Thank you

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The Report

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**Executive Summary**

**Steps Up to STEM**

*Steps Up to STEM* was a workforce development program implemented in 11 counties by the four workforce areas that form New York’s Greater Capital Region Workforce Investment Boards (GCRWIBs). The program was funded by a three-year Workforce Innovation Fund (WIF) grant from the U.S. Department of Labor (USDOL), for a total of nearly $3 million. At its inception in 2012, the program concept was an emerging, untested idea based on the hypothesis that those who complete Science, Technology, Engineering, and Math (STEM) education and training, and obtain credentials would find employment, stay in STEM jobs and careers, and advance in those careers at a higher rate than similar individuals who did not participate. The intervention aimed to increase awareness of, and access to, STEM career and training opportunities, under the notion that growing STEM fields would provide better economic and job opportunities to workers in the Greater Capital Region.

*Steps Up to STEM* was designed to walk participants through a set of activities that would prepare them for employment in a STEM field:

**Recruitment**

Three primary avenues were available to potential program participants interested in entering the program: 1) entering through the Career Center as a job seeker, 2) being referred by an employer, or 3) attending a Train First recruiting event.

**Assessment**

All potential program participants received an initial assessment, which was most commonly administered by a Workforce Advisor. The purpose of the initial assessment was to: 1) provide an overview of the services available through the Career Center including the *Steps Up to STEM* program, and 2) review the job seeker’s work and educational background, as well as their current life circumstances, to determine if the customer was job ready or in need of career development services.

**Training**

Based on the participant’s initial assessment, the individual could be referred to receive career development services, to attend a STEM labor market workshop, to complete a STEM comprehensive assessment, to develop a STEM IEP, or to receive a STEM Two-Step job referral. Once the participant was ready, he/she would engage in an individualized career plan or an Individualized Training Account (ITA). A key innovation of the grant program was the individualized career plans for program participants that required two training steps. These plans were developed in two manners: 1) they partnered a program participant with an employer to create a unique plan for the individual’s training and employment, or 2) they established sector-based (i.e. Train First Model) trainings as Step One, followed by an employer-specific Step Two.

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1. The Fulton, Montgomery, and Schoharie Counties Workforce Development Board, Inc., which serves as the grant recipient and fiscal agent; the Capital Region Workforce Investment Board; the Columbia-Greene Workforce Investment Board; and the Saratoga, Warren, and Washington Counties Workforce Investment Board.
2. Employer referrals include both incumbent workers and reverse referrals.
In addition to participant services and training, *Steps Up to STEM* also included:

- A STEM awareness campaign through videos, panel discussions, and STEM Youth Summer Institutes focusing on middle-skill STEM jobs
- Employer recruitment and participation through increased and intentional engagement with the region’s Business Services Representatives (BSRs)
- STEM-focused sector partnerships facilitated through bi-monthly *Steps Up to STEM* Coalition meetings and enhanced through Train First Model initiatives
- Professional development for Career Center staff through monthly staff development activities including tours of local STEM-related businesses

Each element of the *Steps Up to STEM* program worked in tandem with other elements to increase awareness of, and access to, STEM career and training opportunities:

*Figure E51: Steps Up to STEM Program Model*
Program Evaluation
The GCRWIBs contracted with Thomas P. Miller & Associates, LLC (TPMA) to serve as an independent, third-party evaluator. The evaluation’s primary purpose was to assess the planning, implementation, and effectiveness of the intervention. The evaluation itself consisted of three components:

Implementation Evaluation
The Implementation Evaluation began November 2012 and continued through September 30, 2015, to document program progress, to monitor program outcomes, and to provide recommendations for continuous improvement of program operations. The Implementation Evaluation primarily focused on the training provided by Steps Up to STEM, but also covered progress of all grant-funded initiatives. The Implementation Evaluation was primarily qualitative and included calls, in-person interviews, document reviews, as well as reviews of NYSDOL One-Stop Operating System (OSOS) data. The Implementation Evaluation can be described in two parts – the formative, or ongoing analysis of the program, and the summative, or final cumulative program analysis.

Outcomes Evaluation
The Outcomes Evaluation specifically focused on assessing Two-Step and One-Step training participants. Using participants’ program goal attainment, wages, and job retention data, the evaluation team examined the hypothesis that those who pursue STEM education and training and obtain credentials will be able to find employment, stay in STEM jobs and careers, and advance in those careers. The evaluators compared participants before and after the program on wages and job retention as an estimate of the effect of the program.

Cost Evaluation
The Cost Evaluation was designed to provide a basic understanding of the cost per Steps Up to STEM participant through various stages of participation. A cost allocation analysis was conducted to provide an estimated range of the funding required to implement or replicate the complete or sub-groups of the model – focusing on figures related to the initial assessment and Two-Step/One-Step trainings. The evaluators reviewed the cost per participant through stages of Steps Up to STEM engagement and compared it over time specifically by calendar year and by the four consortium members and their respective workforce areas.

This Final Evaluation Report provides USDOL with evidence-based findings and lessons learned from Steps Up to STEM, giving insight for future funding and program scaling decisions.

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3 For a detailed description of the methods of the evaluation see Appendix A, Appendix B, and Appendix C.
Summary of Evaluation Findings

Between June 2012 and March 2016, four workforce investment boards in New York’s 11-county Greater Capital Region developed and implemented an innovative program designed to: grow the talent pipeline for STEM jobs through broader awareness of STEM opportunities; improve job seeker wages and employment retention in Science, Technology, Engineering, and Math (STEM) careers with a Two-Step training model and other customized STEM training; and better serve job seeker customers through stronger connections with business and industry.

For slightly less than $3 million, the region achieved the following goals:

**Successes**

- Exceeded its goals of **STEM exposure** and **STEM readiness assessments** by more than 60 percent each, providing STEM labor market and career information to more than 14,400 job seekers and assessing nearly 2,200 people for STEM readiness.

- Connected 147 individuals to employers through **training contracts** and significantly improved training participants’ **wages by an average of $2.55/hour.**

- Established new methods of, and relationships for, job seeker training, both on an individual employer level and through **industry sector partnerships**.

- Deepened workforce staffs’ appetite for creative approaches to job seeker services, and broadened their understanding of the region’s labor market conditions through **staff professional development** opportunities and overall engagement in *Steps Up to STEM*.

**Challenges**

- **Employers participating in Two-Step contracts** (achieved 42 of 88), due to greater-than-anticipated difficulties finding businesses willing to participate, shortfalls in the contract business intermediary’s performance, and shortages of business services staff – and time spent on business services activities – in several of the more populated counties.

- **Career plans developed** (achieved 147 of 192), due to lags in program start-up and to noted difficulties with employer participation, but not due to lack of job seeker interest.

- **Community colleges with “employer-specific” credentials** (achieved 0 of 6), due to modifications in program implementation that included few multi-credential Two-Step contracts. Instead, the program focused largely on some combination of multiple On-the-Job Training (OJT) and short-term training with the region’s career and technical education system (BOCES) rather than its community colleges.

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4 This wage finding is statistically significant (p<.001) as a main effect for change over time (for participants compared to themselves before program, at Step One, at Step Two, and after program), averaging across trainings.

5 Industry sector partnerships were developed in areas including machine tool technology and healthcare.

6 The craft beer brewing training, which included coordination with a local community college to develop “employer-specific” credentials, was initially planned to be conducted with the *Steps Up to STEM* grant. However, the start date for the craft beer brewing training began beyond the allowed period for grant training funding and thus is not counted within the analysis.
Program Variation & Wages

Steps Up to STEM was designed to be flexible, to allow for adaptation in a variety of workforce system structures, population densities, employer needs, job-seeker skill-levels, and economic conditions. As the region’s workforce agencies learned through trial-and-error, the definition of STEM jobs expanded, methods of communication with employers and job seekers were adjusted, and, as staff experimented with different approaches to employer engagement and job seeker training, the actual proportion of various types of training contracts was different than anticipated.

The flexibility in the program itself is best seen through the diversity of training. For two regions, Fulton, Montgomery, and Schoharie Counties Workforce Development Board, Inc. (FMS WDB) and Columbia-Greene Workforce Investment Board (CG WIB), the training portion of the program was largely – or, in the case of FMS WDB, nearly wholly – implemented through the program’s primary innovation: Two-Step contracts. Saratoga, Warren, and Washington Counties Workforce Investment Board (SWW WIB), along with CG WIB to a lesser extent, focused a large portion of time and effort on training through the Train First model (included both Train First and the combination of Train First & Two Step (TF&TS)) while nearly three of every four contracts Capital Region Workforce Investment Board (CR WIB) established were One-Step Individualized Training Accounts (ITAs).

Figure ES2: Steps Up to STEM Program Participants

This diversity in training approaches mirrors the diversity in the average wage across training types. On average, participants experienced a $2.55/hour wage increase measured before and after the program, the increase ranged from $1.06/hour (for participants in ITA) to $4.43/hour (for participants in TF&TS).

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7 The Train First training referred to an individual who participated in Step One of a sector-based training. Train First & Two Step referred to an individual who participated in Step One of a sector-based training and then continued on to a second step of training with an employer.
The figure above demonstrates the average (or mean) wage changes over time for a *Steps Up to STEM* program participant. Key time points represented in the figure include pre-program wage (“prior”), wage at Step One, wage at Step Two, and wage after completing the program (“post”). Because the ITA and Train First were only one step of training, there was no wage data for Step Two. An overall increase in wages over the four time points was statistically significant.

### Beyond the Grant

Effects of the *Steps Up to STEM* grant program will continue up through the end of the grant and beyond. During the remaining months of the grant, the program will continue to experience progress toward output goal attainment and will accrue new data to supplement analyses for program outcomes and cost. One of many findings within this evaluation report is programs like *Steps Up to STEM* take time to implement and even more time to evaluate. However, because of the time invested in the grant, the evaluators anticipate positive longer-term effects of the grant to include:

- Enhanced workforce system capacity via sustained grant innovations and preparation for WIOA
- Increased levels of engagement between the workforce system and regional employers
- Stronger occupational outlook for participants, measured by transferrable skills and wages

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8 Due to small sample sizes of ITA participants, data for the average post-program wage has been suppressed. For a full description of sample sizes across trainings and time points see the Outcomes Evaluation section of the report.

9 Based on Linear Mixed Models with repeated measures across participants ($F(3,155.07)=8.71, p<.001$).

10 Quantitative analysis included within this report is as of October 2015. Training funds end in December 2015 and all other grant funding ends in March 2016.

11 As of October 2015, 16 percent of participants were still actively pursuing Step One or Step Two of training, and the GCRWIBs were continuing to enroll new participants into the program.

12 Increased employer engagement was noted in employer and workforce system staff interviews and through increased trends in employer contributions within the Cost Evaluation.

13 Transferrable skills were noted in employer and participant interviews.
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Steps Up to STEM
Steps Up to STEM

Purpose & Scope

Steps Up to STEM was a program funded by a three-year Workforce Innovation Fund (WIF) grant from the U.S. Department of Labor (USDOL), with a budget of $2,999,970. At its inception in September 2012, the program was an emerging, untested idea based on the concept that those who completed science, technology, engineering, and math (STEM) education and training, and obtained credentials would find employment, stay in STEM jobs and careers, and advance in those careers. The intervention aimed to increase awareness of, and access to, STEM career and training opportunities, under the notion that growing STEM fields would provide better economic and job opportunities to workers in New York’s Greater Capital Region.

The intervention was implemented in the 11-county jurisdiction of four workforce areas in Upstate New York, which includes: the Fulton, Montgomery, and Schoharie Counties Workforce Development Board, Inc. (FMS WDB), which served as the grant recipient and fiscal agent; the Capital Region Workforce Investment Board (CR WIB); the Columbia-Greene Workforce Investment Board (CG WIB); and the Saratoga, Warren, and Washington Counties Workforce Investment Board (SWW WIB). Together, these boards form the consortium known as the Greater Capital Region Workforce Investment Boards (GCRWIBs). See Figure 1 for a map of GCRWIBs geographic footprint.

The program’s strategy for addressing the STEM skill shortage was twofold. First, the program aimed to increase, among WIA-eligible, now WIOA-eligible (WIA/WIOA) youth and adults, awareness about STEM careers, the value and opportunities such careers provide, and the resources available to prepare for success in the field. These activities were intended to help maintain and build the region’s STEM talent pipeline, particularly in middle skills, so that employers have a greater pool of STEM-trained workers. Second, the program sought to develop linkages among employers, job seekers, workforce development professionals, and education providers to create Two-Step contracts – customized training plans to increase an individual’s readiness to meet an employer’s job/hiring requirements and to move along a career pathway.

Program Activities

The principal activities of the intervention included six dimensions: 1) a STEM awareness campaign; 2) job seeker recruitment & preparation; 3) employer recruitment & participation; 4) STEM-focused sector partnerships; 5) professional development of Career Center staff; and 6) individualized Two-Step contracts.

STEM Awareness Campaign – The primary objective of these activities was to raise awareness of STEM as a concept and of the opportunities that could result from pursuing a STEM career. Elements

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14 WIA stands for the Workforce Investment Act. WIOA stands for the Workforce Innovation and Opportunities Act.
of the campaign included: STEM Youth Summer Institutes, two videos highlighting STEM-related businesses, panel discussions with businesses around STEM hiring needs and opportunities, marketing collateral describing STEM careers and salaries, incorporation of STEM into Career Center workshops, and word of mouth from Center staff promoting STEM opportunities.

**Job Seeker Recruitment & Preparation** – Detaiiled in the *Job Seeker Participant Flow* section that follows, GCRWIBs provided initial assessments, career development services, STEM Labor Market Workshops, and a STEM comprehensive assessment to better prepare job seekers for STEM careers.

**Employer Recruitment & Participation** – Business Services Representatives (BSRs) were the primary point of contact for many employers and used the *Steps Up to STEM* grant as another resource to highlight with employers during times of regular employer engagement. BSRs then worked with interested employers to complete the paperwork and address as many barriers to participation as possible. Workforce areas held joint BSR-employer meetings to ensure strong on-going communication. Additionally, regional employers were heavily engaged in Train First program development and participant selection.

**STEM-Focused Sector Partnerships** – As a region, GCRWIBs hosted bi-monthly *Steps Up to STEM* Coalition meetings. These meetings focus on collaboration and engagement of stakeholders and included representation from WIBs, Career Centers, New York State Department of Labor (NYSDOL); businesses; and regional and community organizations. In addition, Train First Model initiatives in several of the workforce areas led to sector partnership discussions.

**Professional Development of Career Center Staff** – Enhancing workforce programming and services included increasing the capacity of Career Center staff. Beginning in Year 2, WIF-funded staff met for monthly staff development activities to share promising practices and discuss key elements to implementation, including ongoing discussions of the definition of STEM jobs. In Year 3, WIF-funded staff toured local STEM-related businesses, learning more about the work environment and staffing needs. Workforce Advisors reported these tours were especially beneficial for developing their firsthand knowledge of various businesses, since Workforce Advisors counsel job seekers but had rarely visited employer locations.

**Individualized Two-Step Contracts** – Two-Step contracts were an integral component to the program design, and are described in the *Job Seeker Participant Flow* section that follows.

**Job Seeker Participant Flow**

For *Steps Up to STEM* job seeker participants, the GCRWIBs developed a series of counseling and training sessions designed to guide participants in understanding STEM careers and developing of individualized Two-Step contracts. These included: 1) an initial assessment; 2) career development services; 3) STEM Labor Market Information workshop; 4) STEM comprehensive assessment; and 5) STEM IEP development. Additionally, WIF-funded staff would provide guidance and support for the

15 See *Two-Step Contracts* section below for more information about the Train First Model. The Machine Tool Technology training program model is an example of a targeted sector partnership initiative, which brought together employers, an education training provider, and the workforce system to create and deliver area-specific training for machinists.
individualized Two-Step contracts, as needed, through STEM Two-Step job referrals and Two-Step contract development.

Figure 2 represents how the counseling, training, and Two-Step guidance components of the Steps Up to STEM program worked for a job seeker. Numbers included within the diagram are enrollment figures as of October 2015.

Figure 2: Steps Up to STEM Job Seeker Participant Flow

Steps Up to STEM was designed to walk participants through a set of activities that would prepare them for employment in a STEM field. Because education, employment history and, job readiness varied among participants, there was no standard time frame for an individual to be involved in activities.
Participants also had the option to opt out of Steps Up to STEM and re-enter regular WIA/WIOA-funded activities at any point in the program, up to and including the STEM Two-Step Plan Job Referrals, which preceded the creation of a Two-Step contract.

Recruitment

There were three avenues from which a participant could enter into the program:

Job Seeker through the Career Center – Participants could enter into the Steps Up to STEM program just by coming to a Career Center within the GCRWIBs region and meeting with a Workforce Advisor for an initial assessment.

Employer Referrals – Employers could refer individuals to participate in the program. Interviewed employers reported hearing about the program through WIB or center staff, through other employers, or through the potential participant themselves. Some employers who provided referrals reported not knowing about the specific Steps Up to STEM program in advance, but recognized that some form of training funding could be available through the workforce system and so more broadly referred the participant for training support. Employer referrals included two forms of participants: incumbent workers or reverse referrals. An incumbent worker is an individual who was already employed by the employer who provided the referral. A reverse referral is a job seeker who was identified by an employer as an individual the entity would like to hire, then the employer recommended this individual for training.

Train First Recruitment Events – The third form of recruitment came from specific events targeting potential participants for the Train First Model. These events looked different across the workforce areas that used the Train First Model. Examples included:

- **CNA Recruitment Informational Session** – Staff from four nursing homes and other health care facilities in the workforce area provided information to the attendees about what it was like to work as a CNA and what it was like to work at their facilities. After the information session, applicants participated in short job interviews with each of the facilities and with the class instructor. Applicants had to be selected by at least one of the facilities and be approved by the instructor to be admitted to the Steps Up to STEM Train First class.  

- **Machine Tool Technology Recruitment** – A recruitment event was held for each year of the training (three total). During the event, WIF-staff and GCRWIBs Leadership presented information about the grant program and the Machine Tool Technology training. Participating employers identified consistent interview questions, and a core team of employers were engaged to interview each promising candidate — selected from those who attended the recruitment event as well as individuals who contacted the career centers with interest in the training. Center staff facilitated the interview process and then met with

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16 Twenty-seven applicants participated in the recruitment event. The maximum number of students that could be selected for the class was ten. Fourteen candidates were approved, so four students were put on a waiting list until an appropriate class could be found for them to attend.
employers to debrief and identify next steps, including identification of which individuals would be admitted to the training.\textsuperscript{17}

**Assessment**

All potential program participants received an initial assessment, which were most commonly administered by a Workforce Advisor. The purpose of the initial assessment was twofold:

- To provide an overview of the services available through the Career Center. This was where potential participants were told about the advantages of STEM related careers and the *Steps Up to STEM* grant program.
- To review the job seeker’s work and educational background, as well as their current life circumstances, to determine if the customer was job ready or in need of career development services. Different services are then offered to the customer based on their classification (job ready or in need of career development services) and their interests. See Training – As Needed section below.

Regarding eligibility requirements for the *Steps Up to STEM* program, the universe of individuals who could become participants included WIA/WIOA-eligible workforce customers in the 11 counties that comprised the jurisdiction of the GCRWIBs. These individuals either needed to be identified as a Dislocated Worker or an adult whose income fell below the self-sufficiency level established by the FMS WDB. The FMS WDB self-sufficiency level was used because of their role as the WIF grant recipient.\textsuperscript{18}

In addition to being eligible for program services, the potential participant would also need to be interested in *Steps Up to STEM*. WIF-funded staff and GCRWIBs leadership have noted that often, while an individual was eligible for the program, he/she was not interested in participating either because the individual was looking for immediate job placement without the requirement of training or the individual had no interest in a STEM career.

Individuals who were eligible and interested in the *Steps Up to STEM* program could then have their training governed by the training policies of the grant recipient,\textsuperscript{19} FMS WDB, should local boards agree to the policies, otherwise, consortium members were able to use their already existing training policies.

\textsuperscript{17} The first year around 95 potential participants attended the recruitment event and 15 were chosen for the training class. The second and third years, 49 and 45 individuals attended the recruitment with 13 being chosen for training each year. The maximum class size was filled each year. Over the three years of enrollments, a broad range of participants were engaged in training: those who were unemployed, underemployed, involved with an upcoming plant closure, and a few that were employed in an entry level job but this training would allow them to advance.

\textsuperscript{18} This is a federal WIA standard and used by all GCRWIBs.

\textsuperscript{19} FMS WDB training policies included: 1) Self-sufficiency for adults and dislocated workers was determined on a single individual status, with a ceiling of $30/hour; 2) On-the-Job Training (OJT) and Classroom Training for adults served adults earning up to 500 percent of the Federal Poverty Guidelines (based on family size) but gave priority to certain groups including veterans and low-income and/or Public Assistance recipients; 3) Customized Training for employed workers upgrading to a new position, a trainee must not be earning a self-sufficient wage as described in FMS’s self-sufficiency policy. Starting wage after training must be at least $11.50 an hour, and an increase of at least a $1 or 5 percent, whichever was more; 4) Total of $6,000 was available for two training steps.
All five elements within the “as needed” training section of the job seeker participant flow were available to job seeker participants at any point following the initial assessment. While the STEM Two-Step Job Referrals would occur right before placement, the other as needed training options could occur in any order as required by the participant and identified through the initial assessment.\footnote{Activity Participants} 

\textit{Career Development Services} – Career development services included the array of services traditionally offered through a Career Center, including mock interviews, resume reviews, and career counseling. Individuals needing career development services typically faced the following challenges: outdated skills; limited work skills, experience, and/or education; lack of occupational goals; and barriers to obtaining or retaining employment such as childcare needs.

\textit{STEM Labor Market Information Workshops} – This activity communicated to workforce customers the benefits of STEM careers in terms of income, job security, and job availability. Workshops also provided career development information such as what can be found on O*Net.\footnote{The Occupational Information Network, or O*Net, is a free online database by the U.S. Department of Labor. The O*Net database houses occupational definitions with associated skills, abilities, interests, and knowledge required for the occupation.} In addition to a traditional workshop format, the GCRWIBs provided STEM labor market information in the form of PowerPoint presentations and brochures and through other \textit{Steps Up to STEM} workshops, including the Math Anxiety workshop.

