and relationship building with employers, especially the resulting expansion of work-based learning opportunities.**

- Most employer advisory committees that were developed or expanded through NRC will be sustained either in their current form or through merging with pre-existing program advisory committees.
- New internship opportunities developed through the grant will continue, particularly for pre-existing programs that already had internships as a required part of the program curriculum.
- At one college, the attention NRC brought to employer engagement was incorporated into a new strategic plan; according to its president, *"it's clear that some of what has come out of the NRC is what we're talking about for the future at [our college]."*

## **Financial and Administrative Prioritization**

**Divisional and departmental administrators successfully transitioned grant-funded instructors who developed new credit curricula, programs, and credentials into permanent positions at many colleges. In doing so, these leaders signaled that these new credit programs of study were an institutional priority.**

- The curriculum approval process for credit programs is led by faculty, and highly structured to include departmental, college-wide, and statewide mechanisms for review and consent. The willingness to spend the time to work through this process, which can take up to one year, is itself an indication that the new or modified curriculum and program is an institutional priority

- Colleges worked to sustain grant-funded instructors who developed new curriculum and programs, and for the most part transitioned these grant-funded positions into adjunct or full-time positions at the college so the courses and programs would be continued.

**Executive leaders used the NRC grant to raise the stature of continuing education and workforce development programs at the college and the importance of articulating transparent pathways between non-credit and credit programs.**

- For many colleges, continuing education programs are considered a lesser priority compared with credit programs; during the NRC, senior leaders sought to break down these siloes between continuing education and credit programs and departments, and signal that non-credit programming is also an institutional priority. Linking pathways between continuing education and credit programs aligns well with most colleges' missions to expand postsecondary opportunity and success. The articulation of pathways from continuing education to credit programs was incorporated into a new or existing strategic plan at some NRC colleges, and some colleges formalized processes to review and renew articulation agreements annually.
- One college enhanced its continuing education and workforce development center during the grant by establishing a new senior level position and several administrative staff positions for this division. The college also incorporated its leaders into the Executive Cabinet and NRC project staff on the Achieving the Dream leadership team. Another college created a new career and experiential learning center to institutionalize the capacity developed through the grant by a career development coordinator; this grant-funded staff position (originally funded by the grant) is now a full-time, permanent employee.

**Executive leaders, including senior-level divisional and departmental administrators, did not allocate institutional resources to sustain the support services positions funded through the grant.**

- Staff who provided support services to students were grant-funded and dedicated to serving NRC students, or were permanent support services staff partially grant-funded to focus on NRC students. The comprehensive support services provided by these staff to NRC participants were more in-depth, frequent, and targeted than what is available to the general student population. During the grant, colleges neither cost-shared these comprehensive support roles and functions with institutional funds, nor developed intentional plans to transition these support services and roles into permanent functions at the college as the grant sunsets. In some cases, grant-funded staff left because there was no indication their position would become permanent, or there were signals that the position would terminate after the grant ended.
- Colleges hired grant-funded staff to build relationships between the college and local employers, and to connect NRC participants to internships and job opportunities. Despite statements by senior college leaders about the value of expanded employer relationships, and the positive impact of these staff positions for the college and for NRC participants, for the most part these staff will not be retained post-grant (with one exception noted above).
- Colleges indicated that some grant-funded support services, such as skill-building workshops and orientations that incorporate resiliency, may be incorporated into other grant programs or certain program and support courses; however, there was a lack of cross-pollination between

the comprehensive support services provided during the grant – especially for continuing education students – and the institution’s support service division.

### Transparent and Supportive Policies and Practices

#### **Senior administrators clarified policies and practices to formalize links between continuing education programs, including internal articulation agreements and institutional Credit for Prior Learning procedures.**

- The NRC’s focus on Prior Learning Assessment, including the development of regional PLA standards, resulted in a renewed commitment from executive, divisional, and departmental leaders to enhance and make more transparent institutional PLA policies and processes so that students could receive college credit for past educational and professional experiences. In the words of one college president, *“PLA has been really important and has really taken hold at the institution. This will be sustained, and has generated a lot of interest. I don’t think we were good at this before, but our eyes have opened and we really want to pay attention and be good at this.”*
- Several colleges had continuing education programs and industry certifications offered during the NRC grant evaluated by external state universities for credit equivalency, thus enabling students who completed these continuing education programs, or who earned an industry certification, to earn credits that would become part of their official college transcript and could be transferred to the college.
- At one college, the board of trustees approved the Regional PLA standards that the consortium developed. The policy change removed the requirement of executive-level approval of Credit for Prior Learning, and allowed faculty to make this decision independently – ensuring that credits awarded for prior learning are stored on transcripts so students can take these credits with them. At another college, credit faculty in Information Technology developed PLA “challenge exams” to be offered to students who completed non-credit training programs at the colleges, and this process was approved by the college’s Academic Senate to formalize a credit for prior learning policy and practice for IT. A third college strengthened its existing PLA policies and practices by formalizing internal articulation agreements between continuing education and credit programs, many of which had been informally available on an *ad hoc* basis for a decade. Formal agreements with credit programs are now standard policy, and the college plans to conduct an annual review of each articulation agreement.

#### **Faculty embedded resiliency competencies into program courses by mapping course curriculum to the NRC resiliency model; yet, formal curriculum changes were rare, creating uncertainty about the institutionalization of resiliency competencies.**

- During the NRC, at least one program or course at each college mapped its learning goals and activities to the resiliency competencies, with some colleges mapping more than one program. In rare cases, this process led to the development of new instructional activities for courses that were designed to build specific resiliency competencies. Although many staff and faculty across the NRC colleges were familiar with the concept of resiliency and the resiliency competencies, most believed they already taught resiliency – albeit using different language and concepts – and thus did not commit to making formal changes to course competencies and learning outcomes.

**Although senior administrative leaders praised the comprehensive support services provided during the NRC, they did not take steps to adapt the roles and responsibilities of existing support services staff at the college to align with the more in-depth, proactive, and program-specific services offered to NRC participants.**

- NRC colleges have extensive support services staff – mostly focused on students enrolled in credit programs – and their roles and responsibilities are well-established. Adapting these positions to incorporate supports for continuing education students, and to provide more in-depth and comprehensive supports, was too expensive and unsustainable, according to executive leaders.

### **Professional Development**

**Colleges provided professional development sessions for faculty about Prior Learning Assessment, though opportunities to engage administrators, faculty, and staff more generally around continuing education programs, formally linking these programs with credit programs, and the need for comprehensive support services, were not widespread.**

- The most common professional development activities during the NRC grant revolved around Credit for Prior Learning and Prior Learning Assessment. These sessions were offered on individual campuses and in locations that could accommodate participants from multiple colleges. At these professional development sessions, faculty were encouraged to develop portfolio assessments and challenge exams that would provide PLA opportunities for students in their departments. At one college, a stipend was provided to any faculty member who completed both days of the PLA training and developed either a challenge exam or portfolio assessment for their program.
- Professional development opportunities around resiliency competencies and other instructional approaches (e.g., productive persistence) were also offered, though colleges reported difficulties in getting larger numbers of faculty to participate aside from those directly involved with the NRC grant.

### **Use of Data and Evidence**

**Project leaders collected data on NRC participants, including the support services they received and industry credentials earned, though colleges did not analyze these data to document the effectiveness of grant strategies or use data to advocate for sustaining grant-funded strategies and positions.**

- College staff collected data about the support services provided to students using a common data platform called the NRC Participant Database. These data allowed for analyses to examine support service utilization, and if these supports were associated with higher program completion rates or increased attainment of industry-recognized credentials. For the most part, colleges did not use these data strategically to support the sustainability of grant strategies.
- One college was an exception, and used data from the NRC Participant Database and completion data from the Workforce Investment and Opportunity Act to check whether students registered for courses, and if those who completed programs took the related industry certification exams. This use of data may have contributed to higher retention rates and industry credential attainment for NRC participants at the college.