\textit{STEM Comprehensive Assessment} – The purpose of this individual counseling session was to confirm that the customer was interested in pursuing training and employment in a STEM career and to discuss possible occupations. An intensive review of a customer’s education and work history determined if he or she should be referred to the Math Anxiety workshop,\footnote{A STEM workshop for job seekers who were concerned about their ability to learn mathematical concepts, especially those math skills, such as algebra, necessary to successfully pursue a STEM career} other skills workshops, and/or the pre-test for the National Work Readiness Credential.\footnote{A credential for job seekers without a high school diploma or equivalent; with poor writing skills; and/or with a limited work history, or a work history that was not recent. Other assessments used to identify potential participant skills and interests, outside the individual counseling appointment, included employer panel interviews in the Train First Model.} 

\textit{STEM IEP Development} – This activity involved a counseling appointment that determined the services and activities the customer may have needed before being referred to STEM employers, including:
Purpose & Scope

Steps Up to STEM

- Confirming the career path options the customer wanted to pursue;
- NWRC preparation classes for anyone who failed the pre-tests;
- NWRC Certification exam for job seekers who could benefit from having the credential;
- Scheduling any ProveIt assessments related to their career path options where an objective assessment and validation of their knowledge could help with their job search process;
- Referral to English as a Second Language (ESL) or High School Equivalency Diploma (HSED) classes for all appropriate customers; and
- Referral to Resume and Job Interviewing workshops.

STEM Two-Step Job Referrals – Job seekers, without business sponsors, who were interested in pursuing a STEM career could meet with a BSR for employer matching support. Support included the BSR directly matching the job seeker with a business and/or providing the job seeker with materials to be his/her own salesperson.

Training – Two-Step and One-Step

The primary innovation developed through Steps Up to STEM, Two-Step contracts were individualized career plans for program participants and served as three-way agreements among the workforce areas, the job seeker participant, and the employer. The concept deviates from previous workforce development strategies in that it required a multi-step, career pathway focus. Traditional workforce training strategies primarily focused on training for job placement, instead of career progression.

Components of the Two-Step agreement included: 1) identification of two training steps with detailed descriptions of training to be provided, 2) wage increase at the implementation of Step Two and, depending on circumstances, after Step Two goal attainment, 3) a wage that met minimum workforce area requirements, 4) shared participant wage compensation of 50-50 split between workforce area and employer, and 5) commencement of Step Two of training within one year of Step One goal attainment.

Contracts involving two steps were primarily formed through two approaches: individual employer training contracts and Train First Models. In individual employer training contracts, training and employment would occur simultaneously, so that an individual would become employed, an employer would provide some sort of initial training investment as Step One, and the employer would commit to supporting Step Two within one year. All four workforce areas used the individual employer training approach.

In the Train First Model, candidates were trained prior to program-related employment, which qualified as Step One of Two. Then, employers hired workers from this trained pool of applicants. Three

24 ProveIt is testing tool developed by Kenexia used to assess job specific skill levels and/or behavioral aptitudes.
25 Known as the General Equivalency Diploma until 2014.
26 Training steps could include industry-recognized credentials or “employer specific” stackable credentials, but credential attainment was not required.
27 If another grant source (e.g. National Emergency Grant) was used for Step One, then the wage sharing requirements would align with the alternative grant source for the first step.
consortium members, the CG WIB, the SWW WIB, and the FMS WDB, used this model to train and place candidates.

Participants could also engage in a One-Step training, which included job seeker commitment to only the first step and was implemented to address challenges with longer training programs.  

The evaluation of Steps Up to STEM focused on the training portion of the program.

Training – Examples

Training flexibility and customization was both an important and valuable component of the Steps Up to STEM model. Each Two-Step contract was designed uniquely for the participant and employer, as such there was no singular approach to training. What follows are examples of training contracts created by the GCRWIBs:

OJT + Customized Training
A Two-Step participant was working at a textile mill as a machine and building maintenance worker (servicing machinery and assisting in maintaining the building and grounds) for five years. The individual had an opportunity to advance into a machine technician position through the Steps up to STEM program due to the loss of an experienced, long term technician. Step One included On-the-Job Training (OJT) in installing production machines and the plant facility’s equipment, basic machinist duties and operation, machinery mechanical and electrical repairs, pneumatic and hydraulic repairs and installation, reading and interpreting equipment manuals and work orders, troubleshooting and diagnosing problems, plumbing maintenance, use of electric meters, and detection of faulty machinery/manufacturing operations and reporting issues to the supervisor. Step Two and Step Three consisted of customized training where the participant attended the local community college and completed two courses per semester: Industrial Automation and Robotics 1 and Industrial Automation and Robotics 2. As a result of the training, participant received an overall increase of $2.50/hour.

Customized Training + OJT
A Two-Step participant in a manufacturer, wholesale supplier, and distributor of a broad range of products for the stage and theatrical lighting company attended a training in Austin and Dallas, Texas to become certified in digital lighting programming and fixture repair training with High End Systems. Step

Note that the One-Step training was allowable under the original grant narrative and was intended to be a secondary training approach (as compared to the primary Two-Step contract approach). The term One-Step training is synonymous with Individualized Training Account (ITA) used elsewhere within the report.

The Implementation Evaluation focused on both the as needed and the Two-Step/One-Step trainings, the Outcomes Evaluation only focused on the Two-Step/One-Step trainings, and the Cost Evaluation included initial assessment figures as well as Two-Step/One-Step training figures.

This first course studied the theory and operation of devices and systems that are used in industrial controls, including the fundamentals and applications of automation and robotics. The participant was trained to troubleshoot and repair systems that contain devices such as photoelectric sensors, inductive and capacitive proximity sensors, timing circuits, relays, pneumatic and hydraulic solenoids, and basic controls.

The second course (Step Three) involved the study of sensors and actuators by studying the theory, programming and operation of devices and systems that are used in industrial controls, including closed loop control, PID (proportional–integral–derivative) controller, PLC’s (programmable logic controllers) using ladder logic, robotics, HMI’s (human machine interface), and SCADA (supervisory control and data acquisition) systems. It also included DC and AC motor controls, servo systems, and coordinated motion control systems. The participant found it very helpful and exciting to attend classes and then return to work and actually practice what was learned.
Two then included a supervised OJT in electrical and mechanical repair of various entertainment industry products including the use of computers, programming, assembly, and repair.

A Two-Step participant with no previous manufacturing or mechanical skills and applied for a position at a composite manufacturing firm and entered into the Steps Up to STEM program. For Step One, the participant was enrolled in a series of classroom training certification sessions at MACDAC, Inc. for CNC Machine Operation and Programming. The participant completed certifications in Mill 2D, Mill 3D, and CNC Operation programming. Step Two for the participant was an OJT as a Machinist and was able to learn on the job creating templates and programming of various mill machines to create composite materials. The participant went from making $8/hour as a seasonal Housekeeping Aide to $14/hour as a full time CNC Machinist.

A Two-Step participant with a company that manufactures custom, high quality thermoplastic tubing for the medical device industry company had Step One include attendance at a Compuplast Extrusion Seminar— a three day Seminar and Training program to be certified with their computer-aided design (CAD) software. Step Two included a supervised OJT in implementation of the computerized program that applied the software program to optimize designs and troubleshoot processing problems and working with manufacturing department to develop, coordinate, and implement technical training for employees.

A Two-Step participant was working at an advanced manufacturing plastics company as a CNC Machine Operator for 10 months, the individual had attained a Bachelor’s Degree in Science and Economics prior to this position but found it difficult to secure employment in that field thus accepted the position in plastics manufacturing. Step One of training was customized classroom training for blueprint reading through a local community college. Step Two of training was OJT for a Tool Designer/Drafting position with a $2.50/hr. wage increase. The participant stated that, this “WIF STEM training was much more worthwhile than the four years of time, money, and effort spent for the Bachelor’s Degree.”

**OJT + OJT**

A Two-Step contract was developed with a small solar energy company. The participant started out as a Solar Installer and the OJT outline included learning about Photovoltaics (PV) Systems, installation equipment, warehouse procedures, and customer scheduling procedures. The participant continued to work in that job title while also taking a PV non-credit class that prepared the individual to pass the North American Board of Certified Energy Practitioners (NABCEB) PV Entry level certification exam. The participant began Step Two with a promotion to Operations Manager/Assistant Sales Consultant and engaged in OJT learning sales techniques, site assessment procedures, component and equipment specifications, and proposal generation procedures. From the Two-Step contract, the individual started at $17/hour and moved up to $20/hour. Since the completion of the contract the individual has

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32 The OJT included: developing detailed drawings and specifications for tools using computer-assisted drafting (CAD) equipment, assisting the lead drafter in developing the structural design of products using drafting tools or CAD equipment, laying out and drawing schematics, orthographic, or angle views to depict functional relations of components and assemblies, checking dimensions of materials to be used and assign numbers to the materials, reviewing and analyzing specifications, sketches, drawings, ideas, and related data to assess factors affecting component designs and the procedures and instructions to be followed, modifying and revising designs to correct operating deficiencies or to reduce production problems, computing mathematical formulas to develop and design detailed specifications for components or machinery using computer-assisted equipment, positioning instructions and comments onto drawings, laying out, drawing and reproducing illustrations for reference manuals and technical publications to described production, and designing scale or full-size blueprints of specialty items as needed.
continued to advance in the NABCEP training and credentialing path completing the following courses: Residential PV Site Assessor, PV Introduction to Off-Grid Systems, Advanced Residential PV Site Assessor, and Advanced PV Systems. The final step is to pass the Midwest Renewable Energy Association (MREA) Residential PV Site Assessor Certificate Examination.

A Two-Step participant was working as an assistant kitchen manager and had some computer knowledge from personal interest with friends who had been in the industry. The individual was hired by a local custom software and custom application development company as a Computer Programming Trainee for Step One of an OJT. During Step One, the customer learned specific programming languages, Ruby on Rails and Gems, through a mix of online and hands-on training and earned certification in the Ruby on Rails computer programming language. The participant then was promoted to a Software Engineer through Step Two of an OJT at the same business to learn additional specific programming languages and customer engagement for social media—Action Pack, Action Support, and Active Record. From the start, while working in the restaurant, the customer went from making $14/hour as a Kitchen Manager to over $27/hour as a Software Engineer.

An OJT contract was developed with an Information Technology Service company that sells and services Dell equipment. The participant was initially hired in an IT support position, and the training was structured into four steps, with each step of training averaging 200-240 hours of work. During each step the trainee earned separate Dell Certifications for servicing Desktops, Notebooks, and Printers. Another industry recognized certification was in Labtech and in Connectwise Service Dispatch procedures. At the end of training, the participant had moved from $12.50/hour to $14/hour.
Logic Model

The logic model that follows in Figure 3 outlines the resources utilized, the activities undertaken, the target outputs, and the program outcomes that resulted from Steps Up to STEM. The goal of Steps Up to STEM was to address the region’s STEM skill shortage to ensure that employers have access to the qualified workers needed for success and economic growth. This was done by increasing the number of disadvantaged youth, low-income adults, and dislocated workers who are interested in STEM careers, and by linking the workforce system, employers, educators, and emerging and returning workers through Two-Step contracts.
Figure 3: Steps Up to STEM Logic Model

**Inputs**
- Wagner-Peyser Business Reps.
- Career Center Staff
- Existing Foundation of Collaboration
- Partner Commitment (Time/ $)
- UI – Section 599
- Grant $:
  - Staffing
  - Comm. Outreach
  - Employer Outreach
  - Profess. Develop.
  - Mentors NVRC
  - STEM Training
  - 3rd-party evaluation

**Activities**
- Professional development for staff to develop STEM knowledge & career path expertise
- STEM Youth Summer Institute
- STEM career exploration at all Career Centers
- STEM careers promoted to disadvantaged youth, low income adults, and dislocated workers
  - Participant Flow
    - Initial individual assessment of STEM skills and interest
    - Career development services
    - STEM labor market information workshop for participants
    - STEM preparedness, especially math skills and work readiness, assessments
    - STEM IEP development for participants
    - Employers, participants, & WF system develop customized Two-Step career paths
    - Step One & Two of career path implemented
  - Sector training programs
  - STEM Coalition Meetings
  - STEM Sector Partnerships to identify trends and align training and education for common needs

**Outputs**
- Staff professional development opportunities
- Individuals exposed to STEM career opportunities (workshops/presentations)

**Outcomes**
- Staff better trained in STEM career pathways and opportunities
- Individuals exposed to STEM career opportunities
  - Preparation for Workforce Innovation and Opportunities Act (WIOA)
    - Low income adults, dislocated workers, youth assessed for STEM Readiness
    - STEM-trained and qualified participants
    - Two-Step/One-Step plans developed
    - Employers participate in Two-Step contracts
    - New employer relationships
    - Employers join & participate in STEM Sector Partnerships

**Long-Term Outcomes**
- Improved services for workforce system for job seekers
- Increased STEM workforce
- Improved results for workforce system job seekers
- More affordable training options available for employers and jobseekers
- Cost savings for employers & workforce through decreased recruitment costs, entry-level training investments, and increased retention rates
- Employers have access to a regional workforce with the necessary STEM skills
- Documented work readiness skills for employers and workforce system
The activities conducted under *Steps Up to STEM* represented an emerging strategy, one that brought together different elements of GCRWIBs’ special projects and programs that worked well and/or had the support of economic development, businesses, and their associations during the time of the grant application in 2012. The STEM Readiness Assessments, employer commitment, and the Two-Step contracts were new innovations to the region.

As a new and untested idea, the proposed strategy was based on evidence that there were not enough STEM workers for the middle-skill STEM jobs in the Greater Capital Region. The 2009 *Regional Talent Pipeline Study*[^33] and the Brookings Institution’s *America’s Advanced Industries* report[^34] confirmed this need. This challenge in producing STEM workers was coupled with the belief that WIA/WIOA customers often did not consider math- or science-based careers outside of healthcare due to an anxiety about the subject matter of STEM courses and the time commitment involved in preparing for a STEM middle-skill job.

Given this evidence and assumptions, the program’s hypothesis was based on the following:

- Successfully trained workers carry benefits in the form of increased productivity for employers and increased wages and employment retention for workers;[^35]
- Workers in low-paying, entry-level jobs will be more dedicated if their employer reciprocates their loyalty. This loyalty will be demonstrated by their employer’s support of their education and the opportunity for advancement;[^36]
- Adult learners are more likely to complete their educational programs when they have a steady income and know they have a concrete benefit upon completion/graduation, because lack of time, scheduling, and cost represent “consistent and powerful barriers to further education for working adults;” and[^37]
- Workers are more likely to complete educational programs with short-term “success points” than programs with no rewards until a final graduation, because success points help build momentum and promote better alignment with employer competency needs.[^38]

With this evidence in mind, the GCRWIBs designed *Steps Up to STEM* to incorporate mutual investment and accountability on the part of the employer and the worker, through Two-Step contracts; to provide workers with clear and concrete benefits for completing training, through retained employment and increases in wages and to establish multiple “success points” with training in two stages. *Steps Up to STEM*

[^36]: Ibid.
**STEM** was designed to lead to better trained employees who are able to retain their jobs, advance, enjoy higher wages, and be more productive for their employers.

The Greater Capital Region’s talent pipeline study involved a series of formal focus groups, in-depth individual interviews, and more than 400 hours of discussions with business leaders, educators, policy makers, community leaders, and workforce officials. It provided the region with a firm grounding from which to focus on the STEM talent pipeline. The study produced findings that were especially relevant for STEM careers, including:

- Verified a shortage of workers for emerging jobs;
- Identified the desired skill sets for mid-level technicians;
- Confirmed insufficient capacity in the training system to meet anticipated demands;
- Noted that successful pipelines already exist in the region that can be built upon; and
- Called attention to the fact that many segments of the Capital Region’s population, such as minority populations and women, are not sufficiently engaged in technical careers.

As the intervention was developed, it shared foundational elements with innovative employer engagement strategies cited as “promising innovations” by the U.S. Government Accountability Office’s (GAO) *Workforce Investment Act: Innovative Collaborations between Workforce Boards and Employers Helped Meet Local Needs.* The report noted that the 14 promising initiatives reviewed in the study shared six key elements that led to sustained collaboration. The intervention’s strategy demonstrated the key elements noted in the GAO report in the following ways:

**Element 1. Focusing on Urgent Needs** – The Two-Step contract offered a solution to regional employers’ shared challenge of finding qualified STEM-capable workers.

**Element 2. Leadership** – The GAO report cites a need for a neutral convener to build trust. The GCRWIBs were poised as the regional convener of employers, training providers, job seekers, economic developers, and other workforce and community development professionals.

**Element 3. Leveraging Resources** – *Steps Up to STEM* leveraged employers’ contributions as well as grant funding to test a hypothesis that, if successful, can be continually supported by ongoing employer involvement and WIA/WIOA funds.

**Element 4. Employer-Responsive Services** – The Two-Step contract was customized to each employer’s specific needs and designed to offer accessible and relevant training solutions.

**Element 5. Minimizing Administrative Burden** – The project created efficiencies throughout the 11 counties in New York’s Greater Capital Region by centralizing grant administration and creating a contracting process employers described as “painless.”

**Element 6. Demonstrating Results** – *Steps Up to STEM* was designed to ensure employers built skilled talent throughout the engagement and were able to realize cost-savings in employee training and retention.

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With the transition from WIA WIOA, the concepts embedded within *Steps Up to STEM* remained at the forefront of legislative priorities. Although the program was conceptualized before WIOA was passed, *Steps Up to STEM* was designed and implemented in such a way that it aligned with several WIOA priority areas including regional collaboration, \(^{40}\) sector based approaches, \(^{41}\) career pathways, \(^{42}\) demand-driven approaches, \(^{43}\) work-based training, \(^{44}\) serving the hardest to serve, \(^{45}\) comprehensive service provision, \(^{46}\) use of labor market data, \(^{47}\) and youth services. \(^{48}\) \(^{49}\)

\(^{40}\) Title I Subtitle B Chapter 3 (Section 134(b)(1)(IV & V))
\(^{41}\) Title 1 Subtitle A Chapter 1 (Section 101)(d)(3)(D)
\(^{42}\) Title I Subtitle A Chapter 2 (Section 107(d)(5))
\(^{43}\) Title I Subtitle A Chapter 2 (Section 107(b)(2)(A)(ii))
\(^{44}\) Title I Subtitle A Chapter 2 (Section 108(b)(A)(B))
\(^{45}\) Title I Subtitle B Chapter 1 (Section 121(2)(A)(iv))
\(^{46}\) Title I Subtitle A Chapter 4 (Section 116)
\(^{47}\) Title I Subtitle A Chapter 2 (Section 106) (c)(1)(D))
\(^{48}\) Title I Subtitle B Chapter 2 (Section 129)(b)(2))
\(^{49}\) Greater detail on *Steps Up to STEM* and WIOA legislation is available in the *Implementation Evaluation*. 
The Evaluation
The Evaluation

The GCRWIBs contracted with Thomas P. Miller & Associates, LLC (TPMA) to serve as an independent, third-party evaluator. Within the evaluation there are three main components:

Implementation Evaluation

The Implementation Evaluation began November 2012 and continued through September 30, 2015, to document program progress, to monitor program outcomes, and to provide recommendations for continuous improvement of program operations. The Implementation Evaluation primarily focused on the training provided by Steps Up to STEM, but also covered progress of all grant-funded initiatives. The Implementation Evaluation was primarily qualitative and included calls, in-person interviews, document reviews, as well as reviews of NYSDOL One-Stop Operating System (OSOS) data. The Implementation Evaluation can be described in two parts – the formative, or ongoing analysis of the program, and the summative, or final cumulative program analysis.

Outcomes Evaluation

The Outcomes Evaluation specifically focused on assessing Two-Step and One-Step training participants. Using participants’ program goal attainment, wages, and job retention data, the evaluation team examined the hypothesis that those who pursue STEM education and training and obtain credentials will be able to find employment, stay in STEM jobs and careers, and advance in those careers. The evaluators compared participants before and after the program on wages and job retention as an estimate of the effect of the program.

Cost Evaluation

The Cost Evaluation was designed to provide a basic understanding of the cost per Steps Up to STEM participant through various stages of participation. A cost allocation analysis was conducted to provide an estimated range of the funding required to implement or replicate the complete or sub-groups of the model – focusing on figures related to the initial assessment and Two-Step/One-Step trainings. The evaluators reviewed the cost per participant through stages of Steps Up to STEM engagement and compared it over time specifically by calendar year and by the four consortium members and their respective workforce areas.

50 The grant implementation will continue until March 30, 2016. However, qualitative progress from October 1, 2015 through March 30, 2016 was not captured within this report (with the exception of footnoted progress).
The formative Implementation Evaluation was conducted throughout the delivery of *Steps Up to STEM*. Through this evaluation, the evaluation team documented program progress, successes, challenges, and external factors and provided ongoing recommendations to the GCRWIBs. Additionally, the formative Implementation Evaluation provided context for the outcome and cost analyses by documenting the timing and nature of adjustments to program design. The Outcomes and Cost Evaluations used this documentation to understand whether changes to the program might impact various participants or cost allocations.^^51^^

At the conclusion of the evaluation, and presented within this report, are the findings from the summative (cumulative) Implementation Evaluation, Outcomes Evaluation, and Cost Evaluation.

^^51^ See *Informing Outcome and Cost Evaluations* in Appendix A for additional details.
Implementation Evaluation
Implementation Evaluation

Design Summary

The Implementation Evaluation began November 2012 and continued through September 30, 2015 to document program progress, to monitor program outcomes, and to provide recommendations for continuous improvement of program operations. The evaluators conducted a formative and summative evaluation, primarily focused on the training provided by Steps Up to STEM. Because the Steps Up to STEM model was an innovative, untested program design, the Implementation Evaluation proved to be a key element in learning lessons along the way to enhance program implementation and results. Evaluation feedback was provided through analysis of the following primary themes:

- Progress toward producing outputs and achieving certain program outcomes or milestones
- Program accelerators, barriers, and environmental factors
- How strategies or activities not successfully implemented could be adapted or modified to the realities of the circumstances surrounding the project
- Context for sustaining certain project activities

To gather information on the themes above, the evaluators used a combination of phone calls, in-person interviews, program artifact reviews, and workforce system data including:

- Implementation Update Calls with all GCRWIBs Leadership members
- Progress Calls with the grant recipient and fiscal agent and the evaluation liaison
- In-person interviews with GCRWIBs Leadership, WIF-funded staff, non-WIF-funded staff, regional employers, and Steps Up to STEM participants
- Steps Up to STEM documents and artifacts, including quarterly program reports, news articles, newsletters, program-related flyers, and other documents
- NYSDOL OSOS data

The Implementation Evaluation allowed the evaluators, the GCRWIBs Leadership, and WIF-funded staff to better understand the program’s core activities and the outputs produced by each activity. The analysis qualitatively evaluated how the operations of Steps Up to STEM functioned, placing the outcomes of the intervention into context with the implementation process and determining whether the program was implemented as designed. This allowed the evaluators to uncover any potential threats to the validity of the study and helped program staff understand how the process might be modified to produce greater results.

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52 The grant implementation will continue until March 30, 2016. However, progress from October 1, 2015 through March 30, 2016 was not captured within this report (with the exception of footnoted progress).
53 For a description of analysis methods and a full listing of Implementation Evaluation research questions and the relationship between the research questions, logic model, and data sources see Appendix A.
54 Appendix A contains descriptions of each Implementation Evaluation data source. Triangulating results from these varying sources was used as an attempt to address the limitation of partial and biased findings.
55 The evaluators used purposive and convenience sampling for employer and participant interviews coordinated by program staff. See Appendix A for a discussion on various limitations to the study.
56 See the Informing Outcome and Cost Evaluations section of Appendix A.
Findings Overview

Findings for the Implementation Evaluation were grouped by research question themes. Every implementation research question was represented within this section, and the questions align with the detailed Research Question section chart included in Appendix A. Overall themes within the Implementation Evaluation findings include:

**Equal Balance of Systems and Relationships**
Success within the grant was relationship-driven. BSRs needed to have, or build, close relationships with employers to gain enough buy-in to have adequate placement sites. GCRWIBs Leadership relied on close connections with WIF-funded staff, and GCRWIBs Leadership needed strong ties to each other. As important as relationships were, the workforce system structure was of equal importance. Program success came easier when GCRWIBs Leadership had greater control over program implementation and/or Center leadership bought into the grant early; GCRWIBs Centers had existing skilled WIA/WIOA-funded BSRs, and were aided when there were existing industry collaborations or strong company needs; and GCRWIBs Centers already offered OJT.

**Importance of Business as Customer**
Program success was heavily dependent on workforce area responsiveness to the business as the customer. As highlighted within the Implementation Evaluation: Employer Partner section, the program seemed to work best when it was highly customized and highly responsive. WIF-funded BSRs were critical to successfully engaging employers, increasing program accessibility and assisting in paperwork navigation. Additionally, interviewed businesses identified Steps Up to STEM as tying directly to their bottom line, allowing a business 1) to hire the participant when company funding alone would not have allowed the hire, 2) to hire locally and train an under-skilled worker when the company would have otherwise recruited from outside of the region, and/or 3) to invest more time into training an employee because of the offset salary.

**Capacity Building**
This grant allowed the GCRWIBs to experiment with programming innovations. While elements of these innovations will last, including Two-Step contracts, Youth Summer Institutes, and an emphasis on STEM jobs; even more-so, the impact will be on the capacity of the workforce areas to prepare for and adapt to the new WIOA legislation. Grant-funded activities that contributed to GCRWIBs’ readiness for WIOA are detailed in the Implementation Evaluation: Beyond the Grant section and include: career pathways, demand-driven approach, work-based learning, strategies for regional planning, and labor market data.

**Flexibility**
An overarching theme throughout the program was the struggle with, and benefits of, flexibility. Steps Up to STEM was designed to be flexible and adaptable, allowing each workforce area and Center to customize the program. This flexibility allowed for elements of success to take place within each workforce area and for each area to offer employers customized and responsive training options. With this flexibility came the challenges of defining the program. While GCRWIBs Leadership could provide guidance, there was no clear, singular road map for what occupations qualified as STEM or precisely what form a Two-Step contract should take. It was through struggling with flexibility and questions like “What is STEM?” that the GCRWIBs created real-time program innovations and customized employer-specific training approaches.
Program Performance & Variance

The content within this section of findings focuses on research questions grouped around the common elements of program performance and program variance. These findings discuss the overall grant rollout, changes, accelerators, barriers, environmental factors, and program outputs.

Research Questions:
- How has Steps Up to STEM rolled out in each workforce area and overall? How have those processes varied across time? Across workforce areas? Why?
- What have been successes and obstacles to program performance?
- What program outputs have been generated to date? How have results varied across workforce areas? Why?
- Did the GCRWIBs collectively meet its target output? What barriers hindered output achievement? What factors unexpectedly improved output achievement?

Grant Implementation

Year 1 (July 1, 2012 – June 30, 2013)

Consortium members spent the first six months of Year 1 organizing and launching the program. Start-up activities included the purchase of two Tandberg video conferencing systems for the two consortium workforce areas without one, the procurement of a third-party evaluator, and the signing of subcontracts for CR WIB, CG WIB, and SWW WIB. A contract was also signed with the Center for Economic Growth (CEG) a regional economic development organization contracted as a business intermediary and tasked with facilitating employer-workforce relationships.

The consortium developed job descriptions for Workforce Advisors (WAs) and BSRs and held meetings and trainings to introduce WIF-funded staff to Steps Up to STEM. For staff development, the consortium established a shared Dropbox folder for reference materials. The CR WIB hired a BSR to assist with WIF-funded activities and all other workforce areas partially- or fully-funded a current staff member to support the grant.57

To track WIF grant outputs, the GCRWIBs worked with NYSDOL to modify and enhance the data collection capacities of OSOS and to develop an OSOS user’s guide for the WIF grant.

Following start-up, GCRWIBs began implementing STEM awareness activities, workshops, and Two-Step contracts. According to interview data from WIF-funded and non-WIF-funded staff, all four workforce areas successfully incorporated STEM awareness materials into Career Center resource rooms and, to a lesser extent, general workforce introduction workshops. Grantees found greater success with participation in the STEM Labor Market Information workshop compared to the Math Anxiety workshop.

Year 1 saw fewer Two-Step contracts than the GCRWIBs had anticipated, as the GCRWIBs originally anticipated implementing a year of Two-Step training contracts instead of an unanticipated six month start-up activity requirement followed by six months of training contracts. Structurally, consortium

57 While all other workforce areas have WIF-funded or partially WIF-funded staff, the Capital Region was the only WIB to hire a new staff person as part of grant-funded activities.
members spent the first year focusing on the primary model and major project innovation, the Two-Step contract, which promoted as linear a path as possible from participant intake, through STEM activities, and to a Two-Step contract placement with an employer. This model focused on simultaneous training and employment, so that an individual had to become employed, and an employer had to then provide some sort of initial training investment as Step One. At that time, the employer committed to supporting Step Two at a later date, to begin within one year.

**Year 2 (July 1, 2013 – June 30, 2014)**

By the end of Year 1, it was clear the primary form of the program — both the Two-Step model and strict definition of a “STEM job” — was more difficult to coordinate than expected. The primary Two-Step structure envisioned simultaneous training and employment for the majority of Two-Step contracts; however, the timing of matching interested employers and job seekers was a challenge. That is, Centers had interested job seekers, and BSRs began cultivating interest among employers, but the direct connection between the skills of an interested job seeker, and the open positions at willing companies, was more difficult to make than program designers anticipated.

The Train First Model, originally envisioned by the consortium within the grant application as a secondary approach, began to increase in prominence in Year 2. This model created value for employers by engaging them at the beginning of training and allowing them to see the quality of each participant before choosing to hire. Candidates were trained, which qualified as Step One of Two, and then employers hired from this trained pool of candidates. The Train First Model also removed the employer barrier of the primary Two-Step contract model, which often required promotion of a newer staff member (Steps Up to STEM participant) over their existing workers who may have had more tenure than their Steps Up to STEM participant. Two consortium members, CG WIB and SWW WIB used this model to train and place candidates.

The structure of a Two-Step contract was also enhanced through an increased number of Reverse Referrals. These individuals were originally envisioned in the grant design but were anticipated to be a smaller number of program participants, as compared to Enrolled Participants. Referral Participants included both incumbent workers, who were already working for the participating employer and then recommended by that employer for the grant program; and reverse referrals, who were job seekers identified by an employer and recommended to the program.

Additionally, at the end of Year 2, another secondary model of the grant, a One-Step only model, was implemented to address challenges with longer training programs. For some potential participants and occupations, the second step of the Two-Step contract required a prolonged training period and thus would not fit within the grant timeframe. This was the case, for example, with many participants pursuing a healthcare career pathway, where Certified Nurse Aide (CNA) training was followed by

58 In Year 1 discussions around the Train First Model for CNA Trainings in CG and FMS and Machine Tool Technology training in SWWW had taken place. However, implementation of the Train First Model primarily took place in Year 2.

59 Similar to the Train First Model, the inclusion of incumbent workers took place in Year 1, but was more prominent during Year 2 and beyond.

60 Note that the One-Step training was allowable under the original grant narrative and was intended to be a secondary training approach. The term One-Step training is synonymous with Individualized Training Account (ITA) used elsewhere within the report.
Licensed Practical Nurse (LPN) or Registered Nurse (RN) training, both of which required significant time commitments and were not possible within the grant timeframe.

After reviewing resources from other workforce entities, during Year 2 the GCRWIBs broadened the definition of what qualified as a “STEM job.” Virtually all occupations have some element of science, technology, engineering or math, even if they are secondary components to job activities, and so GCRWIBs Leadership and WIF-funded staff took steps to determine whether a job was sufficiently STEM-related. As no such comprehensive list existed at the state or federal levels, and occupational demand varied greatly across the region, there was a certain amount of discretion for the workforce areas to define it for themselves. As the program continued, so too did the refinement of what was considered a “STEM job” and what jobs may have STEM-related tasks but stray too far from the original spirit of the program.

Year 2 also saw important progress around uniform data reporting. During Year 1, activities were not tracked consistently across workforce areas or, in some cases, across Career Centers within the same workforce area. Although each WIB was using the state workforce data system, OSOS, the same activities were entered into the data tracking software differently, or not entered in at all. As a result, inconsistency in activity data collection was addressed during Year 2. Actions taken included: in-person and virtual trainings for staff around how services should be universally defined and recorded; monthly staff development meetings for all WIF-funded staff that included elements of data tracking and reporting; additions to the OSOS system to track STEM interest, activities, touches, and assessment for STEM readiness; and closer content review and monitoring by data staff.

**Year 3 (July 1, 2014 – June 30, 2015)**

By Year 3, the Two-Step model, STEM definition, and data tracking—all important components of Year 2—were all relatively consistent in their application. It was in Year 3 that WIF-funded staff, and the grant program itself, settled into place. Through interviews with GCRWIBs Leadership and WIF-funded staff, themes of increased comfort levels with the grant and increased grant successes surfaced. WIF-funded staff interviewed were able to think strategically around the Two-Step model as they provided recommendations for future improvements, instead of focusing on program challenges or quick fixes (e.g. more funding for One-Step trainings). Important successes for the consortium during Year 3 included the STEM Youth Summer Institute, the Train First Model, and local business tours through the monthly meetings, all three highlighted in the Accelerators section below.

**Extension (July 1, 2015 – March 2016)**

Implementation during the extension period mirrored the Year 3 approach to the grant. However, for most workforce areas, there was a slowdown in Career Center traffic as the economy improved and more job seeker customers were able to find jobs without accessing additional training or skill development. Unique successes that occurred during the extension, and would otherwise not have been possible include:

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61 Activities added included a tab to record WIA-eligible youth attending the STEM Youth Summer Institute.

62 “STEM touch” activities included Customer Service Engagements, known as C3E workshops, to provide STEM information to job seekers.

63 Qualitative content for this report ends in September 30, 2015 (with the exception of footnoted updates).
Contracts that included Three or Four Steps, rather than the requisite Two

Replication of the sector model (e.g. Train First Model) through brewer training

Repeat business customers (even after the first Two-Step participants completed but then left for a job with another company)

Businesses voluntary increase participant wages, even more than the contract stipulated, because of efficiencies experienced and credentials gained

Continued replication and enhancement of the Machine Tool Technology training model

Program Changes

As highlighted in the Grant Implementation narrative above, throughout the course of the grant, changes and adjustments were made to the original model. Reflecting on the original logic model created for the grant application and subsequent Evaluation Design Report, several adjustments were made to account for actual program roll-out and implementation. These adjustments were either alterations in grant concepts, or changes to the logic model. These included changes to the categories outlined in Table 1.

Table 1: Conceptual and Logic Model Modifications

<table>
<thead>
<tr>
<th>Item (Change)</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concept</strong></td>
<td></td>
</tr>
<tr>
<td>Two-Step Contracts</td>
<td>The initial Two-Step contract model experienced increased use of the Train First Model and One-Step training options.</td>
</tr>
<tr>
<td>STEM Definition</td>
<td>The consortium broadened its definition of what constitutes a STEM job, based on their research into other programs and how other groups, nationally, are defining STEM; and on the needs of their business customers.</td>
</tr>
<tr>
<td>OSOS Data Tracking and Definitions</td>
<td>Dedicating GCRWIBs Leadership and leveraged-staff time to focus on data and data tracking was an intentional priority shift in Year 2.</td>
</tr>
<tr>
<td>Math Anxiety Workshops</td>
<td>The concept was designed to reduce job seeker apprehension for math-related careers and testing. In practice, job seekers were not interested in attending these trainings. As a result, concepts developed for the Math Anxiety Workshops were incorporated into other workshop offerings, rebranded, and/or offered in a one-on-one setting.</td>
</tr>
<tr>
<td>Referral Participant</td>
<td>Referral Participants were originally envisioned to play a small role within the participant flow. However, as identified through site visit interviews, the Implementation Evaluation, Referral Participants comprised a considerable number of WIF-participants.</td>
</tr>
</tbody>
</table>

**Definitions**

64 Anticipated enhancements include 1) increasing involvement of employers through shadowing, 2) including NIMS credentialing, 3) building soft-skills training into the program curriculum, and 4) building in an optional up-front math component taken before the course begins.

65 Although the precise reasons for this lack of interest is unknown, the consortium has speculated that it may have resulted from some combination of the following factors: a lack of understanding around the workshop’s purpose; a genuine fear of math that was not helped by the workshop’s title; and a disconnect between the workshop and its perceived relevance to a customer’s future job.

66 As noted earlier, Referral Participants are both incumbent and reverse referral job seekers.

67 Referral source was not tracked, so it was not possible to determine the precise split.
<table>
<thead>
<tr>
<th>Item (Change)</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity Participant</td>
<td>Originally defined as “any customers who are engaged in the program through workshops, counseling appointments, assessments, AND ALL other activities that precede the creation of a Two-Step contract.” However, with the deviation from a sequential participant flow, the definition of Activity Participant has been adjusted to read “any customers who are engaged in the program through workshops, counseling appointments, assessments, and/or other activities that preceded the creation of a Two-Step contract.”</td>
</tr>
<tr>
<td>Enrolled Participant</td>
<td>Originally defined as “a subset of Activity Participants, as all Enrolled Participants will have gone through four or more Steps Up to STEM activities (including, at a minimum, receiving STEM Labor Market Information, STEM Comprehensive Assessment, STEM IEP Development, and STEM Two-Step Plan Job Referrals).” This definition has also been adjusted to allow for the realities of program implementation and a non-sequential participant flow, “a subset of Activity Participants, as Enrolled Participants would have gone through some element of Steps Up to STEM activities (including receiving STEM Labor Market Information, STEM Comprehensive Assessment, STEM IEP Development, and/or STEM Two-Step Plan Job Referrals) before signing a Two-Step contract.”</td>
</tr>
</tbody>
</table>

**Contracts**

| Trinity Alliance        | In the second quarter of Year 3, the CR WIB entered into a contract with Trinity Alliance for the provision of workforce advisor and business services for the Albany Career Center. Originally the CR WIB intended to re-fill the Albany Career Center’s WIF workforce advisor and business services needs by hiring a full-time staff member. Because the recruitment process for a government staff person would take longer than the remaining grant period, the CR WIB contracted with Trinity Alliance for a BSR/WAT who would promote STEM middle-skills, assess participants, and develop a specified number of Two-Step contracts by December 2015. |

**Inputs**

| Video Conferencing      | Centers in SWW and CG workforce areas faced technological challenges setting up the conferencing equipment and using the conferencing capability. As a result, the video conferencing equipment was not used to enhance the grant program, as intended. Some of the equipment, such as the TVs, were used to project STEM PowerPoint presentations and so were still used, but did not provide the video connectivity service. |

**Activities**

<table>
<thead>
<tr>
<th>Monthly Staff Meetings</th>
<th>Instituted in Year 2, these meetings have increased consortium staff connectivity, increased data reporting consistency and quality, and provided opportunities for local business tours.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant flow (arrows modified)</td>
<td>In its original design, it was anticipated that a majority of Two-Step engagements would follow a relatively linear path from participant intake, through STEM activities, and to placement and a Two-Step contract with an employer. In this flow, a job seeker would come in for an initial assessment and would then proceed through each of the steps. In practice, job seekers have entered into the grant program at various stages, some have skipped or condensed stages, and many have been directly referred to the program by an employer (“direct referrals”). See Appendix E for the original WIF participant flow chart.</td>
</tr>
<tr>
<td>Sector training programs (added)</td>
<td>Sector-based training programs were developed around Healthcare CNA and Machine Tool Technology training, with future opportunities in Brewer Training, IT, and mechatronics.</td>
</tr>
<tr>
<td>STEM Coalition Meetings (added)</td>
<td>To facilitate regional support and collaboration across workforce, education, and economic development, the GCRWIBs used their Workforce Coalition to promote their STEM initiative. The Coalition met bi-monthly and covered topics important to the grant and the region as a whole. GCRWIBs’ leadership reported that the Steps Up to STEM grant allowed for more frequent meetings with Coalition members and brought legitimacy to the gatherings (by showing grant-related activities and progress made by the GCRWIBs). This activity is anticipated to continue beyond the grant.</td>
</tr>
</tbody>
</table>

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68 Monthly Staff meetings are included within the “Provide professional development to staff to develop STEM knowledge & career path expertise” bucket in Logic Model Activities.
## Program Performance & Variance

### Implementation Evaluation

<table>
<thead>
<tr>
<th>Item (Change)</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM Youth Summer Institute (added)</td>
<td>The grant's focus on reaching WIA/WIOA-eligible youth included hosting a four-day STEM Youth Summer Institute each summer, once in each workforce area. Institute topics have included aerospace and nanotechnology.</td>
</tr>
<tr>
<td>Community Colleges Develop Stackable Credentials (removed)</td>
<td>Despite efforts to engage community colleges within the region with credentialing, “employer-specific” stackable credentials were not created at the community-college level. “Employer-specific” credentials were created through alternative training institutions, specifically for the Machine Tool Technology training’s Train First Model.</td>
</tr>
<tr>
<td>New Employer Relationships (added)</td>
<td>Through employer outreach events, Train First Models, and the necessity to match unique job seeker skills with employment opportunities, Center staff and especially BSRs, formed relationships with new employers. Even if the employer chose not to participate in the Steps Up to STEM grant program, staff feel these new connections will help to better serve job seekers in the long-run.</td>
</tr>
<tr>
<td>Increased Staff STEM Knowledge (added)</td>
<td>Through the monthly WIF-funded staff development meetings and discussions around the definition of STEM, staff reported greater levels of comfort with and understanding of STEM to share with job seeker customers. This knowledge included the range of STEM jobs, and especially STEM opportunities for the middle-skill occupations.</td>
</tr>
<tr>
<td>Preparation for WIOA (added)</td>
<td>Key components of the grant align with the new WIOA legislation. By engaging WIF-funded staff and regional partners in these efforts since the grant was awarded in 2012, the Greater Capital Region has more experience in and is more prepared to implement changes than without the grant program.</td>
</tr>
</tbody>
</table>

### Steps Up to STEM Logic Model

The logic model that follows represents the original model with modifications. Elements that were not implemented from the original design are represented by gray dashed boxes and the elements that were added are in shaded boxes.

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69 Community colleges were engaged in other areas of the grant program, including offering space and instructors for the STEM Youth Summer Institute.
### Figure 5: Steps Up to STEM Logic Model Modifications

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Activities</th>
<th>Outputs</th>
<th>Outcomes</th>
<th>Long-Term Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wagner-Peyser Business Reps.</td>
<td>Professional development for staff to develop STEM knowledge &amp; career path expertise</td>
<td>Staff professional development opportunities</td>
<td>Staff better trained in STEM career paths and opportunities</td>
<td>Improved services for workforce system for job seekers</td>
</tr>
<tr>
<td>Video Conferencing Equipment</td>
<td>STEM Youth Summer Institute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Career Center Staff</td>
<td>STEM career exploration at all Career Centers</td>
<td>Individuals exposed to STEM career opportunities (workshops/presentations)</td>
<td>Staff more knowledgeable when sharing about STEM</td>
<td></td>
</tr>
<tr>
<td>Existing Foundation of Collaboration</td>
<td>STEM careers promoted to disadvantaged youth, low income adults, and dislocated workers</td>
<td></td>
<td>More individuals pursue STEM career opportunities</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Participant Flow</td>
<td>Preparation for Workforce Innovation and Opportunities Act (WIOA)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Initial individual assessment of STEM skills and interest!</td>
<td></td>
<td>Improved results for workforce system job seekers</td>
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<td></td>
<td>Career development services</td>
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<td></td>
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<td></td>
<td>More affordable training options available for employers and jobseekers</td>
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<td></td>
<td>STEM labor market information workshop for participants</td>
<td>Public WF system providing better screened candidates for entry-level STEM employment</td>
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<td></td>
<td></td>
<td></td>
<td>Cost savings for employer &amp; workforce through decreased recruitment costs, entry-level training investments, and increased retention rates</td>
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<td></td>
<td>STEM preparedness, especially math skills and work readiness, assessments</td>
<td>Youth, low-income adults and dislocated workers obtain STEM-related credentials, including “employer-specific” credentials</td>
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<tr>
<td></td>
<td></td>
<td>STEM IEP development for participants</td>
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<tr>
<td></td>
<td>Employers, participants, &amp; WF system develop customized Two-Step career paths</td>
<td>STEM-trained and qualified participants</td>
<td>Participants complete Step One of their career path</td>
<td>Employers have access to a regional workforce with the necessary STEM skills</td>
</tr>
<tr>
<td></td>
<td>Step One &amp; Two of career path implemented</td>
<td>Two-Step/One-Step plans developed</td>
<td>Participants complete Step Two of their career path</td>
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<tr>
<td></td>
<td>Sector training programs</td>
<td>Employers participate in Two-Step contracts</td>
<td></td>
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<tr>
<td></td>
<td>STEM Coalition Meetings</td>
<td>New employer relationships</td>
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<tr>
<td></td>
<td>STEM Sector Partnerships to identify trends and align training and education for common needs</td>
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<tr>
<td></td>
<td>Community Colleges developing “employer-specific” stackable credentials</td>
<td></td>
<td>Community College and Employer recognized stackable credentials to meet demands of STEM sectors</td>
<td>Documented work readiness skills for employers and workforce system</td>
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</table>
Accelerators & Strengths

Strengths and accelerators are defined as elements of *Steps Up to STEM* that have positively impacted program outputs, outcomes, and/or implementation. Program accelerators include:

- GCRWIBs Leadership
- Consortium Grant
- Program Flexibility
- Ease of Employer Access
- Direct Tie to Business Bottom Line
- Sector Strategy Development (Train First Model)
- Stakeholder Investments
- STEM Youth Summer Institute

GCRWIBs Leadership

*Existing Relationships* — The GCRWIBs consortium was engaged in collaborative efforts since 2001. Each member of the GCRWIBs Leadership built and established trust amongst the other Directors well before *Steps Up to STEM* began. This foundation of cooperation and trust greatly strengthened the consortium’s ability to be effective and cohesive, reducing start-up time lags and communication challenges. These relationships also allowed the consortium to work together to continually refine the definition of a “STEM job,” a difficult but necessary task when there was no central source or preexisting definition to work from.