## Implications for Education and Training Programs at Community Colleges

The evaluative assessment of institutionalization and sustainability, as well as the implementation and impact findings documented in this report, point to four implications for community colleges who want to expand opportunities for education and training to “non-traditional” student populations, leverage and align resources with the workforce development system, and strengthen relationships with employers.

- 1. Break down institutional siloes between continuing education/workforce development programs and credit programs (e.g., between non-credit and credit “sides of the house”).** Students access college programs in different ways, some preferring to matriculate into credit-based programs to seek a college degree from the onset of their educational journey, and some preferring to take smaller steps pursuing shorter-term – and often non-credit – education and training programs to upskill for employment advancement and to earn industry-recognized certifications. These two on-ramps should be articulated along a career pathway with stacked and latticed credentials that includes transparent policies and procedures to award credit to students who complete continuing education and workforce development programs and matriculate into credit programs, as such articulated pathways were shown to increase transitions into credit programs for NRC participants. Aligning non-credit and credit curriculum and competencies, and engaging full-time credit program faculty in this process, is critical for its success and longevity.
- 2. Reallocate institutional resources and revamp support services so that comprehensive support services are provided proactively to students and encompass career, personal, and academic supports.** Regardless of where students take courses and pursue skills and credentials (e.g., continuing education/workforce development programs or credit programs), the impact of engaging students early and often on educational progress and completion seems clear. Significantly higher percentages of NRC participants who received comprehensive support services completed their programs, earned credentials, banked credits or accumulated more college credits, and transitioned into credit programs (if they started in non-credit) than a statistically matched comparison group. Often these support services were offered as a grant-funded enhancement with little forethought into how they could be sustained. Colleges need to find the revenue models to revamp support services so they can be proactive and comprehensive, as today’s college students need intensive and ongoing support and engagement to become successful.
- 3. Create formal and strategic partnerships with the workforce development system around WIOA - leveraging its emphasis on career pathways, and integrated education and training programs.** College continuing education and workforce development programs can be affordable programs for WIOA clients, especially those with low basic skills and who are non-native English language learners. Making sure college programs are on the WIOA Eligible Training Provider List is essential; however, more critical is to build formal agreements and contractual relationships with the workforce development system to provide education and training programs for their clients. A key selling point is the existence of transparent and articulated pathways between continuing education/workforce development programs and credit programs, which can enable colleges to become nimble and flexible in providing short-term training opportunities that are desired by WIOA-funded agencies, while ensuring that these short-term non-credit programs offer ongoing education and training opportunities to WIOA clients who choose to continue along an educational pathway.

4. **Recommit to their community as an “anchor institution” with a priority to serve the local population, who are often the poorest members of their communities, and to align community assets with local employer needs.** As open-access institutions, community colleges have always been the primary on-ramp for low-income students to pursue education and training programs beyond high school. To better serve these students, colleges may need to enhance their basic skills and English language learner programs, as well as expand shorter-term non-credit programs that can better fit into the schedules of working adults and unemployed adults. Expanding these offerings should strategically connect to the college’s credit-based programs, and align with local employer needs for skilled workers.

## Appendix A: Technical Appendix

In this appendix, the evaluation team provides a detailed description of the data collection and statistical methodology used to generate the impact estimates of comprehensive support services and continuing education to credit pathway participation on educational outcomes for continuing education participants in the Northeast Resiliency Consortium Round 3 Trade Adjustment Assistance Community College and Career Training grant program.

### Data Sources

The evaluation team obtained academic and background data from each of the seven community colleges in the consortium, as well as from a centralized NRC database maintained by the lead college (PCCC). In addition, the evaluation team received unemployment insurance (UI) records from three states. Due to state mandate, UI records were not available in Massachusetts. Unit-record UI data were available in New York and Connecticut, and aggregate UI records were available for New Jersey. The variation in employment record structure across the NRC states limited the ability to conduct impact analyses on employment outcomes.

### Participant Outcomes

The educational outcomes of interest for continuing education students include program completion, credential attainment, earned or banked credits, and transition into a credit program. Each outcome and its data source(s) is described in detail below:

- Program completion was documented by NRC staff at each college, and entered directly into the central NRC database; thus, the program completion data do not come from college administrative records.
- Credential attainment reflects the receipt of an industry-recognized credential or a college awarded credential. The NRC database provided information about industry-recognized credentials, and reflects direct data entry from program staff. College-awarded credentials are from institutional administrative records, and measure certificates and degrees earned at that institution. Thus, credential attainment refers to *both* industry-recognized credentials *and* credentials awarded by the college.
- Credits earned or banked also draw from both the NRC database and college administrative data, and reflect credits recorded at each institution as well as credits that can be awarded based on the college's Credit for Prior Learning policy, including formal articulation agreements between continuing education and credit programs. Credit banking is used to represent credits awarded to students upon completion of a continuing education program that can be applied to a credit program at the college once a student matriculates. Thus, this outcome measures both the credits students banked as recorded in the central NRC database and the credits they earned upon matriculation. This is a binary variable, reflecting whether participants earned or banked at least one credit (vs. earning or banking zero credits).
- Transition to credit programs refers only to enrollment in a credit program at the same institution. This variable does not reflect matriculation in a credit-granting program at a different institution. Transition to credit programs means that a continuing education student enrolled in a credit program at the same institution and attempted at least one credit, according to college administrative records.

## The Impact Study: Propensity Score Matching

To examine the impact of participating in continuing education to credit pathway or receiving comprehensive support services, the evaluation team conducted Propensity Score Matching (PSM) to generate a comparison group similar to the treatment group along a set of characteristics that could affect the likelihood of receiving treatment. Rosenbaum & Rubin (1983) introduced the propensity score approach to matching, and described it as *“the conditional probability of assignment to a particular treatment given a vector of observed covariates.”*<sup>28</sup> In other words, the propensity score reflects the probability of receiving treatment based on a set of background characteristics. PSM is an increasingly common approach for accounting for factors that may influence the receipt of treatment, and thus confound analysis of impact. By generating a comparison group that resembles the treatment group on all variables thought to affect likelihood of receiving treatment, researchers can infer that the subsequent observed impact is the result of the treatment, and not the result of different characteristics among the two groups.<sup>29</sup>

While randomized control trials generate treatment and comparison groups that are expected to differ only in their treatment condition, observational studies face the issue of selection bias, in which receipt of treatment may be the result of meaningful differences between the treatment and comparison groups.<sup>30</sup> In observational studies, the treatment is not randomly assigned and, thus, *“baseline characteristics of treated subjects often differ systematically from those of untreated subjects.”*<sup>31</sup> Balancing on propensity scores is one way to account for differences between treated and untreated cases. PSM uses a set of variables that may influence the receipt of treatment to create propensity scores, or scores that reflect the probability of receiving treatment, for both the treated and untreated cases. The subjects are then matched on their propensity scores, and untreated cases with similar propensity scores to those in the treatment group form the matched comparison group. This approach controls for potential confounds in treatment receipt. After statistical balance has been achieved along the predictor variables (e.g., measures that could influence receipt of treatment), outcomes for the matched treatment and control group should not differ systematically in the absence of treatment.<sup>32</sup>

The evaluation team conducted separate PSM analyses for each treatment in question; thus, there is one PSM model for the continuing education comprehensive support services impact analysis, and one PSM model for the continuing education to credit pathway impact analysis. Each PSM model balances on characteristics that could be related to receipt of treatment.

The PSM approach to generating a matched comparison group enabled the evaluation to meet standards of rigor for non-experimental research studies as defined by the Clearinghouse for Labor Evaluation and Research (CLEAR)<sup>33</sup> and the Institute of Education Sciences What Works Clearinghouse (WWC).<sup>34</sup> PSM is a quasi-experimental design methodology that can achieve a moderate rating from CLEAR, as well as meet WWC standards with reservations.