*Grant Authorship* — During the grant development phase, each member of GCRWIBs Leadership was heavily engaged in the authorship of the *Steps Up to STEM* grant proposal. Joint authorship of the proposal increased the GCRWIBs Leadership’s investment in the success of the grant and ensured that the grant was applicable to the varying workforce areas.

Consortium Grant

*Shared Successes* — All WIF-funded staff and GCRWIBs Leadership agreed that the grant was more successful because it took place within a consortium setting. In addition to providing administrative efficiencies, the consortium setting facilitated sharing of success stories, allowing other workforce areas to point to a success from one consortium member as an example to their employers of how the grant could be implemented. For example, the success of the Machine Tool Technology training program in SWW WIB sparked discussions in other workforce areas around additional sector-based training approaches.

*Monthly Meetings* — The monthly staff development meetings allowed WIF-funded staff to learn from each other. All WIF-funded staff identified the monthly meetings, which began in Year 2, as an important turning point that increased their understanding of the program’s intent, structure, and application. WIF-funded staff appreciated that the meetings started with introductions, so they could identify their counterparts across the consortium, and the meetings themselves struck a balance between having set agenda topics with open time to discuss common challenges, successes, and lessons learned. In Year 3 and beyond, these meetings incorporated employer visits. WIF-funded staff, especially
WATs, identified these visits as a lasting program impact because of the increased knowledge that Center staff now have of employment options and business set-ups within the consortium.

Program Flexibility

Steps Up to STEM adapted to the policies, procedures, and philosophies of each workforce area. Each area, however, was encouraged to use the FMS WDB policies for classroom and employer based training (such as OJTs) when possible as they were the broadest and most flexible. By trying different approaches in different workforce areas, the “scope” of the experiment expanded, allowing each workforce area to replicate successful sub-models from other areas. Flexibility in program concepts and the definition of STEM broadened possibilities of focus and programming. In addition, after definitions and program concepts became clear, both WIF-funded and non-WIF-funded staff indicated an ease of incorporating Steps Up to STEM activities into their current job functions.

Ease of Employer Access

Over more than three years of the program, each of the more-than 30 interviewed employers reported that Center staff, especially BSRs, were accommodating and helpful, assisting in the paperwork and application process and often traveling onsite to visit companies and participants. This assistance made paperwork and procedures for employers and participants easy to handle and understand, limiting barriers to program entry and participation for these businesses. Employers reported that the lack of paperwork and red tape was one of the program’s greatest strengths and contributed to their likelihood of using the program again, recommending the program to a peer employer, and/or participating in future workforce initiatives. One business even noted how easy the paperwork was when compared to other state and federal grants. These findings highlight the importance of skilled BSRs within a workforce area. In this way, Steps Up to STEM achieved its goal to instill Elements 4 and 5 of the U.S. GAO report, to provide employer-responsive services and to minimize administrative burden.70

Direct Tie to Business Bottom Line

Many interviewed businesses reported they could not, or would not, have hired the Steps Up to STEM participant if not for the grant. This was true even for businesses who hired Referral Participants. In one case, an IT professional noted that even though the business’s first Two-Step contract participants completed training, worked at the company for two years, and then took another job, this was still

considered a success. Businesses reported the program significantly decreased the time they would have needed to spend training under-skilled participants; the program allowed them to spend extra time training the participant because of the offset wages; and the program aided in succession planning, particularly for machinists and other skilled trades. For example, one business noted that the Machine Tool Technology training offered through the grant was equivalent to up to three years of work experience and saved the company at least a year of onboarding.

**Sector Strategy Development (Train First Model)**

Through the grant, consortium members strengthened sector strategy development and training within their workforce areas. This sector-based approach was especially seen through the Train First Model. The premise of the model was gathering a critical mass of sector-specific employers, identifying common employer needs, and engaging the employers in developing a customized training program. In Year 2, the FMS WDB and CG WIB focused on healthcare sector strategies, and SWW WIB began the Machine Tool Technology training. The success of the Machine Tool Technology training led to craft beer breweries in the area identifying a common training need and bringing this opportunity to SWW WIB and the GCRWIBs toward the end of the extension period. Additionally, as of the end of the grant, the CR WIB and FMS WDB were exploring new sector strategy options in IT and mechatronics, because of the success with the Train First Model.

**Stakeholder Investments**

Most WIF-funded staff, businesses, and participants agreed that the time and/or financial requirements of the grant program, made participating in the program an increased investment and resulted often times in increased buy-in. Through the grant, WIF-funded staff were required to stay connected to the participant longer through increased follow-up and interaction; participants were required to invest time into their education; and businesses needed to pay 50 percent of employee wages and invest time developing the training contracts and providing OJT training. Because of this increased investment, WIF-funded staff said they cultivated stronger connections with participants and businesses; many participants said they were more committed to the company and more likely to stay there longer-term; and many

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71 Since the report was written, the craft beer brewer training started in January 2016 and will be completed by April 2016. The maximum class size of 15 trainees was filled by interested job seekers who attended a recruitment event put on in partnership between the GCRWIBs, local craft breweries, and a local community college. Beyond March 2016 (when this report was updated), the GCRWIBs anticipate a second round of training (planning for which has already started), while the craft brewers work with their state association to look at expanding this state wide and the community college works to develop plans to offer one year certificates and two year degrees in addition to this short term program, if approved by the New York State Education Department.
employers said they were more likely (or as likely) to use the workforce system again for training support.

**STEM Youth Summer Institute**

*Increasing Youth Interest* – Across the consortium, Center staff and GCRWIBs Leadership identified the STEM Youth Summer Institute as a successful strategy in engaging WIA/WIOA-eligible youth and increasing youth interest in STEM careers. The STEM Summer Institute took place for one week in each workforce area during summer 2013, 2014, and 2015 and engaged WIA/WIOA-eligible youth in a variety of hands on activities. The summer of 2013 focused on nanotechnology. In the summer of 2014 and 2015 the focus was on aerospace and with hands-on activities including rocket launching and interaction with a mobile astronomy dome.

*Cost Efficiency* – The consortium hosted the same summer institute in each workforce area. GCRWIBs realized economies of scale from only one curriculum development cost, instead of separate costs for four different curricula (without the consortium). Additionally, the workforce areas now own the curriculum and could take the curriculum to their community colleges and to other local summer programs, allowing these groups to customize the already-developed curriculum, lowering costs and making the program more accessible to area youth.

**Barriers & Challenges**

As with any grant program, several factors hinder or slow grant progress. For *Steps Up to STEM*, these included a range of elements from program start-up (e.g. time and program definition), to customer flow, to staff accountability. Some hindering factors included:

- Defining the Program
- Program Time for Implementation
- Business Intermediary
- Business-Job Seeker Connections
- Employer Apprehension toward Step Two
- Taking the Second Step
- Realities of Staff Accountability
- Data Tracking

**Defining the Program**

The workforce areas spent much time during the first two years of the grant discussing what the program parameters should be, including: what was the appropriate definition of “STEM” and the appropriate use of WIF funds for various Step One training options. The novelty of the *Steps Up to STEM*

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72 The workforce areas would need to credit the curriculum developer and USDOL if using the curriculum again.
Program Performance & Variance  Implementation Evaluation

Program Flexibility

“As this program was significantly different, with regards to the lack of rigidity of other federal workforce programs, it took time for staff to be able to think in terms of the flexibility and how to fit the needs of the job seeking customers and businesses into the grant, rather than the other way around.”

WIF-Funded Staff

Program Time for Implementation

Because a brand new concept does not benefit from the lessons learned from others’ mistakes and successes, much of Year 1 was spent laying the groundwork for the successful implementation and initial awareness of Steps Up to STEM. The program did not truly start until Year 2 and the majority of staff felt comfortable with the program in Year 3. The increased start-up time (12 months instead of six) and the increased training time for staff left less room for longer Two-Step contracts. For example, if a participant was interested in pursuing an associates or LPN, then the grant would be unable to cover the full training duration. WIF-funded staff speculated that this timing issue was one of the elements that lead CNA Train First Model participants to stop after Step One. As a result of the condensed implementation timeframe, especially before the opportunity of an extension, the GCRWIBs adjusted their training options to allow for increased participant engagement, including the offer of a One-Step training model, which was allowable within the original grant narrative and staff found worked especially well within the healthcare sector.

Business Intermediary

The business intermediary, the CEG, could have been an integral component to Steps Up to STEM. As staff expressed challenges with educating employers about the Steps Up to STEM concept, CEG had the potential to be a strong partner and advocate in the Greater Capital Region, and they were a designated
partner in the grant to do just that. Especially for areas with no WIA/WIOA-funded BSRs, CEG had the potential to make connections between WIF-funded staff and employers in the area.

Despite their express role and the significant potential it presented, the contract with CEG was a missed opportunity with the grant. Out of the promise for ongoing business leads, CEG provided fewer than five leads during the 36 months of Two-Step contract implementation, and only one or two of the businesses were an appropriate fit for the GCRWIBs. Of the ten promised marketing videos, only two videos were produced, and these two were not customized for the WIF grant audience. Of the two employer panels organized, one was a success and a highlight for WIF-funded staff, while the other was planned last minute and did not have the breadth or depth of attendance desired.

In an attempt to strengthen CEG’s accountability, the consortium and CEG agreed that CEG would provide biweekly update reports, which was intended to help to increase accountability. However, CEG did not always provide these updates. Additionally, the consortium renegotiated the contract with CEG to create a stricter scope and performed an audit of CEG work completed to date. The audit revealed that CEG needed to improve their recordkeeping for the individuals working on the grant as they were unable to quantify their grant-funded time and efforts.

It is important to note that the consortium felt they must contract with CEG because it was the only economic development organization representing the same footprint of all 11 counties of the consortium. The organization overall has name recognition and standing in the 11 counties that could have allowed the GCRWIBs entree to some industries and organizations that it might otherwise have difficulty developing relationships.

Business-Job Seeker Connections

Each workforce area faced challenges matching business and job seeker customers in a just-in-time manner. An individual could receive training or identify a field of interest and be prepared for a job, but have difficulty finding an interested company looking to hire. In many cases, a job seeker could not afford to wait to find a STEM job opening and needed to take the next job available for which he or she qualified. Similarly, businesses may be interested in hiring, but the Centers

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**Intermediary Engagement**

“We have continued to work with our Business Intermediary, The Center for Economic Growth, to review deliverables accomplished under our contract as well as those that are still outstanding. The unexpected and sudden death of the Vice President of CEG and the retirement of the long-time President and CEO have presented challenges for both CEG and the GCRWIBs. Additionally, the high turnover of junior staff assigned to the WIF project had a negative impacted on the accomplishment of deliverables. After discussions with CEG, the amount of the contract and number of deliverables has been decreased to make the deliverables more achievable.”

GCRWIBs Leadership

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**Customer Alignment**

“Although each workforce area may have differing customer flow approaches, our real issue has been with the critical, but beyond our control, alignment of the workforce stars necessary to have willing and interested participants available at the same time that employers have job openings, and are willing to take on the risk of a new and untried program.”

WIF-Funded Staff
sometimes did not have the right candidates to fit the need. Although each Center had varying customer flow approaches (e.g. training first, only conducting workshops, only OJT), virtually all WIF-funded staff struggled with incongruent timing between willing participants and employers 1) with job openings, 2) who were willing to take a gamble on - what one employer called an - “unknown quantity,” and 3) with a job opening that appealed to a potential job seeker participant.

**Employer Apprehension toward Step Two**

Staff reported employers were sometimes hesitant to provide employees raises or higher-level career opportunities over other, similarly skilled employees with longer tenure at the company. In other cases, small and mid-sized employers did not have well established career pathways or clear promotion systems in place. As a result, WIF-funded staff reported businesses they approached about participating in Steps Up to STEM were often apprehensive about Step Two. Staff theorized that employers were worried the WIB, or the USDOL, would request a refund of Step One funds if the second step was no longer feasible, the employee left, or they otherwise did not succeed in completing the program. Additionally, in 2013, the economy in upstate New York was still stuck in the recession, and many employers were reluctant to fill vacancies that were not absolutely critical, let alone open up new positions. Interviewed employers who participated in the program did not see these as barriers or were willing to work with WIF-funded staff to identify appropriate approaches to addressing them.  

**Taking the Second Step**

Especially true with the Train First Model, once companies hired a participant full-time, fewer participants continued on with Step Two of training. In some cases, interviewed participants and employers reported they were unaware, or did not recall, funding available for a second step. For some participants, taking a second step would require going back to school for a relatively long program, and the individual was not interested in leaving the job or decreasing his or her working hours and thus take-home pay (e.g. CNA to LPN participants). While the second step was an incentive for employee retention, WIF-funded staff theorized that some employers may have seen Step Two as a disincentive because it required a pay increase. While each employer-participant case could be different, there was a common theme of a drop in Step Two participants, especially from the Train First Model approach.

**Realities of Staff Accountability**

WIF-funded Center staff were a key component to the grant’s implementation including interfacing with the participants and businesses, developing the Two-Step contracts, and running the STEM Youth Summer Institute. Throughout the course of the grant, primary factors that affected implementation as a result of different WIF-funded staffing needs or structures included:

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73 The evaluators acknowledge that self-selection bias was present, as interviewed employers did choose to participate in the program. For the one non-participant employer interviewed, the requirement of two steps was not self-identified as a barrier to participation.

74 Out of 40 participants enrolled in the Train First Model, 13 of them continued on to Step Two of training.

75 Also, for participants who started Step Two, there was a higher percentage of those who did not complete, when compared to Step One: 17 percent of Step One participants did not complete, compared to 34 percent of Step Two participants (not accounting for participants in Step One or Step Two who, as of the time of this writing, were pursuing but had not completed their training).
Preparation of Staff – Staff orientation and training took place in Year 1 through a consortium-level staff meeting and through GCRWIBs Leadership providing targeted trainings in their workforce areas. In addition, starting in Year 1, common resources for marketing and explaining the program were available through a shared-online platform (Dropbox). However, especially during Year 1, WIF-funded staff felt unprepared to implement the grant and/or felt that the grant program itself was outside their “comfort zone.” For example, WIF-funded Center staff with little-to-no previous experience with OJT paperwork and development, often felt less equipped than their more experienced counterparts and had a harder time identifying and understanding how the grant fit within their current Center operations. Increased time for more-intensive grant training and start-up, including earlier implementation of monthly staff development meetings, could have helped increase WIF-funded staff understanding of and comfort with Steps Up to STEM.

Center Director Buy-In – With the exception of the CG Career Center Director, who is a member of the GCRWIBs Leadership team, Center Directors from across the consortium were primarily engaged after the initial grant was written and the start-up phase was underway. As a result, the program had varying levels of Center Director buy-in. In areas with low buy-in, successful implementation of the program was significantly more difficult for GCRWIBs Leadership, and overall Two Step participation numbers were lower. GCRWIBs Leadership recommended using Center Directors as a resource in the initial grant writing and start up phases, to increase both buy-in and accountability.

Data Tracking
Prior to implementation, OSOS, the workforce data tracking system for the State of New York, was not equipped to handle WIF data tracking. During the grant start up period, GCRWIB Leadership worked with NYSDOL staff to customize the OSOS interface, allowing for some WIF grant-specific data collection. Customized WIF data collection using a pre-existing system created challenges including 1) collection of grant data in two separate databases—OSOS and Excel, and 2) creation of new data definitions that took time and training before WIF-funded staff could implement in a consistent manner. This led to varying data definitions and collection protocols across the four areas for the first year. Concerted efforts to increase consistency in data definitions and collection were made in Year 2, with data definition training and discussions continuing throughout the remainder of the grant.

Environmental Factors
In addition to accelerators and barriers, there were also several external factors within the environment surrounding Steps Up to STEM, which positively and negatively impacted program implementation. These included:

- Workforce System Structure
- State of the Economy
- Employer Density
- New Legislation – WIOA
- State-Level Oversight

76 Separate Excel documents were used to track grant required data that could not be captured through OSOS and served as a back-up recordkeeping system.
Workforce System Structure

One significant external factor to grant success was the pre-defined structure and focus of each of the GCRWIBs members. Successful grant implementation came easier, when:

- GCRWIBs Leadership had greater control (e.g. non-profit structure) and/or Center leadership were brought into the grant early
- GCRWIBs Centers had existing skilled WIA/WIOA-funded BSRs, and were aided when there were existing industry collaborations or strong company needs
- GCRWIBs Centers already offered OJTs

501(c)3 versus Governmental Entity – Compared with wholly public entities, WIBs operating as a non-profit have elements of increased flexibility and can often be more nimble in areas such as in staff hiring, in creating means of staff accountability, and in accessing and allocating funding. The flexibility inherent within a non-profit structure provided the best support for consortium members in implementing the grant and ranged from creating policies, to establishing staff accountability measures from WIB Directors to their subcontractor and subcontractor front-line staff, to acquiring new funding streams, to quicker and less bureaucratic funding allocation. Consortium members with a city- or multiple county-operated workforce system faced greater challenges in implementation, including requirements to hire civil service employees only, a longer hiring process because of required steps and paperwork, decreased ability to build in staff accountability measures, and strong reservations to hiring permanent employees for a grant-funded position.

Presence of WIA/WIOA-funded BSRs – GCRWIBs Leadership and staff alike reported the presence of skilled BSRs as an extremely important component of grant success, as they provided the “matchmaking” component needed to connect STEM-interested job seekers with businesses and to facilitate paperwork completion and reimbursement. However, not all areas had dedicated WIA-funded staff in a BSR role. Workforce areas with WIA BSRs were able to allocate grant funding so that the WIA BSR could also conduct employer outreach for the WIF grant. Workforce areas without WIA-funded BSRs either had to hire for a new business services-focused position, or staff not otherwise responsible for BSR roles, such as Center Directors, could assumed the responsibility. GCRWIBs members with previously established WIA-funded BSRs reported greater success in the business outreach and engagement components of the grant. In addition, BSR staff and GCRWIBs Leadership were aided where existing industry collaborations existed or where companies

Importance of BSRs

“Due to the need to do more with less over the years, our business services approach had become more narrow. However, as a result of this grant, we were able to highlight improvements needed and it gave us an opportunity to improve the level and scope of our customer service and to introduce more employers to the benefits of engaging with our local workforce system.”

GCRWIBs Leadership

77 Within the workforce system, there are a combination of partners that come together to deliver services, including WIF-funded staff and NYSDOL state staff. For the WIF grant, GCRWIBs were able to use WIF funding to hire new staff or supplement current WIA/WIOA-funded staff. While some areas did have NYSDOL BSR staff present, these individuals were not funded by the grant program. NYSDOL BSR staff have on occasion provided referrals to WIF-funded staff, however there are neither requirements nor accountability measures built to ensure these referrals took place.
had immediate, obvious “pain” with hiring. Examples of this include regional machine tool shops facing machinist retirements and the dearth of skilled brewers without training options in the region. OJT Experience – Within the Two-Step contract structure, Steps One and Two could have been a combination of classroom-based training and OJT. OJTs tended to be the most common training mechanism used in the grant. For GCRWIBs Career Centers with prior OJT experience, this meant easier application of existing workforce philosophies, processes and procedures, and staff experience. For Centers that had not previously, or recently, offered OJTs, the philosophies, paperwork and processes of administering OJT funding, and staff experiences administering OJTs all needed to change before the OJT concepts could be applied as smoothly as in Centers with prior OJT experience.

State of the Economy
In Year 1, as the economy was just beginning to recover from the Great Recession, the GCRWIBs region faced relatively high levels of unemployment. With numerous individuals looking for jobs, this climate provided the opportunity for ample job seeker participation within Steps Up to STEM. However, the presence of a large pool of unemployed workers allowed employers to be selective about candidates they hired; BSRs reported that many companies they contacted could find the workers they needed without the support of the workforce system and would rather hire without the perceived constraints of the program, or were not in a position to hire at all.

With the economy in recovery during the extension period, the pool of unemployed candidates shrank. WIF-funded staff noted that employers were more likely to turn to the workforce system for finding candidates, thus increasing employer participation as job seeker participation decreases. During this time, however, the workforce system had fewer job seekers as potential grant participants, and those job seekers Center staff did see had a greater number of barriers to employment. In addition, the individuals using workforce services in this time period were often the hardest to serve. Ultimately, whether in an economic downturn or upswing, the state of the economy affected workforce programming and grant implementation.

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78 In Step One of training, OJT was indicated as the goal for 59 participants (40 percent), while in Step Two 48 participants (33 percent) indicated OJT Upgrade as a goal. The next highest Step One goals were Customized training -ITA only (n=40, 27 percent) and Pre-Hire Classroom Training – ITA (n=31, 21 percent). The next highest Step Two goal was Classroom Training – ITA (n=15, 10 percent).


81 As an example, in one workforce area the Center traffic had decreased by 17 percent when comparing July-August 2014 to July-August 2015 (examining current Year-To-Date totals). This workforce area had also experienced decreased traffic in the most recently completed fiscal year, July 2014-June 2015, with a 19 percent decrease in Center traffic when compared to the five year traffic average of July 2009 – June 2014.

82 Hardest-to-serve populations could include individuals with poor work history, lack of work experience, lack of educational or occupational skills attainment, dislocation from high-wage and high-benefit employment, low levels of literacy or English proficiency, disability status, homelessness, ex-offender status, or welfare dependency. (Individual with a Barrier to Employment. Sec. 3 Definitions, (24))
Employer Density
Predominantly rural areas, with lower density in the number of businesses present, identified difficulty engaging employers to participate, particularly with sector-based efforts such as the Train First Model. However, despite this challenge, the evaluators note that the three consortium members in a more rural environment appear to be more successful in implementing the program, incorporating a combination of Train First and personalized training models to engage employers. 83

New Legislation – WIOA
In Year 2 of the grant, new workforce legislation – WIOA – was released and replaced the previous workforce legislation, WIA. This shift required significant demands on GCRWIBs Leadership’s time as they navigated the new legislation changes and requirements. As a result, the time and energy of GCRWIBs Leadership during Year 3 and beyond was split between WIOA, the grant, and all their other regular duties.

State-Level Oversight
Though NYSDOL staff were not funded under the grant, their participation was an important element to grant implementation, especially in Career Centers without WIA/WIOA-funded BSRs. However, several state-level restrictions prevented their fuller participation in Steps Up to STEM. NYSDOL staff were required to seek permission from the Governor’s Office before traveling to any meetings, independent of meeting location proximity. Travel requests from NYSDOL staff were required to be submitted at least two weeks before any meeting, to allow for sufficient review time. Travel requests were sometimes denied, especially if several NYSDOL staff request permission to travel to the same meeting or at the same time (e.g. attending the WIF monthly meetings). The decreased flexibility of NYSDOL staff meeting attendance resulted in decreased participation by NYSDOL staff in the implantation of the Steps Up to STEM grant.

Program Outputs
Throughout grant implementation, the GCRWIBs made steady progress toward each targeted output, with the exception of Community Colleges with “Employer Specific” Stackable Credentials;84 however, other training providers such as the Washington, Saratoga, Warren, Hamilton, and Essex Counties Board of Cooperative Educational Services (WSWHE BOCES) provided “employer specific” credentials, and the regional community colleges were a strong partner in creating the STEM Youth Summer Institute.

As of October 2015, the GCRWIBs successfully completed four of seven output goals, and continued to work toward successful goal attainment through the end of the extension in March 2016. 85 Strengths of output progress were seen across the grant initiatives, from initial assessments and STEM exposure, to WIF-funded staff professional development, to employer engagement through sector partnerships. Significant progress was also made in the development of Two-Step and One-Step career plans, as

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83 Additionally, workforce areas and/or specific Centers with dedicated BSRs showed higher numbers of Two-Step contracts (includes Two-Step and Train First & Two-Step contracts).
84 The craft beer brewing training, which included coordination with a local community college to develop “employer-specific” credentials, was initially planned to be conducted with the Steps Up to STEM grant. However, the start date for the craft beer brewing training began beyond the allowed period for grant training and thus is not counted within the analysis.
85 Training funds for the grant end in December 2015. All remaining funding will end in March 2016.
employers and participants were engaged to develop customized and unique training solutions to meet the needs of the GCRWIBs region.

**Table 2: Consortium Stated Output Goals and Progress**

<table>
<thead>
<tr>
<th>Output</th>
<th>Goal</th>
<th>As of Oct 2015</th>
<th>Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Exposed to STEM</td>
<td>9,000</td>
<td>14,436 ✔️</td>
<td>88%</td>
</tr>
<tr>
<td>Assessed for STEM Readiness</td>
<td>1,300</td>
<td>2,152 ✔️</td>
<td>90%</td>
</tr>
<tr>
<td>Employers Participating in Two-Step contracts</td>
<td>88</td>
<td>42</td>
<td>46 (52%)</td>
</tr>
<tr>
<td>Career Plans Developed (IEPs)</td>
<td>192</td>
<td>147</td>
<td>46 (23%)</td>
</tr>
<tr>
<td>Two-Step Contracts Developed</td>
<td>N/A</td>
<td>80</td>
<td>N/A</td>
</tr>
<tr>
<td>Community Colleges with “Employer Specific” Stackable Credentials</td>
<td>6</td>
<td>0</td>
<td>6 (100%)</td>
</tr>
<tr>
<td>Professional Development Opportunities Provided to Staff</td>
<td>20</td>
<td>28</td>
<td>✔️ 92%</td>
</tr>
<tr>
<td>Employers in STEM Sector Partnerships</td>
<td>25</td>
<td>25</td>
<td>✔️ 93%</td>
</tr>
</tbody>
</table>

*Figure 6* depicts consortium progress toward output goals and to what degree the consortium exceeded (in green and to the right of the output goal) or fell short (in pink and to the left of the output goal) of the target output number.

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86 Professional Development Opportunities Provided to Staff was taken out as all GCRWIBs staff received the same number of professional development opportunities.
87 As of October 7, 2015. Includes totals from each region in addition to STEM exposures from outside one particular workforce area.
88 160% of goal.
89 As of October 30, 2015.
90 166% of goal.
91 Number includes totals for One-Step and Two-Step contracts, including Train First and TF&TS.
92 140% of goal.
93 100% of goal.
Program Performance & Variance  

Implementation Evaluation

Figure 6: Consortium Progress toward Output Goals  

Data as of October 2015. Full data available within Table 2.

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94 Data as of October 2015. Full data available within Table 2.
Capital Region WIB
The CR WIB serves Albany, Schenectady and Rensselaer counties with Career Centers located in Albany, Troy, and Schenectady. The CR WIB faced many of the workforce structural challenges described earlier within this section, including being a city-operated workforce entity, which requires adherence to city processes and civil service hiring requirements. In addition, two of the region’s Career Centers were without WIA/WIOA-funded BSR staff members, which required the CR WIB to hire a business-focused staff member for the grant. The individual hired was not a good fit for the program, produced very few grant-related deliverables, and left before the grant ended. The gap in WIA/WIOA-funded BSRs at two of the three Centers in the region could have been filled by CEG, the grant’s Business Intermediary. As noted, however, CEG did not fulfill many of the grant deliverables for which it was hired, most notably serving as the primary source of business lead generation. Additionally, during the course of the grant, the region faced turnover at the WIB Executive Director position. The transition from one Executive Director to the next was well executed, with the new Executive Director taking on grant-related responsibilities in collaboration with the previous director during his final months, even before this new director was WIF-funded. However, the new Executive Director has needed to fill both the WIB Director and WIB Executive Director roles since the transition.

Highlights from the CR WIB include Two-Step contracts primarily through Rensselaer County and consistent STEM workshop offerings in Schenectady County. Several of the Two-Step contracts in the region were at high-tech (semi-conductor materials) or information technology companies, a unique employer population as compared many of the companies serviced through the more rural consortium workforce areas. The CR WIB exposed a high number of individuals to STEM at more than 5,300, which was almost 30 percent of the total for the GCRWIBs. The CR WIB also developed 30 career plans, primarily through One-Step training contracts, and assessed 646 individuals for STEM readiness.

Table 3: Output Progress Contributing to Consortium Totals

<table>
<thead>
<tr>
<th>Output</th>
<th>As of Oct 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Exposed to STEM</td>
<td>5,303</td>
</tr>
<tr>
<td>Assessed for STEM Readiness</td>
<td>646</td>
</tr>
<tr>
<td>Employers Participating in Two-Step contracts</td>
<td>7</td>
</tr>
<tr>
<td>Career Plans Developed (IEPs)</td>
<td>30</td>
</tr>
<tr>
<td>Two-Step Contracts Developed</td>
<td>7</td>
</tr>
<tr>
<td>Community Colleges with “Employer Specific” Stackable Credentials</td>
<td>0</td>
</tr>
<tr>
<td>Employers in STEM Sector Partnerships</td>
<td>0</td>
</tr>
</tbody>
</table>

95 Professional Development Opportunities Provided to Staff was taken out as all GCRWIBs staff received the same number of professional development opportunities.
96 Number includes totals for One-Step and Two-Step contracts.
Columbia-Greene WIB

The CG WIB covers Columbia County and Greene County within the state of New York. The CG WIB had one Career Center location at Columbia-Greene Community College, which was also the location of the WIB office. Consolidation of services in one location assisted the CG WIB with consistent implantation of the grant. Additionally, the CG WIB Center Director was one of the four GCRWIBs Leadership members and was heavily involved in grant activities and data outcomes quality review. This level of participation strengthened the implementation of the grant within the region.

During Year 1, CG WIB created a Train First Model for CNA training while also offering targeted, individualized Two-Step contracts. The CNA Train First Model included training for several large healthcare providers in the region and worked especially well for Step One. Transitioning Step One participants on to the second step, LPN training, proved challenging, in part because LPN training required considerably more time. Feedback from this training lead to the adjustment of the Two-Step training model, by adding One-Step contract options in Year 3 and beyond.

Throughout the grant, CG WIB has seen strong success in offering individualized training contracts for industries including:

- appliance installation and repair
- business marketing services
- cabinet building
- custom materials handling
- digital fabrication
- heating and cooling
- information technology
- solar energy installation

Success through individualized Two-Step contracts came, in large part, through the efforts of the Center’s BSR, who had strong business relationships and experience with OJT placements as a result of the National Emergency Grants (NEG). The CG WIB has developed 38 Two-Step contracts — more than 45 percent of the Two-Step contracts created by the consortium. In addition, GC WIF-staff worked to develop 48 career plans and had 14 employers participating in Two-Step contracts, more than 30 percent of the GCRWIBs cumulative outputs for both.

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97 A business from each industry described was visited by the evaluation team.
Table 4: Output Progress Contributing to Consortium Totals

<table>
<thead>
<tr>
<th>Output</th>
<th>As of Oct 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Exposed to STEM</td>
<td>1,652</td>
</tr>
<tr>
<td>Assessed for STEM Readiness</td>
<td>444</td>
</tr>
<tr>
<td>Employers Participating in Two-Step contracts</td>
<td>14</td>
</tr>
<tr>
<td>Career Plans Developed (IEPs)(^99)</td>
<td>48</td>
</tr>
<tr>
<td>Two-Step Contracts Developed</td>
<td>38</td>
</tr>
<tr>
<td>Community Colleges with “Employer Specific” Stackable Credentials</td>
<td>0</td>
</tr>
<tr>
<td>Employers in STEM Sector Partnerships</td>
<td>7</td>
</tr>
</tbody>
</table>

Fulton, Montgomery, and Schoharie Counties WDB

The FMS WDB serves a three-county region in New York with Career Centers in the cities of Gloversville, Amsterdam and Cobleskill. Similar to the CG WIB, FMS WDB explored a healthcare Train First Model during Year 1. FMS WDB faced similar challenges engaging participants in training and instead focused on Two-Step and One-Step ITA contracts. Individualized Two-Step training plans were more successful in this region and have been used in some of the following sectors:\(^{100}\)

- cell phone technology store
- heating and cooling
- Italian heritage products and services
- physical therapy
- plastics manufacturing
- refrigeration
- textile manufacturing

As the grant recipient and fiscal agent for the consortium, FMS WDB was responsible for grant oversight, fiscal management and reporting. FMS WDB structure, as a non-profit, and strong WIB Executive Director leadership has accelerated grant implementation in the region. Additionally, FMS WDB structure of business service provision included two WIF-funded BSRs with strong experience in the region and who each focused on a target sector – manufacturing or healthcare. The specialization of the business services function as well as BSR experience with OJTs and other employer connections has been an important strength for program implementation.

The specialized BSR function of the FMS WBD helped lead to successful Two-Step contracts and employer engagement. FMS WDB had 17 employers participating in Two-Step contracts, more than 40 percent of the total for the consortium. In addition, WIF-funded staff assessed more than 720

\(^{98}\) Professional Development Opportunities Provided to Staff was taken out as all GCRWIBs staff received the same number of professional development opportunities.

\(^{99}\) Number includes totals for One-Step and Two-Step contracts, including Train First and TF&TS.

\(^{100}\) A business from each industry described was visited by the evaluation team.
individuals for STEM readiness and developed 25 Two-Step contracts, more than 30 percent of the GCRWIBs total outputs.

Table 5: Output Progress Contributing to Consortium Totals

<table>
<thead>
<tr>
<th>Output</th>
<th>As of Oct 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Exposed to STEM</td>
<td>3,022</td>
</tr>
<tr>
<td>Assessed for STEM Readiness</td>
<td>721</td>
</tr>
<tr>
<td>Employers Participating in Two-Step contracts</td>
<td>17</td>
</tr>
<tr>
<td>Career Plans Developed (IEPs)</td>
<td>27</td>
</tr>
<tr>
<td>Two-Step Contracts Developed</td>
<td>25</td>
</tr>
<tr>
<td>Community Colleges with “Employer Specific” Stackable Credentials</td>
<td>0</td>
</tr>
<tr>
<td>Employers in STEM Sector Partnerships</td>
<td>5</td>
</tr>
</tbody>
</table>

Saratoga, Warren, and Washington Counties WIB

The SWW WIB serves a three-county region in upstate New York. The WIB has three Career Center locations, one in each county, with the WIB office located within the Warren County One-Stop Career Center. SWW WIB had a county-administered workforce system, and, similar to the Capital Region, its structure resulted in decentralized authority for the WIB Director (and resulting decreased accountability for Center Directors). As a result, the region struggled with consistent implementation of the grant program in all three Centers. In addition, the SWW Centers did not have WIA/WIOA-funded BSR staff (only NYSDOL BSRs), and so Center Directors in each location were WIF-funded to take on BSR-type roles. These staff members were not previously in a dedicated BSR function and were relatively new directors; compared to some staff in other regions, they were less successful with the creation of individualized Two-Step contracts. Successful Two-Step customized training contracts included some of the following industry types: commercial printing, polymer product manufacturing, and stage lighting.

SWW WIB successfully implemented a sector training model. Through focused efforts of GCRWIB leadership, the Train First Model was used to create the Machine Tool Technology training. The training program was implemented in Year 2 and included heavy employer engagement. The SWW WIB convened key regional employers to engage in a discussion around employer needs. Participating employers were able to provide input into the discussion and from this, core machining skills that were relatively consistent across all employers were pulled into curriculum components for the Machine Tool Technology training. After identifying curriculum, employers identified the course instructor, based on the individual’s work history in machine tooling and a demonstrated ability to teach machine tooling.

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101 Professional Development Opportunities Provided to Staff was taken out as all GCRWIBs staff received the same number of professional development opportunities.

102 Number includes totals for One-Step and Two-Step contracts.
courses. The chosen instructor was then engaged to develop curriculum specific to the needs of the employer group. As the curriculum was developed, employers were engaged to select participants for the first round of training. Employers also attended classes (to provide instruction and/or to scout out talent), hired training graduates, and donated tools and materials to the program.

After the first cohort of Machine Tool Technology training graduated, SWW WIB offered a second training in Year 3. Similar to the healthcare Train First Models, engaging participants in Step Two has been more challenging, even though the Step One training was successful. As a result of success around Machine Tool Technology training, in 2015 regional brewers who identified a need for craft beer brewers training approached the SWW WIB and the GCRWIBs to develop a Train First Model.

Success in the Train First Model through the Machine Tool Technology training led to 13 employers in STEM sector partnerships – more than 50 percent of the GCRWIBs output total. In addition, SWW WIB WIF-funded staff exposed more than 4,000 people to STEM and developed 42 career plans, the majority of which were one step of training. Of the 42 career plans, 32 (76 percent) participated in one step of training (e.g. were One-Step training contracts or were Train First Model participants who were only engaged in Step One of training).

Table 6: Output Progress Contributing to Consortium Totals

<table>
<thead>
<tr>
<th>Output</th>
<th>As of Oct 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Exposed to STEM</td>
<td>4,035</td>
</tr>
<tr>
<td>Assessed for STEM Readiness</td>
<td>341</td>
</tr>
<tr>
<td>Employers Participating in Two-Step contracts</td>
<td>4</td>
</tr>
<tr>
<td>Career Plans Developed (IEPs)</td>
<td>42</td>
</tr>
<tr>
<td>Two-Step Contracts Developed</td>
<td>8</td>
</tr>
<tr>
<td>Community Colleges with “Employer Specific” Stackable Credentials</td>
<td>0</td>
</tr>
<tr>
<td>Employers in STEM Sector Partnerships</td>
<td>13</td>
</tr>
</tbody>
</table>

103 Of the 42 career plans, 32 (76 percent) participated in one step of training (e.g. were One-Step training contracts or were Train First Model participants who were only engaged in Step One of training)

104 Professional Development Opportunities Provided to Staff was taken out as all GCRWIBs staff received the same number of professional development opportunities.

105 Number includes totals for One-Step and Two-Step contracts, including Train First and TF&TS.
Use of Grant Funds

Grant funding analysis within the Implementation Evaluation section focused on the qualitative aspects of resource allocation—especially program cost (e.g., payroll, staff travel, communication, participant training, etc.), shifts in funding use (e.g., One-Step funding opportunities), and leveraged resources from partners and employers as they relate to other funding sources and the Train First Model. A more comprehensive, and quantitative, discussion of program cost and resources is covered within the Cost Evaluation section.

Research Question:

- How did the workforce areas allocate grant funds? Were resources leveraged?

Program Staffing

As the grant recipient and fiscal agent for the consortium, FMS WDB was responsible for grant oversight, fiscal management and reporting. FMS WDB contracted services out to the other three workforce areas and to CEG, and funded staff within FMS WDB.

Each workforce area needed both BSRs, for employer outreach, and WATs, for job seeker assessment and career plan development. While the funding total was static, the allocation of WIF-funding was at the discretion of each workforce area, and GCRWIBs Leadership could have chosen to allocate a portion of current staff time to the grant or hire a new staff member. All four workforce areas chose to allocate a portion of current staff time to grant activities, and one area (CR WIB) chose to hire a staff member for one Center office (City of Albany Office) that would focus full-time energy on grant activities. Differences in salaries between government staff (CG WIB, SWW WIB, and CR WIB) and not-for-profit subcontractor staff (FMS WDB), meant that while each workforce area was provided with the same BSR and WAT dollar value for WIF services, the amount of hours dedicated to the grant varied.

Table 7 represents staffing for the grant program as implemented in Year 3. All positions in the staffing pattern for Year 3 provided a portion of staff time to the grant with the exception of the Employment Counselor at the City of Albany Office, who was fully devoted to (full-time) Steps Up to STEM.

From Year 1 to Year 2, some of the counties modified their WIF program staffing structure. Previously, staff had been assigned to the project without sufficient understanding of their role in providing services under the WIF grant. Some WIF-funded staff did not buy into this role, as evidenced by lack of attendance at the monthly staff development meetings and lack of documentation of WIF-related activities in OSOS. In Year 2 and beyond, new staff assignments and clearer expectations from GCRWIBs Leadership to Center Directors and WIF-funded staff resulted in increased involvement in WIF-related activities and more buy-in and understanding by WIF-funded staff. During group interviews with WIF-funded staff in Years 2 and 3, staff indicated an increased comfort level with the concept of STEM jobs, a greater understanding of training options that are available under the Two-Step model, and increased enthusiasm about the program’s potential to benefit job seeker customers and businesses.
Table 7: Steps Up to STEM Program Staffing

<table>
<thead>
<tr>
<th>Capital Region</th>
<th>CG WIB</th>
<th>FMS WDB</th>
<th>SWW WIB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● WIB Executive Director</td>
<td>● Center Director</td>
<td>● WDB Executive Director</td>
<td>● WIB Executive Director</td>
</tr>
<tr>
<td>● Rensselaer – BSR</td>
<td>●CG – BSR</td>
<td>● Amsterdam – BSR (served all three counties for manufacturing)</td>
<td>● Saratoga – Center Director</td>
</tr>
<tr>
<td><strong>BSR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Albany – Employment Counselor, New Position(^{106}) (also provided business services)</td>
<td>●CG – 2 WATs</td>
<td>● Amsterdam – WAT</td>
<td>● Saratoga – Employment Counselor</td>
</tr>
<tr>
<td>● Schenectady – Employment Counselor (also provided business services)</td>
<td>● Gloversville – WAT</td>
<td>● Washington – Center Director</td>
<td></td>
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</tbody>
</table>

**Funding Shifts**

Main shifts in funding that occurred during the grant included: One-Step training options, CEG funding reallocation, and grant extension funding reallocation.

*One-Step Training* – In Year 3, the option for a One-Step only model was implemented to address challenges with lengthy training programs. For some potential participants and occupations, the second step of the Two-Step contract required a prolonged training period and thus did not fit within the three-year grant timeframe. This was the case, for example, with many participants pursuing a healthcare career pathway, where CNA training was followed by LPN or RN training. Both second steps would have required more time than was available during the grant timeframe. The One-Step training model allowed a portion of Two-Step contract funds to be used for One-Step only training, setting participants on a career path in a manner that was possible under grant constraints.

*CEG Funding Reallocation* – To address the lack of grant-related activity for CEG, GCRWIBs Leadership did not extend funding to CEG during Year 3. Instead, for Year 3 and the extension, CEG was focused on producing a few grant-related deliverables under funding provided during Years 1 and 2.

*Grant Extension* – FMS WDB and the Greater Capital Region consortium was granted a nine month no-cost extension for *Steps Up to STEM*. Funding was used to extend the implementation period for the program and to pay for the following:

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\(^{106}\) This position was full-time for *Steps Up to STEM*. All other positions provided a portion of staff time for the grant.
Use of Grant Funds

- BSR and WAT salaries (at a lesser amount than the previous-grant funding) to allow STEM education, assessment, and referral, as well as One-Step trainings and Two-Step contracts to continue to be written
- GCRWIBs Leadership’s engagement for the nine months to provide for continued management and grant oversight
- Evaluation implementation analysis to cover the additional grant timeframe

A notable change was that during the extension (after June 30, 2015, the original end of Year 3), WAT salaries were no longer funded through the grant. GCRWIBs Leadership expected the WIF program and the importance of STEM careers be another tool in a WAT's toolkit, as these staff members were trained in the program and STEM. However, when CEG funds were re-allocated, some funding was restored for WAT services as listed above.