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<sup>28</sup>Rosenbaum, P.R. and Rubin, D.B. (1983). The Central Role of the Propensity Score in Observational Studies for Causal Effects. *Biometrika*, 70(1), pp. 41-55

<sup>29</sup> Ibid.; Guo, S. and Fraser, M. (2010). *Propensity Score Analysis: Statistical Methods and Applications*. Los Angeles: Sage Publications; and, Austin, P.C. (2011). An introduction to Propensity Score Methods for Reducing the Effect of Confounding in Observational Studies. *Multivariate Behavioral Research*, 46(3), 399-424

<sup>30</sup> Austin, P.C. (2011) and Rosenbaum, P.R. and Rubin, D.B. (1983)

<sup>31</sup> Austin, P.C. (2011)

<sup>32</sup>Guo, S. and Fraser, M. (2010); and, Monaghan, D.B., and Attewell, P. (2014). The Community College Route to the Bachelor's Degree. *Educational Evaluation and Policy Analysis*

<sup>33</sup>Clearinghouse for Labor Evaluation and Research. *Causal Evidence Guidelines*, Version 2.1, December 2015

<sup>34</sup> Institute of Education Services, What Works Clearinghouse. WWC Standards Brief for Baseline Equivalence, n.d.

The treatment and matched comparison groups were well balanced on many of the variables used in the PSM model across the three models. If a variable was not balanced within defined parameters, it was included in a post-estimation regression analysis, and these post-estimation results are presented in this appendix. Consequently, all impact analyses results meet CLEAR standards for regression studies using matching techniques.

For each outcome, impact is measured by estimating the average treatment effect on the treated (ATT), which is the average difference in the outcome between the treated and matched comparison groups. As Zeidenberg, Cho, and Jenkins (2010) explained, “the ATT is the average effect of the treatment on the sort of person who participates in the program.”<sup>35</sup> In other words, the ATT is the difference in outcome between two groups that have similar probabilities of receiving the treatment (based on the set of covariates used to generate the propensity score).

The evaluation team used the *teffects psmatch* program in Stata to conduct PSM and estimate the ATT. *Teffects psmatch* is a relatively new program that was designed to address a significant limitation of the previous – and widely used – PSM program, *psmatch2*. Stata’s previous PSM program (*psmatch2*) did not account for the fact that propensity scores are estimated when producing standard errors. Therefore, users of *psmatch2* needed to bootstrap the standard errors, a process that has recently been demonstrated, in general, as not appropriate for matching estimators.<sup>36</sup> *Teffect psmatch* accounts for the fact that propensity scores are estimated rather than known when calculating standard errors, and thus produces a more precisely estimated ATT.

### Covariates Used for PSM

For each PSM model, the treatment group consisted of participants that received the treatment of interest, while the matched comparison group was drawn from the pool of NRC participants that did not receive that treatment.

The covariates used in the PSM models included demographic and background variables that could influence the likelihood of receiving treatment.<sup>37</sup> The variables are listed here:

- Gender
- Race
- Ethnicity
- Age during first term in the NRC
- Highest credential received prior to enrolling in the NRC
- Self-reported employment status during first term in the NRC
- Veteran status
- Disability status
- NRC enrollment term
- State
- Industry sector

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<sup>35</sup> Zeidenberg, M., Cho, S.W., and Jenkins, D. (2010). Washington State’s Integrated Basic Education and Skills Training Program (I-BEST): New Evidence of Effectiveness. CCRC Working Paper No. 20, Teachers College, Columbia University

<sup>36</sup> Abadie, A., and Imbens, G.W. (2008). On the Failure of the Bootstrap for Matching Estimators. *Econometrica*, 76(6), 1537-1557; and, Abadie, A. and Imbens, G.W. (2016). Matching on the Estimated Propensity Score. *Econometrica*, 84(2), 781-807

<sup>37</sup> An important note about PSM: PSM can balance only on observed characteristics; thus, unobserved differences between the treatment and control groups could influence results. Therefore, the results of PSM do not provide the most robust level of evidence for causality between the treatment and outcome.

- Comprehensive services (for pathway analysis)
- Non-credit to credit pathway participation (for comprehensive services analysis)

**PSM and Post-Estimation ATT Results: Comprehensive Support Services among Continuing Education Participants**

The variables used in the continuing education career support service PSM model are listed in Table A1 below. As Table A1 shows, the matched comparison group is similar to the treatment group along these treatment model covariates, and tests of mean difference between the treatment and matched comparison group show that the difference for many variables meets CLEAR’s baseline equivalence standards (p-value >.05). The variables that do not meet CLEAR’s baseline equivalence standards are included in post-estimation regression analyses. Table A2 shows the results of the post-estimation ATT analysis for each academic outcome.

**Table A1: Means, Standard Deviations, and Baseline Equivalence for the Continuing Education Comprehensive Supports PSM Model**

	Unmatched comparison pool (n=1,018)	Matched comparison group (n=1,396)	Treatment group (n=1,396)	P-value
25 or older during first NRC term*	.63 (.48)	<b>.75 (.43)</b>	<b>.68 (.47)</b>	.000
Female*	.61 (.49)	<b>.65 (.48)</b>	<b>.59 (.49)</b>	.001
Asian	.05 (.22)	<b>.06 (.23)</b>	<b>.05 (.22)</b>	.355
African American/Black*	.38 (.49)	<b>.47 (.50)</b>	<b>.42 (.49)</b>	.004
Multiracial*	.04 (.21)	<b>.06 (.24)</b>	<b>.10 (.30)</b>	.000
Hispanic*	.26 (.44)	<b>.20 (.40)</b>	<b>.24 (.43)</b>	.013
GED is highest credential received prior to NRC start	.07 (.26)	<b>.09 (.29)</b>	<b>.09 (.28)</b>	.740
HS diploma is highest credential received prior to NRC start*	.35 (.48)	<b>.41 (.49)</b>	<b>.45 (.50)</b>	.032
Two-year degree is highest credential receive prior to NRC start	.09 (.29)	<b>.14 (.35)</b>	<b>.13 (.33)</b>	.266
Four-year degree is highest credential received prior to NRC start	.11 (.32)	<b>.10 (.30)</b>	<b>.10 (.30)</b>	.802
Incumbent worker (self-report)	.41 (.49)	<b>.39 (.49)</b>	<b>.38 (.48)</b>	.393

<b>Veteran</b>	.04 (.19)	<b>.05 (.22)</b>	<b>.04 (.21)</b>	.332
<b>Disabled</b>	.03 (.18)	<b>.04 (.19)</b>	<b>.03 (.18)</b>	.609
<b>State: Connecticut</b>	.50 (.50)	<b>.11 (.31)</b>	<b>.10 (.30)</b>	.756
<b>State: New York*</b>	.29 (.45)	<b>.57 (.50)</b>	<b>.61 (.49)</b>	.026
<b>Sector: Healthcare*</b>	.76 (.43)	<b>.66 (.47)</b>	<b>.62 (.48)</b>	.024
<b>Sector: IT</b>	.07 (.25)	<b>.01 (.09)</b>	<b>.01 (.11)</b>	.448
<b>Sector: Hospitality</b>	.12 (.32)	<b>.24 (.43)</b>	<b>.25 (.43)</b>	.792
<b>First term in NRC was during or after spring 2016*</b>	.41 (.49)	<b>.18 (.38)</b>	<b>.21 (.41)</b>	.039
<b>In non-credit to credit pathway</b>	.64 (.48)	<b>.69 (.46)</b>	<b>.67 (.47)</b>	.255

\*Included in post-estimation regression analysis

**Table A2: Comprehensive Services ATT and Post-Estimation ATT for Continuing Education Participants**

Outcome	Treatment Group (n=1,396)	Comparison Group (n=1,396)	ATT	P-value	Post-estimation ATT	P-value
Completed program	82%	44%	<b>38%</b>	.000	<b>38%</b>	.000
Received credential	74%	37%	<b>37%</b>	.000	<b>36%</b>	.000
Earned or banked credits	41%	24%	<b>17%</b>	.000	<b>16%</b>	.000
Matriculated	24%	20%	<b>4%</b>	.196	<b>4%</b>	.042

### PSM and Post-Estimation ATT Results: Continuing Education to Credit Pathway Participation among Continuing Education Participants

The variables used in the continuing education to credit pathway participation PSM model are listed in Table A3 below. As Table A3 shows, the matched comparison group is similar to the treatment group along these treatment model covariates, and tests of mean difference between the treatment and matched comparison group show that the difference for many variables meets CLEAR's baseline equivalence standards (p-value >.05). The variables that do not meet CLEAR's baseline equivalence standards are included in post-estimation regression analyses. Table A4 shows the results of the post-estimation ATT analysis for each academic outcome.