Leveraged & Other Resources

The GCRWIBs consortium used a variety of leveraged and other resources\(^\text{107}\) to enhance grant opportunities and performance including:

**WIA/WIOA Funds** — The GCRWIBs used WIA/WIOA funds to cover grant-related costs including meeting travel.

**Other Grants** — Other grants and sources of funding helped extend available Steps Up to STEM funding. Often other grants, including the NEG, were used to support individuals who could become Two-Step participants, by paying for Step One training.

**In-Kind Employer Contributions** — Especially for the Train First Model, employer engagement through in-kind contributions of time, expertise, and resources was critical to grant success. For example, in the Machine Tool Technology training, employers contributed time for curriculum development, job seeker interviews, and classroom visits. Employer partners also donated supplies and equipment, decreasing program training costs for participants.

**Data Management** — The FMS WDB Program Management Specialist and database expert donated time and expertise to work with the WIF-funded staff and GCRWIBs Leadership. The Program Management Specialist reviewed OSOS data reporting, noted inconsistencies, and trained staff on data definitions and OSOS WIF-data reporting.

\(^{107}\) Note that leveraged resources as defined in the Cost Evaluation only included money and/or services that the workforce areas had no control over. For example, this would include employer time during Two-Step contract development. In the Cost Evaluation, the topics of data management and other grants were both included in workforce area costs not related to the WIF grant.
Employer Partners

The content within this section is focused on employer engagement and perspective. Throughout the course of the grant, the evaluation team interviewed more than 30 employers. With the exception of one company who considered participating but ultimately chose not to, all employer interview subjects represented companies participating in the grant. Employers represented all four workforce areas, and interviews almost always took place at the business location.

Research Questions:

- Were employers more satisfied with Steps Up to STEM Enrolled Participant workers, compared to workers who did not participate in the program?
- How were training strategies developed and implemented? How involved were employers in the program design process?
- How satisfied were employers with the program? Why?

Employer Perspectives

Employer engagement was detailed earlier in the Implementation Evaluation section as both a strength and a barrier. Interviewed employers, including one non-participant employer, reported that program accessibility through the lack of paperwork or red tape was a significant program strength. Employers interviewed identified competent BSRs as a key driver of this accessibility. For a few employers, this was their company’s first time engaging with the workforce system, but Two-Step contract successes often came from employers with some previous experience with the workforce system. Whether new or previous workforce customers, all interviewed employers reported an increased, or consistent, level of satisfaction from the workforce system as a result of participating in the grant. Employers reported that the grant allowed them to 1) hire the participant when company funding alone would not have allowed the hire, 2) hire locally and train an under-skilled worker when the company would have usually recruited from out of the region, and/or 3) invest more time into training an employee because of the offset salary.

Through interviews with employers, it became clear that “Were employers more satisfied with Steps Up to STEM Enrolled Participant workers, compared to workers who did not participate in the program?” was often the wrong question. The majority of employers responded that Steps Up to STEM allowed them to hire the participant when they otherwise...
would not have – either because they could not afford to hire or could not afford to train the under-skilled worker.

WIF-funded staff identified that employer understanding of STEM, buy-in to the Two-Step contract model, and/or a negative perception of the workforce system presented a significant challenge to successfully engaging employers in the program. While interviewed employer partners rarely identified these as barriers to entry for their company, a few employers spoke to the perception of the workforce system as being viewed by members of their company or peer companies as cumbersome and inaccessible.

Employers from a variety of backgrounds participated in Two-Step contracts. These employer types ranged from manufacturers, to technology companies, to specialty, niche industries such as solar and stage lighting. Employers included the following:

- appliance installation and repair
- business marketing services
- cabinet building
- cell phone technology store
- commercial printing
- composite metal manufacturing
- custom materials handling
- craft beer brewing
- digital fabrication
- heating and cooling
- information technology
- Italian heritage products and services
- machine tool operations
- nursing homes
- physical therapy
- plastics manufacturing
- refrigeration
- semi-conductor materials manufacturing
- software development
- solar energy installation
- stage lighting
- textile manufacturing

Employer engagement in the development of the Two-Step training strategies primarily took two forms:

**Individual Employer Training Contracts** – Employers who participated in the customized contracts worked directly with a BSR to create a Two-Step training plan for the participant. Most often, an employer identified a training need and brought this need to the BSR, and the BSR assisted in matching the employer with a potential Steps Up to STEM participant. If the employer was interested in hiring the individual, the BSR worked with the employer on all required paperwork, including the Two-Step contract. Two-Step contract content details, such as the OJT training specifics, were developed by the employer and based on the skill level of the participant. Interviewed employers reported high levels of flexibility and freedom in developing the training content and appreciated the opportunity to fully-customize training to meet the specific needs of the employer and to align with the skillsets of the participant.

**Sector Strategy Partners**

“The region’s employers cannot have confidence in the public side, if there haven’t been efforts to show reasons for this confidence... It requires the philosophy on the part of the public sector to attack that issue [of confidence].”

Boards of Cooperative Educational Services (BOCES)

**Individualized Training**

“We accelerated his learning curve by a year. Accelerated and expanded it. He got training on the latest software, which we didn’t have. And he got exposed to different people than just the people here. And we couldn’t have afforded to train him.”

Participating Employer

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108 The evaluation team interviewed at least one business from each industry described.
**Train First Model**— Employer engagement in the Train First Model often followed a similar pattern: 1) regional employers convened to discuss common workforce/talent challenges, 2) interested employers gathered to discuss their core training skills and needs, 3) employers identified the desired training format, 4) WIF-funded Center staff and employers were co-engaged in participant recruitment and selection, and 5) employers contributed to the participant training through guest teaching, hands-on training placements, and/or equipment or supply contributions. Following the goal attainment of the Step One training, participating employers could then hire training participants and identify the second step of training.

Though the two approaches to training development were different, employers and WIF-funded staff reported heavy levels of employer engagement in both. Through these approaches a variety of Two-Step contracts were developed. Examples of these contracts included:

- Two steps of OJT in computer programming design software
- Step One as an OJT for mechanical maintenance with Step Two as a customized training course offered by the local community college for industrial maintenance and robotics
- Machine Tool Technology training for Step One followed by an OJT in employer-specific machines for Step Two
- Step One as a solar panel installation pre-hire training course followed by Step Two of an OJT for solar panel installation specific to the business

WIF-funded staff and employer participants also noted that the Steps Up to STEM Two-Step model appeared to work best with small to medium-sized companies, where training funds would make a difference to the company’s bottom line, where employers had some control over career pathways, and/or where employers felt compelled morally or ethically to give a job seeker an opportunity where he or she may otherwise be rejected.

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**Train First Model**

“The workforce development system gives us the controls and allows us to do this right the first time, and refine it... They’re really there as a support.”

“I don’t have the time to train those without training, and this program will give these people a shot.”

*Participating Employer*
Beyond the Grant

The following grouping of research questions address considerations for *Steps Up to STEM* once grant funding ends. These findings center around sustainable change created as a result of the grant, GCRWIBs preparation for WIOA as a result of the grant, and recommendations for consideration should another workforce consortium choose to implement *Steps Up to STEM*.

Research Questions:

- How can program processes, tools, and/or systems be modified to improve performance?
- How satisfied were program partners (GCRWIBs Leadership) and staff with the program? Why?
- Did the program promote systematic change in collaboration of the public workforce system, higher education, and industry? Did partners institutionalize changes in policies or offerings that will continue beyond the life of the grant? Did the program result in changes in perceptions, attitudes or behavior? What evidence demonstrates program value for community? What is the legacy of the program?

Program Sustainability

Reflecting over the grant period, GCRWIBs Leadership and WIF-funded staff indicated medium-to-high levels of satisfaction with the grant. All WIF-funded staff and GCRWIBs Leadership members indicated that, given what they know now, they are glad they chose to implement *Steps Up to STEM* and would not reverse that choice. This was a deviation from earlier years, when WIF-funded staff expressed doubt that the program’s benefits outweighed the challenges of implementing the innovative model. This indicates that a program like *Steps Up to STEM* needs several years of steady implementation for staff to become accustomed to new ways of doing business, and for employers and job seekers to begin seeing notable outcomes.

Additionally, all GCRWIBs Leadership members, and WIF-funded staff in three of the four workforce areas, would continue the grant if additional funding were available. GCRWIBs Leadership and WIF staff reported satisfaction from several program areas including positive impacts experienced by workforce job seekers, positive impacts on workforce business customers, and the sustained changes from the program. The following are legacies of *Steps Up to STEM*:

- STEM Understanding & Education
- Workshops with STEM
- Focus on Career Pathways\(^ {111}\)
- Stronger Business Focus & Relationships
- Two-Step Model
- STEM Youth Summer Institute
- Regional WIB Collaboration
- Labor Market Data\(^ {112}\)
- Credential Attainment
- On-the-Job Training
- Policy Adjustments

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\(^{109}\) See previous sections on *Accelerators & Strengths* and *Employer Partners*.

\(^{110}\) See previous section on *Employer Partners*.

\(^{111}\) Discussed in *Preparing for New Legislation – WIOA* section.

\(^{112}\) Discussed in *Preparing for New Legislation – WIOA* section.
STEM Understanding & Education
As a direct result of WIF funds, WIF-funded staff reported better understanding of STEM as a concept, what STEM opportunities entail, and why STEM is important. WIF-funded Center staff plan to continue to provide job seekers with support and guidance around STEM careers beyond the life of the grant, and will be able to incorporate current knowledge into their advising of: 1) The concept and importance of STEM; 2) the many different avenues for training job seekers—OJT, classroom training, certifications, etc.; and 3) using Job Zone to identify skills gaps with participants and justify why a specific job seeker needs training.

Workshops with STEM
STEM content was incorporated into current workshops and into the introduction to workforce for all unemployed individuals. This curriculum will continue to be used.

Stronger Business Focus & Relationships
The grant program, especially through the creation of Two-Step contracts, highlighted the need for an employer-as-customer approach. Fundamentally, Two-Step contracts, and the Train First Model, cannot be accomplished without heavy business engagement. GCRWIBs Leadership and WIF-funded staff reported a greater focus on reaching out to employers for program development and to identify staffing needs. Even if contacted businesses were not interested in participating in the grant, WIF BSRs reported they will maintain these employer connections and look for additional opportunities to connect the employers with the workforce system.

Two-Step Model
In at least two of the four workforce areas, GCRWIBs Leadership members have facilitated discussions with their boards to identify opportunities for continuing the Two-Step model with regular WIOA funds. Early discussions in this area included setting aside funding for a set number of Two-Step contracts each year, and/or focusing Two-Step contract funding to include a credential as a required outcome. One of the workforce areas will be sustaining a component of the Two-Step model outside the bounds of STEM, identifying the Two-Step framework as the key sustainable element for any high-demand job.113

113 At its October 2015 meeting the Columbia-Greene Workforce Development Board amended their policy regarding OJT to incorporate a component of the two-step training model. The maximum amount of a typical OJT contract in the CG WIB workforce area is $3,000. However, the new policy states that if a business builds in a training component that leads to the participant earning an industry recognized credential then the maximum amount of the OJT could be increased to $4,000, if appropriate.

STEM Opportunities
“We just never thought of it before... For a 2-year degree, or even a certificate program, it's amazing what's out there... and it's not going to break the bank.”

WIF-Funded Staff

Business Engagement
“The grant created a better understanding for how to work with businesses, how to make those connections, and how to keep those connections alive.”

GCRWIBs Leadership
STEM Youth Summer Institute
At least one GCRWIBs workforce area hopes to continue the STEM Youth Summer Institute. The FMS WDB used the grant extension period to ramp up recruitment of area employers to provide financial support for the summer program. FMS had employer donations for the STEM Youth Summer Institute in Year 3 and hopes to increase these donations to fully support the program for the summer of 2016.

Regional WIB Collaboration
The grant increased collaboration across the GCRWIBs, especially through the WIF monthly staff development meetings. These relationships, both at the Leadership level and staff level, are expected to continue after the grant.

Credential Attainment
While credential attainment can be an option outside of the grant, this grant spurred an increased focus on credential attainment aligned with training, allowing jobseekers to have “proven” transferrable skills that they can carry with them throughout their careers.

On-The-Job Training
Especially for GCRWIBs workforce areas with little previous experience, the Steps Up to STEM grant familiarized staff with the OJT approach, and GCRWIBs Leadership are hopeful that a greater use of OJT will be viable options for job seeker customers in the future.

Policy Adjustments
For some workforce areas, the area-specific policies in place during Year 1 decreased the flexibility of grant implementation. An example are policies that cap the amount of funding available for training. To increase flexibility, at least one GCRWIBs workforce area adjusted their workforce policies, including adding that the cap for training dollars was in place “unless there was additional funding that could be applied” then the WIB would be flexible within the parameters of the other funding source. These policy changes will stay in place after grant completion and are written in a way that accommodates future grant opportunities.

Preparation for New Legislation – WIOA
Although Steps Up to STEM was not designed to aid in WIOA preparation, the GCRWIBs found grant-funded activities contributed to their readiness for WIOA in a variety of ways:
Career Pathways – The grant program emphasized career pathways, encouraging WIF-funded Career Center staff to ask about next steps for job seekers. This generated a dialogue between businesses and workforce areas to include multiple steps of training and opportunities for job seeker advancement. The lasting effect of this grant is a mind-set change for staff and employers, as BSR interactions should leave employers thinking about the next steps for their workers. As a result of the grant, WIF-funded Center staff now have practical employer examples to highlight and have spent time developing a “pitch” to employers on why career pathways matter.

Demand Driven Approach – The GCRWIBs’ focus on the business-as-customer was strengthened in areas with BSRs, and progress toward a demand-focus was made in areas without WIA/WIOA-BSR staff. Additionally, the GCRWIBs consortium strengthened existing, and built new, employer relationships through the grant.

Sector Based Approach – Working with employer representatives from manufacturing and health care helped establish a model for further expanding sector based approaches under WIOA.

Work-Based Learning – For some consortium members, OJT was already a strong component of their menu of services. As such, this grant was building on an area of strength. For other workforce areas that had not recently implemented an OJT strategy, however, WIF provided an opportunity to get up to speed with the work-based learning components of WIOA, through use of OJTs.

Strategies for Regional Planning – STEM-focused sector partnerships enhanced regional collaboration across key stakeholders, and professional development for Career Center staff increased collaboration within the workforce system.

Labor Market Data – WIF-funded staff reported that the grant led to greater use of labor market information (LMI). Initially grant staff reviewed LMI to understand the demand for STEM jobs, the types of training required, and the career pathways available. Following the grant, previously WIF-funded staff include LMI discussions in their regular job seeker advising approach.

“Hardest to Serve” Job Seekers – Although the hardest to serve were not the traditional recipients of the Two-Step trainings, the grant stretched Center staff, challenging them to think differently and look for creative training and employer matching opportunities. These transferable skills will benefit Center staff as they support the hardest to serve in the coming years.

Building the Workforce

“This [grant] is focused on where the training needed go in the company. We need to train, need to compensate, and then look to where the next [career] step is.”

Participating Employer

“Success is more long term than just getting the job and getting thrilled about that. Now it’s thinking about the next step [for us as staff].”

GCRWIBs Leadership

“You need a skilled workforce, you need it. There will always be minimum wage jobs, but [those aren’t enough].”

WIF-Funded Staff

“It [the grant] did give customers the opportunity to have a real career pathway.”

GCRWIBs Leadership
Comprehensive Service Provision – With WIOA, Center staff will need to provide more rigorous services, including closer follow up and attendance checking. The grant program incorporated these elements into the Two-Step contracts, better preparing staff for WIOA’s intensive service requirements.

Youth Services Strategies – The grant helped support youth career pathways with the STEM Youth Summer Institute. These camps take place during the summer and offer WIA/WIOA-eligible youth the opportunity to explore a particular STEM pathway.

Starting or Adapting Steps Up to STEM

GCRWIBs Leadership and WIF-funded staff identified the following recommendations for a workforce consortium, or workforce area, considering implementing Steps Up to STEM. These recommendations fall into five general categories – startup considerations, staffing, external partner engagement, training and workshops, and other general considerations.

Startup Considerations

- Increase Time for Program Set-Up
- Consider Startup Investments
- Recognize Local Workforce Area Differences
- Identify Structural Challenges Early
- Conduct Monthly Project Staff Meetings
- Facilitate Early Buy-In with Second- and Third-Tier Leadership
- Visualize Program Concepts
- Create a Common Resource Sharing Network
- Institute Implementation and Marketing Plan
- Create Website and Social Media Strategy
- Identify Sector Partnerships
- Emphasize Business-Workforce Collaboration

Staffing

- Carefully Consider Program Staffing Structure
- Require Grant-Funded Business Services Staff
- Consider Specialization of BSR Staff
- Require Grant-Funded Database Specialist
- Increase Staff Training and Accountability
- Allow Startup Time for Relationship Building
- Refine Onboarding for New Grant Staff

External Partner Engagement

- Identify Target Employers
- Start Employer Tours Early
- Secure Local Support for the Train First Model
- Engage Strategically with External Partners

Training and Workshops

- Customize Math Trainings
- Provide Math Training before First Step
- Offer Workshop Training for Staff
- Identify Short-Term Training for Step Two
- Encourage Certification Requirement for OJT
- Highlight Two-Step Process
- Ensure Instructor Quality

Other Considerations

- Extend Project Timeline
- Reinforce Grant Messaging
- Expand Focus on Youth
- Consider Variations on Grant Components
Startup Considerations

For Starting or Adapting Steps Up to STEM

Increase Time for Program Set-Up
As a new, untested workforce experiment, the rollout of Steps Up to STEM demonstrated that starting a program from scratch is time- and money-intensive. If starting again, GCRWIBs staff would not have assumed employers would immediately understand or value the concept and would have spent more time laying the groundwork for participation. Future areas should allow ample start-up time to develop the program concept, market the program to customers and employers, make connections between job seekers and available jobs, and build strong partnerships across the consortium staff and leadership.

Consider Startup Investments
Future WIB Directors should consider effort and salary considerations when estimating how much time it takes to manage the program development and rollout. It is recommended that future programs put less funding into customer training in the first year and use that extra funding to increase marketing efforts and intensive staff training. This may include increasing the percentage of the grant director salaries dedicated to WIF activities for staff for the first six months to a year.

Recognize Local Workforce Area Differences
When scaling to other regions, each consortium must be aware that there will be differences in implementation, especially for consortium groups that may not have a long history of working together. Program success relies on an understanding of where these differences are likely to occur, which differing opinions must be brought to group consensus, and which can remain fragmented. Differing philosophies could include:

- Recruiting for participation only unemployed candidates vs. also allowing currently employed
- Training models that are OJT-heavy vs. degree attainment vs. industry-recognized credentials
- Pre-job training counting as Step One vs. Step One can only occur while employed

Ensuring WIB leadership and workforce staff understand these differences in philosophy and priority is critical to building cohesion and consensus around the model.

Identify Structural Challenges Early
Each local area’s unique political structure impacts program implementation differently. Program leadership must appreciate the varying levels of staff control, hiring timeframes, necessary partners, relationship strengths and limitations, and other factors of culture and structure. More than just understanding that cultures are different, leadership must identify staff and challenges present within the culture of each WIB and proactively address challenges via monthly staff meetings and persistent communication. GCRWIBs Leadership estimates the program works best, or at least launches more quickly, when the Career Center directors are invested in the project, when WIB leadership have opportunities to build in accountability, and when administrative structure is more flexible.
Conduct Monthly Project Staff Meetings
It is recommended that project teams conduct staff meetings once a month from the first month of the program, to assist with integration of ideas and development of relationships across the consortium. Topics to cover early include: developing the elevator speech and purpose of the program, sharing resources, and discussing data tracking. This information should be updated and shared with staff as changes occur. Over time, the structure of monthly meetings may morph to include activities that provide grant-related professional development for staff, but the concept of meeting monthly around grant-related topics should continue.

Facilitate Early Buy-In with Second- and Third-Tier Leadership
Local Career Center directors and staff supervisors should be involved in the program from the beginning, especially if Career Center staff were not engaged in the grant writing process. Grant leadership should seek to facilitate their buy-in and demonstrate the program’s value, and specific effort should be made where program leadership in some regions have less direct control over the Career Centers than others. Workforce areas with one location may also consider having the Center Director be as engaged, if not more so, than the WIB Director, as operationalization of the grant falls to the Center Director and staff.

Additionally, where grant activities are only a portion of a staff member’s time, supervisors who are not grant-funded should be brought into discussions early on, creating buy-in and emphasizing the importance of the grant. A lack of supervisor support creates the threat that regular, non-grant activities will take precedence in an effort to continue to meet regular performance measures.

Visualize Program Concepts
To mitigate the challenges for staff, businesses, and job seekers in digesting new training concepts, consortium leadership should develop a visual and written concept for the grant. This document should be shared with the Center Directors and staff at the beginning of the program and, at a minimum, whenever the concept is modified.

Create a Common Resource Sharing Network
The GCRWIBs used a combination of Dropbox and monthly meetings as a way to share resources across all WIF-funded staff. Staff identified these platforms for data sharing as helpful and utilized across the consortium for purposes such as onboarding new grant staff and carrying out daily tasks. New programs should consider implementing a consistent method for resource sharing, which can incorporate video technology or other resources that are currently in place.

Institute Implementation and Marketing Plan
A detailed implementation plan promotes progress and consistency across the consortium and the years of the grant. The implementation plan includes goals and timelines, establishment of concrete tasks to work from, and staff and director ownership over specific elements of the plan. A component of this
plan should include establishing marketing efforts early in the program and looking for early successes and employer “champions” who can market the program to their peer-employers.  

Create Website and Social Media Strategy

It is recommended that programs create a web presence, a site or page dedicated to the grant, early in the implementation process. This will allow clients to easily obtain information on the program. Social media (e.g., Facebook, Twitter, and Instagram) can be an effective youth engagement strategy, as staff have observed youth are more likely to seek information online than to stop in the office.

Identify Sector Partnerships

Sector-based success in Steps Up to STEM came from instances where companies already had a history of working together, such as the Machine Tool Training, or where staff had relationships with a critical mass of employers whose training interests were easily aligned, such as the CNA training. Even with this foundation, the execution of sector-based training took a significant amount of time and effort. Early identification of one or more sector groups that are already established or whose interests could be quickly aligned, gives staff and leadership the opportunity to focus on the quality of training and more meaningful engagement than may otherwise be possible in a short timeframe.

Emphasize Business-Workforce Collaboration

Engaging businesses as early as possible in the program cycle will help facilitate a successful initiative. Even with early engagement, and even where relationships are established and strong, employer buy-in may be more challenging than expected. If possible, it is ideal to host at least one business forum in Year 1 to learn about a sector’s workforce trends and to introduce businesses to the program.

Staffing
For Starting or Adapting Steps Up to STEM

Carefully Consider Program Staffing Structure

A brand new program requires shifts in mindsets and in ways of doing business, so it is recommended that workforce areas carefully consider staff who will be engaged in the program. In some areas, utilizing existing staff who are well versed in the workforce system and have prior connections with employers or customers is extremely beneficial. Local areas may also consider ways to hire someone within a partner agency, allowing him or her to move into a grant role. If this is not possible, either because staff are not interested or are not qualified for the program, hiring managers should carefully identify needed staff qualifications and experience, including: experience working with employers, understanding of the workforce system, motivation and drive, and specific program-related skills.

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114 Marketing efforts can include increasing promotion of Steps Up to STEM success stories through social media, email blasts, and other technology; and encouraging employers to promote the project to their networks and peers.
Require Grant-Funded Business Services Staff

A common thread across successful workforce areas was the presence of a strong business services approach, including having dedicated business services staff. It is recommended that future workforce areas require their current WIA/WIOA-funded (and stat-level DOL-funded, if possible) business services staff members to participate. If the WIB or its local Career Centers do not have WIA/WIOA-funded business services staff at each Career Center, then it is strongly recommended that WIB Directors hire and train staff, or reallocate existing staff, to focus on business services.

Consider Specialization of BSR Staff

Specialized business services staff attuned to the needs of specific industry clusters will allow for a sharper focus and development of deeper relationships with employers. Some workforce areas, however, may not have sufficient resources to specialize and those limitations should be recognized.

Require Grant-Funded Database Specialist

Accurate and consistent data reporting is key to tracking and evaluating the success of a new program. A point-person for data questions and data quality review can assist with the new requirements that will likely arise from the development of a new program. Elements of a grant-funded data position could include:

- **Data Definitions** – Creating a clear understanding of what the workforce areas are looking to track and what the definitions are for the data
- **Data Tracking** – Fluency with the current database to know what is possible within the database. Then communicate with database programmers about what needs to be added for collection
- **Staff Training** – Training all staff on how to record all the program data. Training elements can include 1) a data manual with data definitions and “how to” guide for entering information into the database, 2) in-person training for staff, and 3) ongoing staff training either in-person, via webinars, or via email
- **Regular Data Monitoring** – Reviewing the data reports regularly, at least monthly, to identify data trends and identify reporting gaps
- **Data Reporting** – Reporting out numbers to USDOL, or other funders, for the required reports
- **Troubleshooting** – Responding to staff data challenges, database issues, and other problems as they arise

Increase Staff Training and Accountability

*Steps Up to STEM* Leadership recognize the need for consistent and frequent engagement with grant staff, ensuring that staff in all Centers receive adequate training. For other areas that choose to adapt *Steps Up to STEM*, GCRWIBs Leadership recommend frequent training of all program staff (including non-program staff where possible). Additionally, with many activities competing for staff time, program staff must understand that the program is not just an extra “to-do” that can be put off, or another funding stream to supplement a current position’s funding; but rather that the new program should be prioritized as an important job function. As such, the consortium recommends that program staff and
their supervisors be made aware of the tracking requirements and the placement goals of the project up front. WIB Directors should develop detailed jobs descriptions and include specific program-related requirements and performance evaluations associated with program-related tasks. WIB Directors cannot always evaluate staff, as is true with civil service positions, but if it is possible, building in staff accountability mechanisms from the beginning is highly recommended.

Allow Startup Time for Relationship Building
It is important to understand startup activities generally take significantly more time than expected. Once staff are involved as the primary source of implementation, building capacity and understanding of the program takes time. Even if a WIB Director has good relationships with staff, their supervisors, and agency directors, it takes time to onboard staff and help them fully understand a new way of doing business. This is especially true because WIB Directors do not have supervisory control of staff in the Centers (as a staff member’s supervisor and his or her agency is a connector between the WIB Director and the WIF-funded staff).

Refine Onboarding for New Grant Staff
New staff onboarding should include a clear agenda for the grant’s target client (e.g. population demographics), what kind of jobs the grant will be focused on (e.g. skill level), and what kind of companies the new staff member could target.

External Partner Engagement
For Starting or Adapting Steps Up to STEM

Identify Target Employers
It is important to intentionally and strategically engage employer partners, to maximize partner engagement and to minimize low-return efforts by staff.

Small to Medium Sized Employers – WIF-funded staff perceive the training match the workforce system can provide — even larger through Steps Up to STEM — is not a significant incentive for large employers with equally large training budgets. BSRs reported these employers saw the sign-up and compliance requirements of programs like Steps Up to STEM as more hassle than the training dollars were worth, and so the majority of Steps Up to STEM successes were with small- to medium-sized companies who had the flexibility to participate and could feel the bottom-line impact of training funds. Although employer attitudes will vary by region and it is reasonable to expect the program could be successful with some large companies, regions interested in implementing Steps Up to STEM can learn from the GCRWIBs’ experience and focus first on employers who may have the most incentive to participate.

Recognized Need for Diversification of Skills — Target employers that understand the need to change and adapt to be competitive and recognize and value skill diversity in their employees. These businesses

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115 Definition of business size aligns with NEG OJT definitions. Small is under 50 and medium is 51-250.
used grant funds to either expand the skills, and career path, of a current employee, or hired new workers with the intent to cross train them in various current or future company operations.

*Training and Investment Mindset* – One consistent theme from employer interviews is that many employers engaged in the program recognize the need for employee training. Employers who were interviewed consistently identified a need for training and the desire to invest in their employees to both increase employee value to the company and to increase employee retention.

**Start Employer Tours Early**

Tours of regional business were important for Career Center staff focused on job seeker engagement, to understand the unique needs and set-ups of regional businesses and communicate these to the job seeker. These staff traditionally had had little direct contact with employers and employer site visits could better allow these staff to convey the opportunities and requirements of local businesses to the workforce job seekers. In addition to informing job seeker-focused Center staff, business tours are one opportunity to inform and engage businesses in the program early on.

**Secure Local Support for the Train First Model**

To ensure there is enough local training support for a Train First Model, workforce areas should work to engage local businesses early and often within the training development process. Employers can then work with the workforce areas to identify their needs, identify instructors, develop curriculum, interview potential program candidates, provide instruction and “scout out” talent, and provide on-going feedback to program staff. Establishing and maintaining strong employer engagement throughout the project will ensure employer buy-in and support for the program (e.g. testimonials, promotion, and use of the program) and will provide clear employment avenues for job seekers who complete the Train First Model (i.e., as a result of the process of securing support, there are pre-defined and engaged companies who want to hire individuals coming out of the Train First Model).

**Engage Strategically with External Partners**

Selecting and working with partner organizations can be an important component to grant implementation.

*Allow Time for Partner Organization Management* – It takes more time than expected to manage partner organizations. The primary partner organization for *Steps Up to STEM* was the business intermediary, the CEG, but this could apply to any other/partner organizations, especially entities with high staff turnover. Additionally, when considering management of partner organization, the consortium should consider scheduling regular meetings or calls to ensure constant communication across entities.

*Consider All Partner Options* – Within the consortium, GCRWIBs Leadership identified that the services provided by the current business intermediary did not reach their potential. Future implementers can consider contracting directly with industry groups within their area (e.g. manufacturing industry groups) to build business relationships. Partnerships with other organizations or networks is also an option (e.g. the Workforce Development Institute in New York) that consortiums may consider.
Increase Partner Accountability – Through engagement with the CEG, as the business intermediary, GCRWIBs Leadership learned that when partnering with an outside organization, that entity needs to be provided with concrete and clearly defined tasks. Creating a clear and written list of deliverables, rather than a broad, concept-based scope of work, could increase the effectiveness of outside partnering and productivity of partner organizations.

Training and Workshops
For Starting or Adapting Steps Up to STEM

Customize Math Trainings
Although a good training component in concept, the Math Anxiety Workshop was a particularly challenging component to implement due to low interest and attendance from job seekers. As such, GCRWIBs Leadership recommend incorporating math training into multiple components of the Steps Up to STEM services and leaving the implementation of a specific Math Anxiety class up to the discretion of each workforce area. If the Math Anxiety curriculum is used within the program, it is recommended to contextualize concepts, making them applicable to real-life situations, as opposed to “anxiety teaching.” Initially, the workshop was focused on test preparation to avoid anxiety. Instead, it would be beneficial for staff to help customers understand how much they do know and build their confidence in learning.

Provide Math Training before First Step
For STEM training that requires stronger math skills, create a customized training required for that specific program before an individual begins his or her Step One process. Instead of making the training optional, require participation in some form of a math workshop be a pre-Step One, so all participants are trained in basic math skills.

Offer Workshop Training for Staff
Even though the workshop itself was not successful in training a large number of job seeker customers, the development and implementation of the Math Anxiety workshop helped staff improve their training skills and capabilities. Providing general workshop training to staff could be helpful when launching a new program that requires new workshop development.

Identify Short-Term Training for Step Two
When using the Train First Model, include several short-term training opportunities for Step Two. For the CNA training, for example, there were not many options for continued training beyond the RN/LPN, and these pathways are too long in the context of the short timeframe of the program. As such, staff should work with businesses to both understand the desired career paths and to identify appropriate training opportunities based on timeframe and participant ability.

Encourage Certification Requirement for OJT
When possible, program participants should be able to receive credentials as part of an OJT. This could allow customers/participants to “prove” that they have been learning, could help prevent employers
from taking advantage of funding for OJT that may have happened anyway, and could allow individual job seekers to gain transferrable skills.

**Highlight Two-Step Process**
Throughout the grant, a variety of employers and participants forgot or did not realize that there was funding available for Step Two. As a result, it is recommended for future implementation that staff continuously highlight the Two-Step process to support the development of both training opportunities.

**Ensure Instructor Quality**
The effectiveness of the instruction provided through the program, especially in the Train First Model, depends upon the quality of the instructor. When looking to replicate, workforce areas should ensure that they are hiring quality instructors, ideally those individuals chosen by industry partners.

**Other Considerations**

**Extend Project Timeline**
Staff assert that five years or more would be a more suitable duration for a grant focused on innovative programs, because much of the first year must be spent on program start up activities. Extending the grant time would allow time for program establishment, maximize the chance of sustainability and would provide greater opportunities for participants to gain the associate’s degrees and longer-term training that are often required for STEM jobs.

**Reinforce Grant Messaging**
New concepts can at times be challenging for staff, partners, and participants to fully grasp. Even if discussed at the beginning of the grant implementation/planning process, key elements of the grant program should be repeated at staff meetings and through program materials.

**Expand Focus on Youth**
*Steps Up to STEM* had the opportunity to create a positive impact early in the development of youth interest and career pathways. Staff would have liked to see more opportunities for youth via expanded summer camps and other opportunities.

**Consider Variations on Grant Components**
Within *Steps Up to STEM*, there are two different components of the grant 1) a focus on STEM and 2) a focus on the Two-Step Program. GCRWIBs Leadership recommended that future workforce areas consider each of these components separately. Is STEM the best focus for the area? What is the ideal minimum composition of a career pathway model? Thoughtfully considering both the content focus and the career pathway element will increase the likelihood for success. For example, a workforce area with relatively few STEM job opportunities may consider broadening the content to all regionally or locally identified in-demand occupations to increase the likelihood of career pathways success.
Outcomes Evaluation
Outcomes Evaluation

Design Summary

The Outcomes Evaluation was specifically focused on assessing Two-Step and One-Step training participants. Using participants’ goal attainment, wages, and job retention, the evaluation team examined the hypothesis that those who pursue STEM education and training and obtain credentials will be able to find employment, stay in STEM jobs and careers, and advance in those careers. To assess this hypothesis, the evaluators asked the following research questions:

1) What trends are present in participant goal attainment in Step One and in Step Two?
2) Is there significant improvement in participants’ wages from before they entered the program to after their time in the program, and which types or groups of people show the greatest gains?
3) Is there significant improvement in job retention from before participants entered the program to after their time in the program, and which types or groups of people show the greatest gains?

Each of the outcomes under evaluation was related directly to the participants’ partaking in a Two-Step or One-Step training model of Steps Up to STEM. The following training models were offered to the participants:

- **Two-Step (TS)** – Two-Step contract was the primary career pathway design of the Steps Up to STEM model.
- **Train First (TF)** – Train First Model was a sector strategy initiative led by employers where participants were selected by the employers and received training for the first step of the Two-Step contract. TF Model participants did not necessarily have a Two-Step plan.
- **Train First and Two-Step (TF&TS)** – Employers had the opportunity to hire graduates of the Train Frist training, and ideally engage them in an OJT opportunity for their second step.
- **Individualized Training Account (ITA)** – Individualized Training Account was created for a participant who was engaged in a One-Step contract for training. The One-Step training was a secondary design of the primary model of Two-Step training and was primarily used at the end of Year 2 and then in Year 3 and the extension.

Data for the Outcomes Evaluation were collected from the following primary sources:

- **NYSDOL OSOS Data** – Participant names, goals, training, and service location were recorded in NYSDOL OSOS. The data consisted of both participant self-reported and staff-verified data collected by WIF-funded staff and entered into the statewide data management system.
- **UI Wage Data** – Demographic data (birth date, race, gender, education) and employment data (dates and wages) were retrieved through the NYS UI database.
- **GCRWIBs Leadership Calls** – The evaluation team conducted as-needed calls with GCRWIBs Leadership to better understand the nuances and complexities of NYSDOL OSOS data.

116 Goal attainment looks at whether or not a program participant who enrolled in Two-Step, Train First, Two-Step & Train First (TS&TF), and/or Individualized Training Account (ITA) completed Step One and Step Two.

117 The Outcomes Evaluation did not examine outcomes of the program on the participants who were exposed to STEM, but did not participate in one of the following forms of training – Two-Step, Train First, Two-Step & Train First (TS&TF), and/or Individualized Training Account (ITA).
calls included the grant recipient and fiscal agent, the FMS WDB Executive Director, and the evaluation liaison, and the CG WIB Center Director.  

The evaluation did not allow for random sampling. As a result, there was likely bias in the self-selection process, which could bias inferences to the larger population. Since this program was the first of its kind, a suitable comparison group could not be identified; thus, the evaluators compared participants before and after the program on wages and job retention as an estimate of the effect of the program. Data were particularly limited for job dates (retention) and wages before and after the program. The limitation of missing data was handled by using the observed data as much as possible (removing non-significant variables with missing data from the analyses in the final model). However, the missing data were not truly missing at random. There are likely reasons that participants did not report their employment before or after the program. For example, participants may not have been forthcoming if their job ended quickly or their wage was less than they hoped for (self-report bias). This bias may inflate the estimated effect of the program such that the people who took lower paying jobs after exiting the Steps Up to STEM program may not have reported their wage, and those who did not obtain employment did not have wages to report.

Regarding the tracking of participant retention, once an individual left employment he/she was treated as being at the end of employment in the survival analysis on retention, independent of whether the participant left for a similar occupation at another employer but remained employed within the field of training. This is a limitation to the study because the outcome for the participant would still be successful if the individual was progressing within his/her career pathway with a different employer. Therefore, it is possible that the retention analysis underestimates the effects of retention within the participant’s career pathway.

Finally, the evaluation team relied on WIF-funded staff to collect and track much of the data required for the Outcomes Evaluation. Human error, competing priorities, and differences in tagging the data points could lead to imperfect and delayed data entry and tracking.

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118 These calls with GCRWIBs Leadership could be in addition to or in collaboration with the Implementation Update Calls.
119 NYS UI wage data lag-time created uncertainty around completer retention. While participants’ UI data was tracked on an on-going basis, it took several quarters before the data was available to be pulled from the NYS UI system and sent to the evaluation team.
120 Please see full details in Appendix B.
# Findings Overview

The *Steps Up to STEM* program was evaluated statistically based on participants’ goal attainment, wages, and job retention before and after training. One additional goal of the program was employment, the outcomes for which are included in the overview below. Given the pre-/post-study design, readers of this report must be conservative in generalizing Outcomes Evaluation findings. Increased time for program evaluation after the completion of the *Steps Up to STEM* grant program would allow for increased data and analytical capabilities, especially for analysis of outcomes regarding participant retention. However, these early findings suggest that the *Steps Up to STEM* program has positive outcomes for participant occupation success, especially through increased wages, which may lead to other benefits including increased standard of living.

## Employment

Post-program employment was collected via a survey\(^\text{121}\) for 63 participants. Only one participant responded with “none” for post-program employment, where 62 provided either their employer’s name or job title. Of these 62, 56 responded that the employment was related to training. Three respondents said the employment was not related, and three did not indicate whether it was related. Data were limited on post-program employment as many participants were either still in the training program or only recently completed the training.

## Goal Attainment

Of 147 participants enrolled in all training programs, 97 participants (66 percent) were successful in attaining their Step One goal, while 23 participants (15.6 percent) were still in the process of attaining it as of the time of this report, and 25 participants (16.9 percent) did not attain their goal. There was evidence that younger participants (18-35) were more likely to reach their goal than older participants (greater than 35). Of the 71 participants who were listed as setting a Step Two goal, 35 (49 percent) attained their goal, with 11 pending, and 23 who did not attain their goal. There were no significant differences between groups on Step Two goal attainment.

## Wages

There was a significant increase in participants’ wages over time, from before training, at Step One, at Step Two, and after the program. On average, participant wages across all four training programs are estimated to increase $2.55/hour. There was not significant evidence that any of the training groups have a higher potential for wage increases than any other; however, the ten participants in the Train First & Two-Step (TF&TS) program started with the lowest wages prior to the program and showed the largest increase in our sample. The model estimates an increase of $4.43/hour for TF&TS participants, compared to $2.59/hour for Train First and $2.43/hour for the Two-Step program. Participants in the Two-Step program had the highest estimated wage overall ($14.36/hour), averaging across the four time points, compared to the other three groups ($12.21 to $12.93/hour).

## Job Retention

Median job retention was approximately 400 to 500 days (13 to 16 months) both before and after the training program, where data were available. Of the 147 participants, 111 had pre-program job retention data, and only 6 had complete data on job retention post-program. An additional 35 participants had partial data from quarterly reports to estimate job retention. A more accurate understanding of the impact of *Steps Up to STEM* will likely be better understood in three to five years, after all participants have completed training and ample job retention data are available.

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\(^{121}\) For post-program employment, the participants did not fill out a traditional survey. The data was collected through verbal interaction with the WIF staff, and was recorded as “survey.”
Sample Demographics

The Outcomes Evaluation sample consisted of 147 participants (n=147) who were eligible for services within Individualized Training Account (ITA; 24.5 percent), Train First (19 percent), Train First & Two-Step (TF&TS; 8.8 percent), or Two-Step (47.6 percent) training type. The participants across all training types were mostly male (57.8 percent) and their age was mostly between 25 and 35 (41.4 percent). The majority of participants were white (83.6 percent), and most had at least some post-secondary education (54.4 percent).

Figure 11: Training Enrollment by Training Type, Education Level, and Gender

Participant Demographics

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122 There were 7 missing values for Age.
123 There were 19 missing values for Race.
### Table 8: Training Program Enrollment

<table>
<thead>
<tr>
<th>Groupings</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Training Type</strong></td>
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<td></td>
</tr>
<tr>
<td>Individualized Training Account</td>
<td>36</td>
<td>24.5</td>
</tr>
<tr>
<td>Train First</td>
<td>28</td>
<td>19.0</td>
</tr>
<tr>
<td>Train First &amp; Two-Step</td>
<td>13</td>
<td>8.8</td>
</tr>
<tr>
<td>Two-Step</td>
<td>70</td>
<td>47.6</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>100</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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<td></td>
</tr>
<tr>
<td>Female</td>
<td>62</td>
<td>42.2</td>
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<tr>
<td>Male</td>
<td>85</td>
<td>57.8</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>100</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>35</td>
<td>25.0</td>
</tr>
<tr>
<td>25-35</td>
<td>58</td>
<td>41.4</td>
</tr>
<tr>
<td>36-75</td>
<td>47</td>
<td>33.6</td>
</tr>
<tr>
<td>Total</td>
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<td>100</td>
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<tr>
<td><strong>Race</strong></td>
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<td></td>
</tr>
<tr>
<td>White</td>
<td>107</td>
<td>83.6</td>
</tr>
<tr>
<td>Non-White</td>
<td>21</td>
<td>16.4</td>
</tr>
<tr>
<td>Total</td>
<td>128</td>
<td>100</td>
</tr>
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<td><strong>Education</strong></td>
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</tr>
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<td>45.6</td>
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<td>Some College</td>
<td>41</td>
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</tr>
<tr>
<td>College Degree</td>
<td>39</td>
<td>26.5</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>100</td>
</tr>
</tbody>
</table>

The evaluation team examined three outcomes of *Steps Up to STEM* training program:

1. **Goal Attainment**
2. **Changes in Wages**
3. **Job Retention**
Goal Attainment

Research Question #1: What trends are present in participant goal attainment in Step One and Step Two?

A total of 147 participants were enrolled in training programs within Steps Up to STEM with the majority of participants enrolled in Two-Step training (70 participants or 47.6 percent).

Out of 147 participants enrolled, 97 of them (66 percent) completed Step One and 23 (15.6 percent) were still completing as of the time of this report’s writing.

After Step One, 71 participants pursued a second step, and 35 participants (almost 50 percent) completed their Step Two training. As of the time of this report, 11 participants (15.5 percent) were still completing the training.

Table 9: Steps Up to STEM Training Enrollment and Attainment

<table>
<thead>
<tr>
<th>Column1</th>
<th>Enrolled</th>
<th>Completed</th>
<th>Attainment Pending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step One</td>
<td>147</td>
<td>97 (66.0%)</td>
<td>23 (15.7%)</td>
</tr>
<tr>
<td>Step Two</td>
<td>71</td>
<td>35 (49.3%)</td>
<td>11 (15.5%)</td>
</tr>
</tbody>
</table>

Step One Goal Attainment

Out of 147 participants enrolled in all training programs, 97 participants (66 percent) were successful in attaining their Step One goal, while 23 participants (15.6 percent) were still in the process of attaining it as of the time of this report. The Step One goal was either canceled or not attained by 25 participants (16.9 percent), and data were missing for two participants (1.4 percent).