**Table A3: Means, Standard Deviations, and Baseline Equivalence for the Continuing Education Non-Credit to Credit Pathway PSM Model**

	Unmatched comparison pool (n=820)	Matched comparison group (n=1,594)	Treatment group (n=1,594)	P-value
25 or older during first NRC term*	.70 (.46)	.68 (.47)	.64 (.48)	.019
Female*	.52 (.50)	.69 (.46)	.64 (.48)	.001
Asian	.04 (.20)	.05 (.22)	.06 (.23)	.580
African American/Black	.39 (.49)	.41 (.49)	.41 (.49)	.971
Multiracial	.06 (.24)	.09 (.28)	.08 (.27)	.701
Hispanic	.28 (.45)	.23 (.42)	.23 (.42)	.899
GED is highest credential received prior to NRC start*	.06 (.23)	.07 (.25)	.09 (.29)	.011
HS diploma is highest credential received prior to NRC start	.35 (.48)	.46 (.50)	.44 (.50)	.117
Two-year degree is highest credential received prior to NRC start	.19 (.39)	.06 (.23)	.07 (.26)	.128
Four-year degree is highest credential received prior to NRC start	.10 (.31)	.13 (.33)	.11 (.31)	.060
Incumbent worker (self-report)*	.45 (.50)	.43 (.50)	.36 (.48)	.000
Veteran*	.04 (.20)	.06 (.23)	.04 (.20)	.046
Disabled	.02 (.14)	.04 (.19)	.04 (.20)	.520
State: Connecticut	.26 (.44)	.32 (.47)	.28 (.45)	.003

<b>State: New York</b>	.32 (.47)	<b>.53 (.50)</b>	<b>.56 (.50)</b>	.227
<b>Sector: Healthcare</b>	.55 (.50)	<b>.77 (.42)</b>	<b>.75 (.43)</b>	.199
<b>First term in NRC was during or after spring 2016*</b>	.37 (.48)	<b>.33 (.47)</b>	<b>.26 (.44)</b>	.000
<b>Received comprehensive supports*</b>	.56 (.50)	<b>.50 (50)</b>	<b>.59 (.49)</b>	.000

\*Included in post-estimation regression analysis

**Table A4: Continuing Education to Credit Pathway ATT and Post-Estimation ATT**

<b>Outcome</b>	<b>Treatment Group (n=1,594)</b>	<b>Comparison Group (n=1,594)</b>	<b>ATT</b>	<b>P-value</b>	<b>Post-estimation ATT</b>	<b>P-value</b>
Completed program	75%	76%	<b>-1%</b>	.822	<b>0%</b>	.064
Received credential	60%	55%	<b>5%</b>	.205	<b>0%</b>	.756
Earned or banked credits	41%	14%	<b>27%</b>	.000	<b>25%</b>	.000
Matriculated	26%	14%	<b>12%</b>	.000	<b>10%</b>	.000

## Appendix B: Impact Analysis of NRC Participants in Credit Programs

### Credit Impact Study and Exploratory Analyses

Three of the seven NRC colleges served participants in credit-based education and training programs during the NRC: Bunker Hill Community College in Massachusetts, and both Capital and Housatonic community colleges in Connecticut. This appendix provides the results of an impact study on educational outcomes for participants in credit programs at these colleges.

The three research questions for credit participants are as follows:

1. *Do participants who received comprehensive support services (career, personal, academic) accumulate more credits and earn credentials at higher rates than a matched group of participants who did not receive comprehensive support services?*
2. *Are participants who were not employed at the start of their NRC program, and who received comprehensive support services, employed one quarter after program exit, and retained in employment three quarters after program exit at higher rates than previously unemployed participants who did not receive comprehensive support services?*
3. *Do participants who were incumbent workers at the start of their NRC program, and who received comprehensive support services, have a higher rate of increased earnings at any point after enrollment than incumbent participants who did not receive comprehensive support services?*

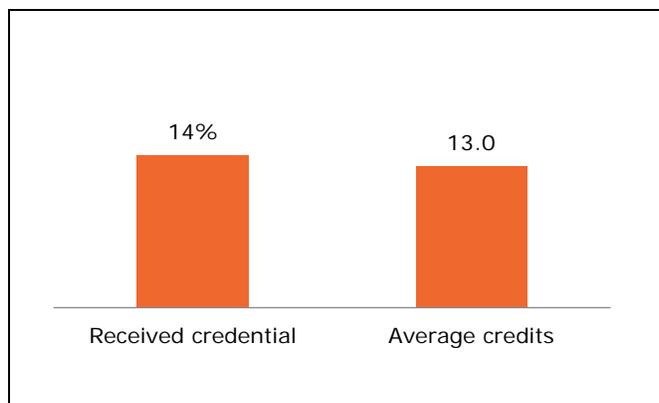
### Credit Participant Outcomes

The impact analysis for NRC credit participants examined two educational outcomes:

- Credential attainment reflects the receipt of an industry-recognized credential or a college awarded credential. The NRC database provided information about industry-recognized credentials and reflects direct data entry from program staff. College-awarded credentials are from institutional administrative records and measure certificates and degrees earned at that institution. Thus, credential attainment refers to *both* industry-recognized credentials *and* credentials awarded by the college.
- Total credits earned draws from college administrative data and reflects the total credits earned at that institution during the NRC grant period.

**14% of the 1,180 NRC credit participants received a credential and, on average, these participants earned 13 credits.** Figure B1 presents the academic outcomes for credit participants.

**Figure B1: Credit Academic Outcomes**

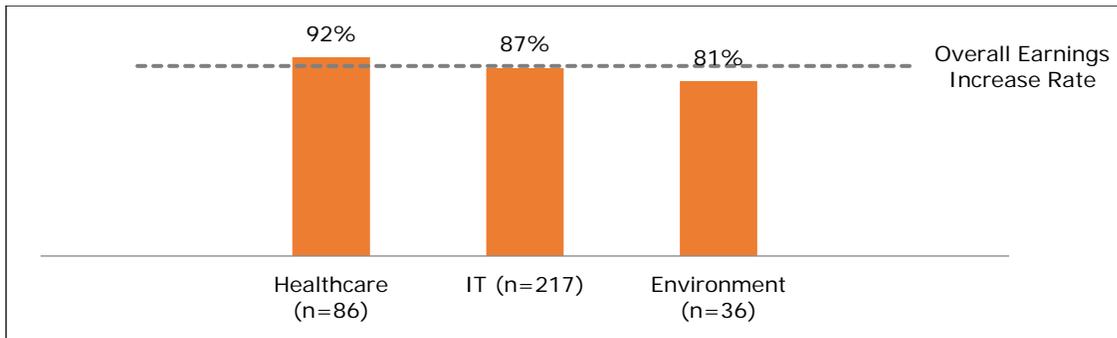


Data limitations introduced severe restrictions to the analysis of employment outcomes. Massachusetts was unable to provide UI data, and, as New York and New Jersey did not serve credit students, the employment outcome analysis for NRC credit participants consists of Connecticut students only.

Consistent with the Department of Labor’s TAACCCT reporting guidelines, the evaluation examined employment outcomes separately for incumbent and non-incumbent workers. For incumbent workers, the employment outcome is the receipt of an earnings increase at any point after the first term in the NRC; for students who were unemployed when they enrolled in an NRC credit program, the employment outcome is employment during the first quarter after program exit, as well as retention in employment three quarters after program exit. Additionally, the employment analysis for credit students is restricted to a simple comparison of means.

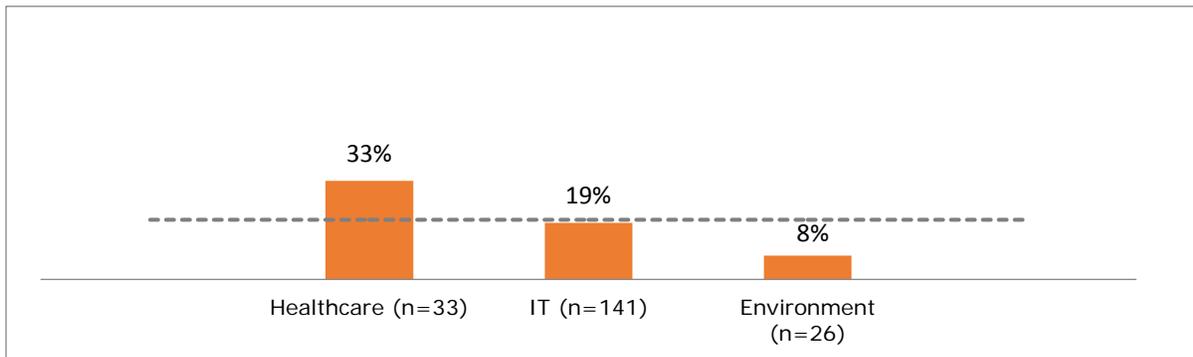
**88% of the 339 incumbent workers in Connecticut who enrolled in an NRC credit program received an earnings increase.** A large majority of credit participants employed at the start of their NRC program received an increase in earnings at some point after enrolling in the grant program. While it is not possible to know whether participants received increased wages in their current job, or if they took a new, higher-paying position, this result suggests that employers value the training NRC participants received. Figure B2 shows that, while there is not dramatic variation in earnings increase rates across program sectors, NRC participants in environmental technology sector programs received earnings increases at a lower rate (81%) than the overall earnings increase rate of 88%, while participants in healthcare programs received a higher rate of earnings increases (92%).

**Figure B2: Credit Earnings Increase Rate by Program Sectors**



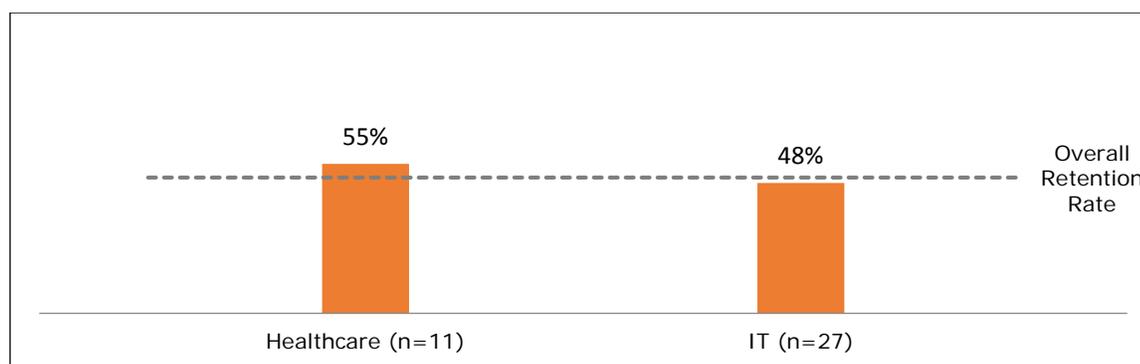
**20% of the 200 credit participants in Connecticut who were unemployed when they began their NRC program were employed one quarter after program exit.** Figure B3 shows that previously unemployed participants who enrolled in environmental technology sector programs became employed at a lower rate than participants in other program sectors, as well as at a lower rate than the overall employment rate of 20%, while healthcare program participants became employed at a much higher rate (33%).

**Figure B3: Credit Employment Rate by Program Sectors**



**50% of the 40 credit participants in Connecticut who were employed one quarter after program exit were retained in employment three quarters after exit.** Among the previously unemployed credit participants who became employed one quarter after exit, half remained employed three quarters after exit. Thus, among the overall previously unemployed group (n=200), 10% of NRC participants became employed and were retained in employment. As Figure B4 shows, the employment retention rate is highest for participants in healthcare programs and lower among participants in IT programs.

**Figure B4: Credit Employment Retention Rate by Program Sectors**



\*The environment sector is not included because number of cases (< 8) is below the minimum threshold allowed by the Connecticut Board of Regents

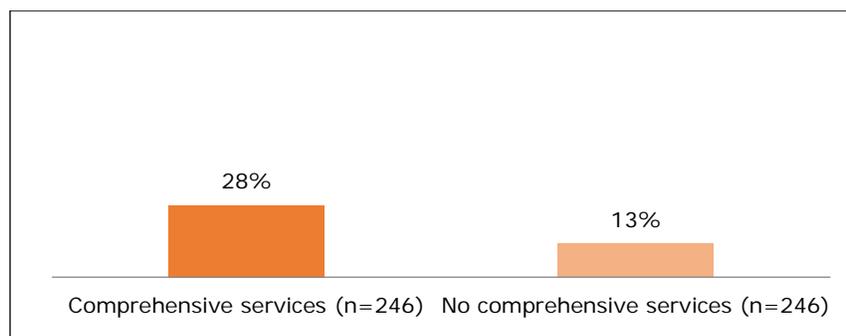
### The Impact of Comprehensive Services among Credit Participants

60% of the 1,180 credit participants received at least one support service, and 21% received comprehensive support services (supports in two or three content areas; e.g., career, personal, or academic). Among credit participants, the impact of comprehensive support services is examined for two outcomes: credential attainment and credit accumulation. The result for each outcome is presented and described below.

**Do credit program participants who received comprehensive support services (career, personal, academic) accumulate more credits or earn credentials at higher rates than a matched group of participants who did not receive comprehensive support services?**

**Credit participants who received comprehensive support services earned credentials at more than twice the rate of participants in the matched comparison group.** There is a large, and statistically significant, difference in credential attainment rate between participants who received comprehensive support services and the matched comparison group: as Figure B5 shows, 28% of credit program participants who received comprehensive support services earned a credential of some kind, compared with 13% of the matched comparison group. This is a compelling finding and suggests that comprehensive support services help credit students complete their program and earn a credential.

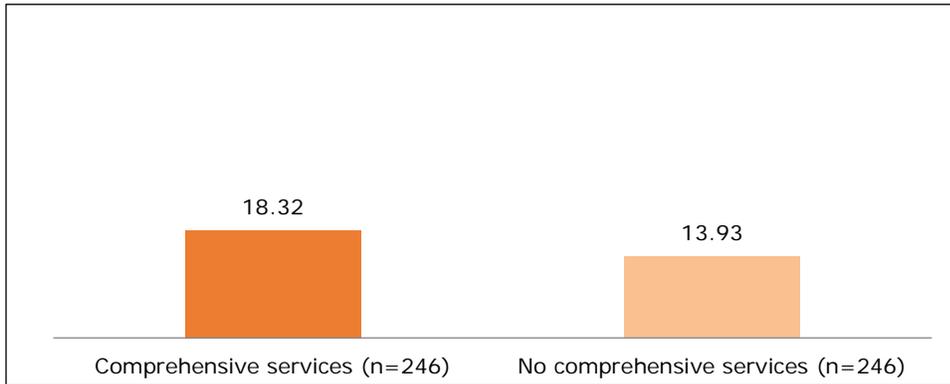
**Figure B5: Credit Credential Attainment by Comprehensive Support Services**



\*ATT=15% (p=.000)

**Credit participants who received comprehensive support services earned more credits than participants in the matched comparison group.** On average, participants who received comprehensive support services earned 4.39 credits more than participants in the matched comparison group; that is 18.3 credits during the NRC grant period compared with 13.9 credits.

**Figure B6: Credit Participant Credit Accumulation by Comprehensive Support Services**



\*ATT=4.39 (p=.000)

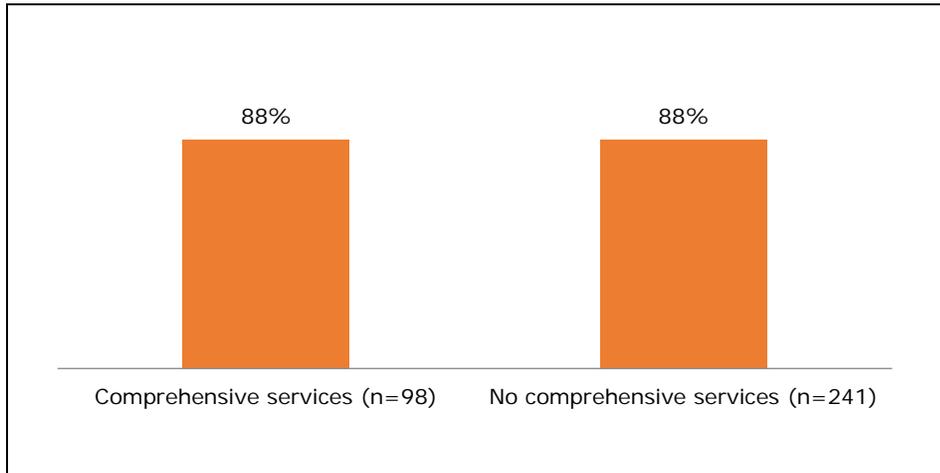
### **A Comparative Analysis of Comprehensive Support Services and Employment Outcomes**

As mentioned earlier, the employment outcome analysis consists of data for Connecticut students only. Additionally, given data limitations, the analysis is restricted to a simple comparison of means.

*Do participants who were incumbent workers at the start of their NRC program, and who received comprehensive support services, have a higher rate of receiving an increase in earnings than incumbent participants who did not receive comprehensive supports?*

**Incumbent worker credit participants who received comprehensive support services received an increase in earnings at the same rate as those who did not receive comprehensive supports.** As Figure B7 shows, 88% of both groups received an increase in earnings at some point after enrolling in an NRC credit program. That is, there is no difference in earnings increase rates between credit students who received comprehensive supports and those who did not.

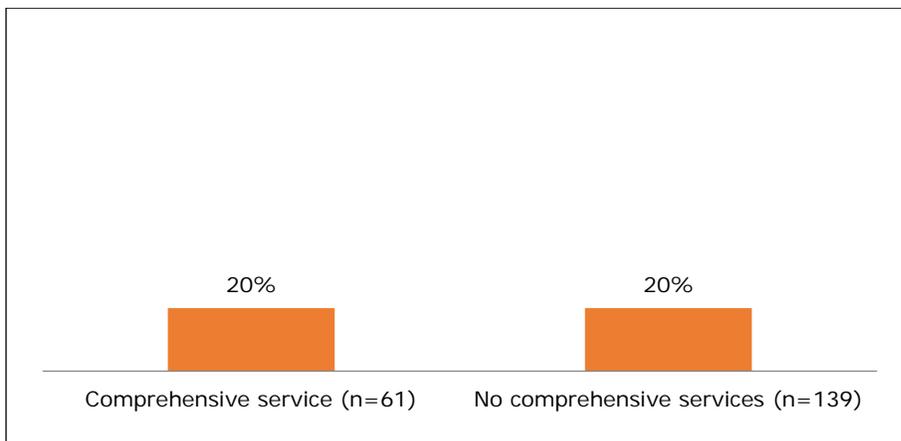
**Figure B7: Credit Earnings Increase among Incumbent Workers by Comprehensive Support Services**



*Are participants who were not employed at the start of their NRC program, and who received comprehensive support services, employed one quarter after program exit and retained in employment three quarters after program exit at higher rates than non-incumbent participants who did not receive comprehensive support services?*

Previously unemployed credit participants who received comprehensive support services were employed at the same rate as those who did not receive comprehensive supports. As with the earnings increase outcome, there was no difference in employment rate between those who received comprehensive supports and those who did not. Figure B8 shows that 20% of both groups became employed one quarter after program exit.

**Figure B8: Credit Employment Rate among Previously Unemployed Participants by Comprehensive Support Services**



Only 8% of previously unemployed credit participants who gained employment one quarter after program exit were retained in employment three quarters after program exit (N=12). This small number is not conducive to statistical analyses.

## Technical Details (for more information, see Appendix A)

### PSM and Post-Estimation ATT Results: Comprehensive Support Services among Credit Participants

The variables used in the credit comprehensive support service PSM model are listed in Table B1 below. As Table B1 shows, the matched comparison group is similar to the treatment group along these treatment model covariates, and tests of mean difference between the treatment and matched comparison group show that the difference for many variables meets CLEAR's baseline equivalence standards ( $p$ -value  $> .05$ ). The variables that do not meet CLEAR's baseline equivalence standards are included in post-estimation regression analyses. Table B2 shows the results of the post-estimation ATT analysis for each academic outcome.

**Table B1: Means, Standard Deviations, and Baseline Equivalence for the Credit Comprehensive Supports PSM Model**

	Unmatched comparison pool (n=934)	Matched comparison group (n=246)	Treatment group (n=246)	P-value
25 or older during first NRC term	.45 (.50)	<b>.48 (.50)</b>	<b>.49 (.50)</b>	.719
Female	.32 (.47)	<b>.30 (.46)</b>	<b>.28 (.45)</b>	.622
Asian*	.11 (.31)	<b>.05 (.22)</b>	<b>.10 (.30)</b>	.026
African American/Black	.22 (.41)	<b>.26 (.44)</b>	<b>.24 (.42)</b>	.532
Multiracial	.06 (.24)	<b>.09 (.29)</b>	<b>.09 (.28)</b>	.873
Hispanic	.24 (.43)	<b>.24 (.43)</b>	<b>.23 (.42)</b>	.672
GED is highest credential received prior to NRC start	.01 (.12)	<b>.08 (.27)</b>	<b>.04 (.19)</b>	.052
HS diploma is highest credential received prior to NRC start*	.31 (.46)	<b>.24 (.43)</b>	<b>.33 (.47)</b>	.028
Two-year degree is highest credential receive prior to NRC start	.08 (.27)	<b>.09 (.29)</b>	<b>.08 (.27)</b>	.520

Four-year degree is highest credential received prior to NRC start	.08 (.27)	<b>.04 (.20)</b>	<b>.06 (.23)</b>	.404
Incumbent worker (self-report)	.66 (.47)	<b>.67 (.47)</b>	<b>.63 (.48)</b>	.257
Veteran	.06 (.24)	<b>.08 (.27)</b>	<b>.07 (.25)</b>	.600
Disabled	.04 (.20)	<b>.06 (.23)</b>	<b>.06 (.24)</b>	.849
State: Connecticut	.41 (.49)	<b>.65 (.48)</b>	<b>.65 (.48)</b>	.925
Sector: Healthcare	.16 (.37)	<b>.17 (.38)</b>	<b>.13 (.34)</b>	.168
Sector: IT	.70 (.46)	<b>.77 (.42)</b>	<b>.78 (.41)</b>	.745
First term in NRC was during or after spring 2016	.51 (.50)	<b>.42 (.49)</b>	<b>.44 (.50)</b>	.650

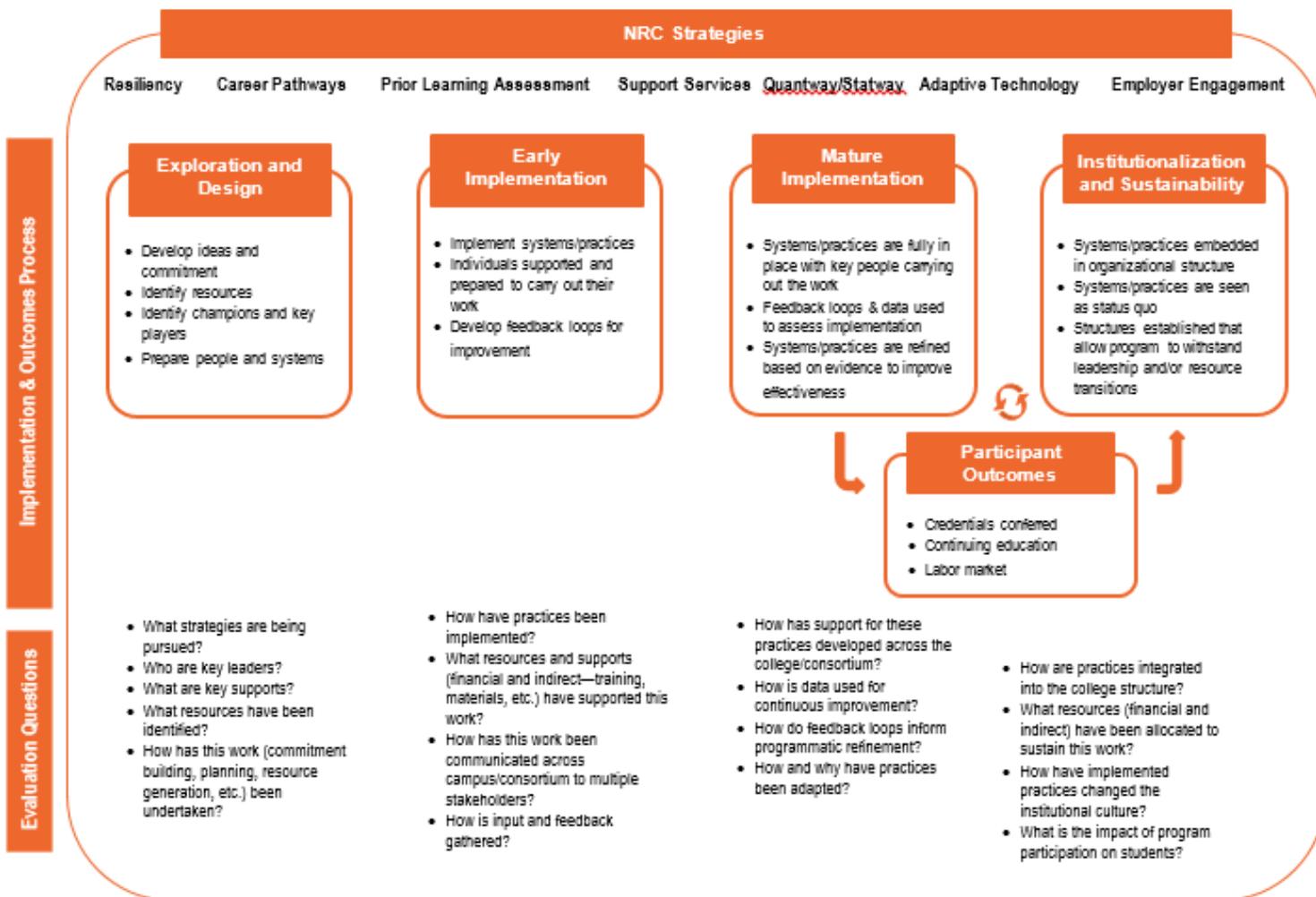
\*Included in post-estimation regression analysis

**Table B2: Comprehensive Services ATT and Post-Estimation ATT (Credit)**

Outcome	Treatment Group	Comparison Group	ATT	P-value	Post-estimation ATT	P-value
Received credential	28%	13%	<b>15%</b>	.000	<b>16%</b>	.000
Total credits earned	18.32	13.93	<b>4.39</b>	.001	<b>4.39</b>	.000

## Appendix C: Northeast Resiliency Consortium Evaluation Framework

The evaluation team presents the evaluation framework on the following page.



Adapted from the National Implementation Research Network <http://nirn.fpg.unc.edu/>

## Appendix D: Northeast Resiliency Consortium Implementation Outcomes and Indicators

### Indicators for Implementation of NRC Strategies

Career Pathways with Stacked and Latticed Credentials Implemented by Each College	Resiliency Competencies Developed by Consortium, and Implemented by Each College	Regional Prior Learning Assessment Standards Developed by Consortium, and Implemented by Each College	Advanced Technology (i.e., Smart Sparrow) Identified by Consortium, and Implemented by Each College
<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• Program(s) identified with employer involvement, and aligned with regional labor market demand.</li> <li>• Curricula and credentials developed or modified, including contextualization with basic skills instruction.</li> <li>• Curricula and credentials approved by college and/or system processes.</li> <li>• Policies adopted to enable non-credit to credit articulation.</li> <li>• Faculty identified (or hired) and trained to deliver new/modified curricula.</li> <li>• Staff identified (or hired) and trained to recruit and place students in TAACCCT program(s).</li> <li>• Participants enroll in TAACCCT program(s).</li> <li>• Participants earn stacked credentials, and gain employment or enroll in additional education and training program(s).</li> </ul>	<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• Consortium working group identified, and process designed, to identify and operationalize resiliency competencies.</li> <li>• Consortium working group agrees upon competencies.</li> <li>• Consortium working group develops and/or identifies instruments/tools to measure resiliency proficiencies.</li> <li>• Colleges adopt resiliency competencies and measures through appropriate institutional processes.</li> <li>• College stakeholders are aware of resiliency competencies.</li> <li>• Faculty and staff trained on resiliency competencies.</li> <li>• Resiliency competencies incorporated into TAACCCT program(s).</li> <li>• Participants demonstrate resiliency competencies.</li> </ul>	<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• Consortium working group identified, and process designed, to develop regional Prior Learning Assessment (PLA) standards.</li> <li>• Colleges align policies and practices, and adopt agreed-upon regional PLA standards through appropriate institutional processes.</li> <li>• Consortium working group identifies initial programs of study at their respective colleges that will utilize regional PLA standards.</li> <li>• Program faculty determines how students can apply PLA credits to their programs.</li> <li>• Colleges provide professional development that addresses implementation and administration of PLA in identified programs.</li> <li>• Faculty, staff, and administrators communicate the PLA process to students; student support and materials are in place.</li> <li>• Participants go through PLA process at each college and are awarded credits toward program(s) of study.</li> </ul>	<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• Consortium working group identified, and process designed, to customize adaptive technology for TAACCCT program(s).</li> <li>• Consortium working group selects competencies and/or activities to be incorporated into adaptive technology platform.</li> <li>• Consortium working group, and appropriate faculty and staff at each college, review and test adaptive technology tools.</li> <li>• Faculty and staff trained to utilize adaptive technology in their program(s) of study and support services.</li> <li>• Adaptive technology integrated into program(s) of study curricula and courses.</li> <li>• Participants utilize adaptive technology tools in their program(s) of study.</li> </ul>

Support Services Provided to Participants in TAACCCT Programs	Employer Engagement Strengthened for TAACCCT Programs	Quantway/Statway, or its Components, Integrated into TAACCCT Programs
<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• College identifies dedicated and/or additional support services for participants in TAACCCT program(s), (such as tutoring, supplemental instruction; advising; career counseling).</li> <li>• Faculty or staff identified (or hired) and trained to provide academic and non-academic support services to TAACCCT participants.</li> <li>• Faculty or staff provides additional academic and non-academic support services to TAACCCT participants</li> <li>• Additional support services are easily accessible and highly visible to students.</li> <li>• Key college stakeholders are aware of additional support services, and where to refer students to receive them.</li> <li>• Participants are aware of and use additional academic and non-academic support services.</li> </ul>	<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• Local employers provide guidance and feedback on curricula and credentials developed for TAACCCT programs(s) via existing and/or expanded advisory committees.</li> <li>• Local employers, workforce development boards, job centers, and labor and skilled trade unions recruit and/or refer clients and employees to TAACCCT program(s).</li> <li>• Local employers support TAACCCT program(s) by providing work-based learning opportunities, (such as internships; job shadows; plant tours; priority interviewing or hiring).</li> <li>• Colleges incorporate employer and industry resources (e.g., equipment, work based learning) into TAACCCT program(s).</li> <li>• Participants are more aware of industry expectations for employee skills and behaviors.</li> <li>• Participants experience work-based learning as part of their TAACCCT program(s).</li> </ul>	<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• College identifies developmental math curricula to be redesigned with Quantway/Statway materials.</li> <li>• Program and math faculty at each college collaborate to determine how Quantway/Statway materials can be applied in TAACCCT program(s).</li> <li>• Program and math faculty integrate Quantway/Statway materials into appropriate courses or assignments for TAACCCT program(s).</li> <li>• If appropriate, program(s) curricula and courses revamped to replace or augment existing developmental math courses with Quantway/Statway.</li> <li>• Participants utilize Quantway/Statway curricula and materials in their TAACCCT program(s).</li> </ul>

## Implementation Factors for Institutionalization and Sustainability

Institutional Leadership and Commitment	Financial and Administrative Prioritization	Transparent, Supportive Policies and Practices
<p><b>Outcome:</b> College incorporates sustainable support for the program or strategy into its Institutional planning and accountability processes.</p>	<p><b>Outcome:</b> College generates buy-in and support for program or strategy from faculty and staff by providing sufficient financial and administrative support.</p>	<p><b>Outcome:</b> College develops and enacts policies and practices to support program or strategy implementation and sustainability.</p>
<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• College has established a clear leadership structure for guiding implementation to include leadership from multiple departments and divisions and at multiple levels of organizational hierarchy.</li> <li>• College has aligned program or strategy with institutional priorities through strategic planning, accreditation, or other accountability mechanisms.</li> <li>• Program or strategy is promoted throughout the college through multiple modes of communication.</li> <li>• Program or strategy is identified as a top priority for the college with appropriate accountability and budgetary processes.</li> <li>• College has articulated how program or strategy is aligned with institutional mission.</li> <li>• Administrators, faculty, and staff understand program or strategy to be a standard practice aligned with institutional mission.</li> </ul>	<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• Executive leaders communicate regularly and publicly about the priority of the program or strategy to the institution.</li> <li>• College is developing clear roles and responsibilities for faculty, support services staff, and administrators around implementation.</li> <li>• Administrators provide the necessary support (staffing, space, technology) for faculty and staff to incorporate program or strategy into their roles and responsibilities.</li> <li>• College has developed program or strategy implementation plans with clearly defined roles, timelines and milestones.</li> <li>• Faculty, staff and administrators are assigned responsibilities and held accountable to the program or strategy implementation plans.</li> <li>• Financial resources are allocated to support program or strategy in departmental and/or institutional budgets.</li> <li>• Faculty and staff prioritize program or strategy in hiring processes for new positions.</li> <li>• Faculty and staff help to identify and recruit students to the program or strategy.</li> </ul>	<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• College has identified and enacted policies and practices to support the program or strategy, which are transparent to the college and community.</li> <li>• A range of stakeholders has been involved in designing and vetting policies and practices to support successful implementation.</li> <li>• College and community stakeholders are aware of and support the policy and practice changes needed for program or strategy implementation and sustainability.</li> <li>• Faculty members understand how the program or strategy applies to their program area, and encourages their students to participate.</li> <li>• Support services staff understands how program or strategy applies to their roles and responsibilities, and incorporates into their job responsibilities.</li> </ul>

Professional Development	Use of Data and Evidence
<p><b>Outcome:</b> College provides ongoing and regular professional development on the program or strategy, with widespread faculty, staff, and administrative participation.</p>	<p><b>Outcome:</b> College uses data and evidence for program or strategy evaluation and continuous improvement.</p>
<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• College has identified individuals who will need professional development.</li> <li>• College or partner organization provides individuals with professional development.</li> <li>• Faculty, students, and staff demonstrate increased knowledge of program or strategy.</li> <li>• Faculty, staff, and administrators can point to a range of professional development offerings that are provided in an ongoing way to support the program or strategy.</li> <li>• Professional development is differentiated by roles and responsibilities to better meet the needs of faculty, staff, and administrators.</li> <li>• Increasing numbers of individuals participate in professional development activities.</li> </ul>	<p><b>Indicators:</b></p> <ul style="list-style-type: none"> <li>• College has developed clear protocols to identify student participants, track and report program participation, and measure outcomes.</li> <li>• The college has created instruments (e.g., surveys, interviews) to evaluate implementation.</li> <li>• The college collects data on program or strategy implementation and outcomes.</li> <li>• Students, faculty, and evaluators provide feedback on an ongoing basis.</li> <li>• The college analyzes participant and implementation data.</li> <li>• Data are used to inform enhancements and changes to program or strategy.</li> </ul>

## Appendix E: NRC Programs

### NRC Programs in Continuing Education

The evaluation team assigned NRC programs to industry sectors based on information gathered during site visits. The team attributed industry sector based on the name of the programs in which NRC participants were enrolled (Tables E1 and E2 below contains a list of program names compiled from the NRC Participant Database and Site Visit Summaries, and the industry sector to which those programs were assigned). While there is a total of 84 programs that were created or enhanced under the grant and across the colleges (44 in continuing education and 40 credit programs), the following tables only include unique programs that served participants (31 continuing education programs and 25 credit programs). The total count of continuing education and credit programs is duplicative since some programs are offered by more than one college. Also, four additional credit programs were created during the time of the grant but did not serve any participants; as a result, those programs are not reflected in the report.

**Table E1: NRC Industry Sectors and Continuing Education Programs**

Healthcare	Information Technology	Environmental Technology	Hospitality
<ul style="list-style-type: none"> <li>Central Services Technician</li> <li>Certified Alcohol and Substance Abuse Counseling</li> <li>Certified Home Health Aide</li> <li>Certified Nursing Assistant</li> <li>Community Health Worker</li> <li>Customer Healthcare Technology Specialist</li> <li>EKG/Monitor Technician</li> <li>Emergency Dispatcher</li> <li>Emergency Medical Technician</li> <li>EMT/Paramedic Training Program</li> <li>Health Information Technology</li> <li>Imaging Academy</li> <li>Medical Assistant</li> <li>Medical Insurance Reimbursement Specialist</li> <li>Patient Care Technician</li> <li>Pharmacy Technician</li> <li>Phlebotomy</li> </ul>	<ul style="list-style-type: none"> <li>Certified Professional Coder</li> <li>Computer Networking</li> <li>Computer Repair</li> <li>Cybersecurity</li> <li>Mobile Apps</li> </ul>	<ul style="list-style-type: none"> <li>CUNY Language Immersion Program</li> <li>Deckhand Training</li> <li>Energy Industry Fundamentals</li> <li>Green Jobs Training Program</li> <li>Weatherization</li> </ul>	<ul style="list-style-type: none"> <li>Culinary Arts/Culinary Institute</li> <li>Culinary School at Eva's Village</li> <li>Food Service Upgrade</li> <li>Sustainable Food Service</li> </ul>

## NRC Credit Programs

**Table E2: NRC Industry Sectors and Credit Programs**

Healthcare	Information Technology	Environmental Technology
<ul style="list-style-type: none"> <li>• Emergency Medical Technician</li> <li>• Health Career Pathways Certificate</li> <li>• Medical Assistant</li> <li>• Medical Coding</li> <li>• Paramedic</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Certified Coding Specialist</li> <li>• Cisco Certified Network Associate (CCA)</li> <li>• Computer Forensics</li> <li>• Computer Information Systems</li> <li>• Computer Networking</li> <li>• Computer Science</li> <li>• Cybersecurity/Networking</li> <li>• Data Management</li> <li>• Data Science &amp; Database Analytics</li> <li>• Database Support Specialist</li> <li>• Gaming/Computer Programming</li> <li>• Information Technology Security</li> <li>• Information Technology Transfer</li> <li>• Network Technology and Administration</li> <li>• Object Oriented Computer Programming and Design</li> <li>• Web Development</li> </ul>	<ul style="list-style-type: none"> <li>• Architectural Engineering Technology</li> <li>• Construction Management</li> <li>• Environmental Science</li> <li>• Fire Science &amp; Protection</li> </ul>