Table 10: Step One Goal Attainment

<table>
<thead>
<tr>
<th>Step One Goal</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Attained</td>
<td>97</td>
<td>66.0</td>
</tr>
<tr>
<td>Set – attainment pending</td>
<td>23</td>
<td>15.6</td>
</tr>
<tr>
<td>Set – cancelled by employer</td>
<td>8</td>
<td>5.4</td>
</tr>
<tr>
<td>Set – cancelled by participant</td>
<td>14</td>
<td>9.5</td>
</tr>
<tr>
<td>Set – not attained</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Further analyses included only the 122 participants: 97 who attained and 25 who did not attain their goal (not counting two missing values and 23 participants whose goal attainment was still pending). The majority were enrolled in Two-Step training (63 participants, or 51.6 percent) and nearly four in five attained their goal (97 participants, or 79.5 percent).

The Two-Step training had the greatest volume of participants trained (n=48), TF&TS had the highest percent of successful completers (92.3 percent), and ITA had the highest percent of participants still engaged in Step One training (47.2 percent).

*Figure 12: Step One Goal Attainment by Training Type*

Table 11 compares participants who attained Step One goals to those who did not based on the categorical variables of age, race, gender, education, and training type. Percentages of goal attainment are calculated based on those who attained or did not attain their goals, where those still pending are not included in the denominator. Comparisons of proportions reveal there was a significant difference in age group, where participants who are between 18 and 24 years old and between 25 and 35 years old were more likely to attain their Step One goal (83.9 percent and 90.9 percent, respectively) than those who are 36 and older (63.4 percent). No significant differences were noticed in terms of participants’ race, level of education, or type of training. The evaluators observed that participants who were white and male had higher attainment rates, in the sample; however, sample sizes were too small to make definitive conclusions.
Goal Attainment

Outcomes Evaluation

Table 11: Step One Goal Attainment by Subgroups

<table>
<thead>
<tr>
<th>Subgroups</th>
<th>Total enrolled</th>
<th>Goal Attained(^{24})</th>
<th>Set – attainment pending</th>
<th>Set – cancelled by employer</th>
<th>Set – cancelled by participant</th>
<th>Set – not attained</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>35</td>
<td>26 (83.9(^{125}))</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>25-35</td>
<td>58</td>
<td>40 (90.9(^{126}))</td>
<td>14</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>36-75</td>
<td>46</td>
<td>26 (63.4%)</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>2</td>
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<tr>
<td><strong>Race</strong></td>
<td></td>
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</tr>
<tr>
<td>Non-White</td>
<td>21</td>
<td>10 (66.7%)</td>
<td>6</td>
<td>2</td>
<td>3</td>
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<tr>
<td>White</td>
<td>105</td>
<td>79 (81.4%)</td>
<td>8</td>
<td>5</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>62</td>
<td>36 (75.0%)</td>
<td>14</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Male</td>
<td>83</td>
<td>61 (82.4%)</td>
<td>9</td>
<td>4</td>
<td>9</td>
<td>0</td>
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<tr>
<td><strong>Education</strong></td>
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<tr>
<td>No College</td>
<td>66</td>
<td>41 (82.0%)</td>
<td>16</td>
<td>1</td>
<td>6</td>
<td>2</td>
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<tr>
<td>Some College</td>
<td>41</td>
<td>28 (73.7%)</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
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<tr>
<td>College Degree</td>
<td>38</td>
<td>28 (82.4%)</td>
<td>4</td>
<td>3</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Training Type</strong></td>
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<td></td>
</tr>
<tr>
<td>Individualized Training Account</td>
<td>36</td>
<td>16 (85.0%)</td>
<td>17</td>
<td>1</td>
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<td>0</td>
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<tr>
<td>Train First</td>
<td>27</td>
<td>21 (76.9%)</td>
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<td>0</td>
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<td>2</td>
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<tr>
<td>Train First &amp; Two-Step</td>
<td>13</td>
<td>12 (92.3%)</td>
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<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Two-Step</td>
<td>69</td>
<td>48 (76.2%)</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>145</td>
<td>97</td>
<td>23</td>
<td>8</td>
<td>14</td>
<td>3</td>
</tr>
</tbody>
</table>

Step Two Goal Attainment

Step Two had an enrollment of 71 participants in training programs. Excluding missing values and 11 participants whose attainment was still pending, 58 participants attained or did not attain their goal. Of these 58 participants, a majority were enrolled in Two-Step training (29 participants, or 49.3 percent), and the majority attained their goal (35 participants, or 60.3 percent).

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\(^{24}\) Percentages were calculated after removing from the denominator those whose attainment was pending.

\(^{125}\) Comparisons of proportions reveal that there was a significant difference in age group where participants who are between 18 and 24 old and between 25 and 35 years old were more likely to attain their Step One goal (83.9 percent and 90.9 percent, respectively) than those who are 36 and older (63.4 percent) (Chi-square(2)=10.31, p=.006).

\(^{126}\) See Footnote 119.
Table 12: Step Two Goal Attainment

<table>
<thead>
<tr>
<th>Step Two Goal</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attained</td>
<td>35</td>
<td>49.3</td>
</tr>
<tr>
<td>Cancelled – entered unsubsidized employment</td>
<td>3</td>
<td>4.2</td>
</tr>
<tr>
<td>Set - attainment pending</td>
<td>11</td>
<td>15.5</td>
</tr>
<tr>
<td>Set - cancelled by employer</td>
<td>8</td>
<td>11.3</td>
</tr>
<tr>
<td>Set - cancelled by participant</td>
<td>8</td>
<td>11.3</td>
</tr>
<tr>
<td>Set - not attained</td>
<td>4</td>
<td>5.6</td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>97.2</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 13: Step Two Goal Attainment by Training Type

Table 13 compares participants who attained Step Two goals to those who did not based on the categorical variables of age, race, gender, education, and training type. Comparisons of proportions revealed no significant differences in age, race, gender, education, or training type between those who attained their Step Two goal. Across the different groups, goal attainment varied from a low of 40 percent, for non-white participants, to 67 percent, for 25-35 year-olds, but sample sizes were not large enough to make significant inferences, particularly for non-white participants.
### Table 13: Step Two Goal Attainment by Subgroups

<table>
<thead>
<tr>
<th>Subgroups</th>
<th>Total enrollment</th>
<th>Goal attained(^{127})</th>
<th>Cancelled - Entered Unsubsidized Employment</th>
<th>Set - attainment pending</th>
<th>Set - cancelled by employer</th>
<th>Set - cancelled by participant</th>
<th>Set - not attained</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>15</td>
<td>7 (53.8%)</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>25-35</td>
<td>26</td>
<td>14 (66.7%)</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>36-75</td>
<td>28</td>
<td>14 (58.3%)</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-White</td>
<td>7</td>
<td>2 (40.0%)</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>White</td>
<td>55</td>
<td>29 (60.4%)</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>21</td>
<td>11 (55.0%)</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Male</td>
<td>48</td>
<td>24 (62.2%)</td>
<td>0</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No College</td>
<td>29</td>
<td>14 (63.6%)</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Some College</td>
<td>20</td>
<td>10 (58.8%)</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>College Degree</td>
<td>20</td>
<td>11 (57.9%)</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Training Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train First &amp; Two-Step</td>
<td>13</td>
<td>6 (50.0%)</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Two-Step</td>
<td>56</td>
<td>29 (63.3%)</td>
<td>0</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>69</strong></td>
<td><strong>35</strong></td>
<td><strong>3</strong></td>
<td><strong>11</strong></td>
<td><strong>8</strong></td>
<td><strong>8</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

\(^{127}\) Percentages were calculated out of the total who attained their goal or not (removing those whose attainment was pending).
Wages

Research Question #2: Is there significant improvement in participants’ wages? 

Of 147 total participants, wages were listed for 129 participants pre-program, for 80 participants at Step One, for 29 participants at Step Two, and for 49 participants post-program.

Means, medians, and standard deviation of wages were calculated for each training type: Train First, Two-Step, TF&TS, and ITA at each of the four time points (1 = Prior to program employment; 2 = Step One; 3 = Step Two; and 4 = Post-program employment). Table 14 shows participants’ average wage at each time point for each training type. Because wages are right-skewed with some participants showing much higher wages than others, medians are included along with the mean as an additional measure of central tendency.

The median wage per hour for participants in Steps Up to STEM increased from $11.75 prior to program, to $12.80 at Step One, $14.00 at Step Two, and $15.00 after the program.

Wages generally increased from before training to after training in each group, except for ITA where data were limited for wages during and after training. Two-Step participants started the highest and ended the highest, on average, increasing from a median of $12.50 to $16.85/hour. TF&TS participants started lowest and increased the most, from $10.23 to $15.00/hour. Wages for Train First participants increased comparatively slightly, from a median $11.60 to $12.08/hour.

---

128 Full Research Question #2 includes: Is there significant improvement in participants’ wages from before they entered the program to after their time in the program, and which types or groups of people show the greatest gains?

129 It is important to consider sample size for each group, as identified within Research Question #1 findings and in the tables that follow. Two-Step participants were the most numerous across all four points in time, followed second by Train First participants. Sample sizes were quite small for wage data during training and after the program for participants in ITA, Train First, and TF&TS.
### Wage Changes

#### Table 14: Average Hourly Wages for Participants in each Training Type at each Time point

<table>
<thead>
<tr>
<th>Training Type</th>
<th>Time</th>
<th>Count</th>
<th>Median</th>
<th>Mean(^{130})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualized Training Account</td>
<td>Before the Training</td>
<td>33</td>
<td>11.75</td>
<td>12.26</td>
</tr>
<tr>
<td></td>
<td>At Step One</td>
<td>6</td>
<td>11.97</td>
<td>11.74</td>
</tr>
<tr>
<td></td>
<td>At Step Two</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>After the Training</td>
<td>1</td>
<td>-(^{131})</td>
<td>-(^{*})</td>
</tr>
<tr>
<td>Train First</td>
<td>Before the Training</td>
<td>23</td>
<td>11.60</td>
<td>12.31</td>
</tr>
<tr>
<td></td>
<td>At Step One</td>
<td>5</td>
<td>12.15</td>
<td>13.64</td>
</tr>
<tr>
<td></td>
<td>At Step Two</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>After the Training</td>
<td>10</td>
<td>12.08</td>
<td>15.32</td>
</tr>
<tr>
<td>Train First &amp; Two-Step</td>
<td>Before the Training</td>
<td>10</td>
<td>10.23</td>
<td>10.09</td>
</tr>
<tr>
<td></td>
<td>At Step One</td>
<td>7</td>
<td>11.00</td>
<td>12.16</td>
</tr>
<tr>
<td></td>
<td>At Step Two</td>
<td>6</td>
<td>13.50</td>
<td>13.84</td>
</tr>
<tr>
<td></td>
<td>After the Training</td>
<td>7</td>
<td>15.00</td>
<td>15.44</td>
</tr>
<tr>
<td>Two-Step</td>
<td>Before the Training</td>
<td>63</td>
<td>12.50</td>
<td>14.59</td>
</tr>
<tr>
<td></td>
<td>At Step One</td>
<td>62</td>
<td>13.75</td>
<td>14.60</td>
</tr>
<tr>
<td></td>
<td>At Step Two</td>
<td>23</td>
<td>15.00</td>
<td>15.12</td>
</tr>
<tr>
<td></td>
<td>After the Training</td>
<td>31</td>
<td>16.85</td>
<td>17.32</td>
</tr>
<tr>
<td>Total</td>
<td>Before the Training</td>
<td>129</td>
<td>11.75</td>
<td>13.24</td>
</tr>
<tr>
<td></td>
<td>At Step One</td>
<td>80</td>
<td>12.80</td>
<td>14.11</td>
</tr>
<tr>
<td></td>
<td>At Step Two</td>
<td>29</td>
<td>14.00</td>
<td>14.86</td>
</tr>
<tr>
<td></td>
<td>After the Training</td>
<td>49</td>
<td>15.00</td>
<td>16.53</td>
</tr>
</tbody>
</table>

An overall increase in wages over the four time points was statistically significant based on Linear Mixed Models with repeated measures across participants.\(^{132}\) Data for wages were log-transformed (base 10) to satisfy assumptions of Normality. After accounting for age and repeated measures, the model estimates the average person to earn $2.55/hour more after Steps Up to STEM training, averaging across the four training methods. Participants in the TF&TS model showed the highest promise for wage change (an estimated increase of $4.43/hour).

Figure 14 shows model-based average hourly wage changes for participants in different training programs prior to program, at Step One, at Step Two, and after the program. While the participants in all training programs experienced an average wage increase measured before and after the program, the increase ranged from $1.06/hour (for participants in ITA) to $4.43/hour (for participants in TF&TS). Participants in TF&TS programs started with the lowest average hourly wages of $10.03/hour, while Two-Step participants started with the highest average hourly wage of $13.42/hour.

\(^{130}\) The arithmetic mean is the same as the average. The term average was used within the report, with the exception of Median-Mean comparison tables.

\(^{131}\) Data points marked with * indicate that data was suppressed due to sample size

\(^{132}\) \(F(3,155.07)=8.71, p<.001\)
Wage Changes

Figure 14: Estimated Average Wage by Training Type, over Time\textsuperscript{133}

Averaging across all four time points and age groups, participants in the Two-Step program had a higher estimated wage per hour ($14.36) compared to participants in the other three paths (ITA $12.59, Train First $12.93, and TF&TS $12.21).

This finding is of interest because, as noted in the Implementation Evaluation section earlier in the report, WIF-funded staff and leadership reported the Two-Step model as the most difficult to implement compared with ITA, Train First, and TF&TS. The reason for higher Two-Step wages is unknown, but, based on the implementation analysis, the evaluators speculate it could be a combination of factors. First, the pre-program wages of Two-Step participants were higher than other groups. Also, Two-Step participants, as a group, may have started the program more skilled – and thus their labor was worth more to an employer – than ITA, Train First, or TF&TS participants. It could be that an individual who was suitable for the Train First model would not have found an employer “fit” in the Two-Step model and thus could not have benefitted from the higher wages observed in the Two-Step model.

Alternatively, the jobs suitable for Two-Step training – that is, those jobs that employers identified could be aligned with a career pathway – may have paid more anyway, or they may have been offered by employers willing to invest more, via salary and training, in their workforce. Staff observed hesitation on the part of some employers to participate in the Two-Step model due to the level of commitment required, even when the same employer would actively participate in the sector-based Train First model or the ITA model.

There was insufficient data to support these claims, however; further study would be needed to determine if there is something categorically different about Two-Step-participating employers, or the occupations into which Two-Step participants were placed, that contributed to program outcomes.

\textsuperscript{133} Wages were estimated on the log10 scale in the model and back-transformed to original scale here (10\textsuperscript{x}).
Table 15: Estimated Average Wage by Training Type

<table>
<thead>
<tr>
<th>Training Type</th>
<th>Average</th>
<th>95% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualized Training</td>
<td>12.59</td>
<td>11.37</td>
<td>13.94</td>
<td></td>
</tr>
<tr>
<td>Account</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train First</td>
<td>12.93</td>
<td>11.41</td>
<td>14.66</td>
<td></td>
</tr>
<tr>
<td>Train First &amp; Two-Step</td>
<td>12.21</td>
<td>10.59</td>
<td>14.07</td>
<td></td>
</tr>
<tr>
<td>Two-Step</td>
<td>14.36</td>
<td>13.54</td>
<td>15.24</td>
<td></td>
</tr>
</tbody>
</table>

Figure 15: Average Wage with Confidence Interval

The figure above represents the average wages (green dot) for each of the training models. In addition, the gray bands (95 percent confidence intervals) represent where a participant’s wage might be, with 95 percent certainty (e.g. when a new participant joins the Two-Step training, the individual’s wage will be within the range of $13.54/hour to $15.24/hour with 95 percent certainty).

---

134 Wages were estimated on the log10 scale in the model and back-transformed to original scale here ($10^9$).
Job Retention

Research Question #3: Is there significant improvement in job retention?  

Job retention was calculated as the number of days from employment start date to employment end date, where available. For post-program employment with no available end date, quarterly data were used to indicate a minimum number of days worked, with a “censored” observation. See Appendix B for recoding under Job Retention within Data Cleaning.

Understanding limitations is particularly important for findings of job retention, as both quality of retention data (e.g. quarterly reporting Y/N versus actual employment termination date) and availability of retention data (e.g. data lag-time for retention reporting) affected the analysis. As discussed within Research Question #1 findings, some participants were still in the process of completing their training as of the time of this report, and those who completed their training program around the time of this report did not yet have job retention data available.

The data for both a start date and end date for employment prior to enrollment in Steps Up to STEM were available for 111 participants, and only six participants had data for both start and end dates following the program. For 35 participants with a start date for post-program employment but no specific end date, indicators for quarterly employment were available. These quarterly employment data were used to create “censored” end dates so these 35 participants could be included in the analysis.

A total of 147 total participants had the potential for 294 total observations of job retention times (147 at pre- and 147 at post-); however, with missing data only 152 observations were available for analysis (111 at pre- and 41 at post-).

Table 16: Data Availability for Job Retention Pre & Post Program

<table>
<thead>
<tr>
<th></th>
<th>N of Events</th>
<th>Censored</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- Observations</td>
<td>111</td>
<td>0</td>
</tr>
<tr>
<td>Post-</td>
<td>41</td>
<td>6</td>
</tr>
<tr>
<td>Overall</td>
<td>152</td>
<td>113</td>
</tr>
</tbody>
</table>

Average job retention for participants at pre- and post-program are shown in the table and graph below. See the Appendix B for details of the Survival Analysis with censored observations. Because the data for days of job retention were skewed, the median was a more stable measure of central tendency. The average (median) days of job retention was 487 days prior to program enrollment (one year and four months) and estimated to be 395 days after the program (one year and one month).

---

135 Full Research Question #3 includes: Is there significant improvement in job retention from before participants entered the program to after their time in the program, and which types or groups of people show the greatest gains?
Table 17: Estimated Job Retention in Days

<table>
<thead>
<tr>
<th></th>
<th>Mean Estimate (number of days)</th>
<th>Std. Error</th>
<th>95% Confidence Interval</th>
<th>Median Estimate (number of days)</th>
<th>Std. Error</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
</tr>
<tr>
<td>Pre</td>
<td>927.9</td>
<td>123.4</td>
<td>686.2</td>
<td>1169.7</td>
<td>487</td>
<td>71.8</td>
</tr>
<tr>
<td>Post</td>
<td>293.2</td>
<td>45.0</td>
<td>205.1</td>
<td>381.4</td>
<td>395</td>
<td>179.8</td>
</tr>
<tr>
<td>Overall</td>
<td>911.4</td>
<td>119.5</td>
<td>677.1</td>
<td>1145.6</td>
<td>486</td>
<td>49.5</td>
</tr>
</tbody>
</table>

“Survival functions” for job retention are plotted below, with a thick blue line for the participants’ Job Retention prior to *Steps Up to STEM* participation, and a separate dashed green path for the participants’ job retention post program. The plots shows the proportion of participants (Y-axis) who kept their job (i.e., “survived”) for at least X days of retention. For example, about 80 percent of the participants (Y) kept their jobs for at least 100 days (X) at pre and also at post.

The evaluators observed that the two survival functions were fairly similar for participants at pre- and post-time points, at least up to about 500 days (at which point later data were limited for post-program retention).

---

136 Estimation was limited to the largest survival time if it was censored.
Based on data available, there was no evidence that the training significantly improved job retention.

137 Cumulative Survival (Y-axis) indicates the proportion of participants who remained at their job at each time point for days of Retention (X-axis). The blue solid line represents the participants’ pre training, and the green dashed line is for participants’ post training. For both curves, about 80 percent of participants retained their jobs for at least 100 days, and 50 percent of participants retained their jobs for about 400 to 500 days.
Cost Evaluation

Design Summary

The Cost Evaluation was designed to provide a basic understanding of the cost per Steps Up to STEM participant through various stages of participation, and address the following research questions:

1. What is the overall cost of Steps Up to STEM per output?
2. How did the cost per output vary per consortium member?
3. How did the cost per output vary over time?

To this end, a cost allocation analysis was conducted to provide an estimated range of the funding required to implement or replicate the complete or sub-groups of the model—focusing on figures from the initial assessment and Two-Step/One-Step trainings. To provide a detailed study of how cost per participant varied through different stages of the interventions, four outputs were selected to represent the varying engagement of participants in Steps Up to STEM, including:

- Total number of individuals who participated in Steps Up to STEM;
- Total number of participants who participated in a One-Step or Two-Step contract (regardless of goal attainment);
- Total number of participants who participated in a Two-Step contract (regardless of goal attainment); and
- Total number of participants who successfully completed Step Two of the Two-Step contract.

The evaluators reviewed the cost per participant through the four stages of Steps Up to STEM engagement and compared it over time specifically by calendar year and by the four consortium members and their respective workforce areas.

The Cost Evaluation examined and compared the four outputs to the inputs of the total cost of the intervention. The cost to the system was represented by the combined expenses of the consortium members, community partners, and participating employers. To allow for a more refined examination of the cost per participant (in regards to the One- and Two-Step contract participants) an additional sub-total, the total training cost, was examined. The total training cost included the funds the consortium members and employers invested in each participant for their training expenses. The evaluators worked with the GCRWIBs Leadership and fiscal staff to assign quantitative figures to each input. These inputs were identified based on a collaborative effort of the GCRWIBs Leadership and the evaluation team to develop a recipe of the components that created and implemented Steps Up to STEM. The system cost went beyond WIF dollars expended on programing and included non-WIF funding and leveraged

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138 Appendix C describes the relationship between the Cost Evaluation research questions, logic model, and data sources.
139 Total Exposed to STEM. This includes individuals who participated in Two-Step, Train First, TS&TF, and ITA.
140 The original stage “Total number participants who participated up to, but not including, the Two-Step Contract” was modified. It became apparent that the implementation of Steps Up to STEM that tracking the number of participants completing this stage was problematic. The nature of the process from exposure to STEM to the engagement in a Two-Step Contract varied widely and the addition of a One-Step contract then required a modification to the original stage for the Cost Evaluation.
141 Defined as participants who participated in Two-Step or TF&T.
142 Defined as participants who completed the Two-Step or TF&T training.
resources. It was necessary to estimate dollar figures for some of the inputs (e.g. employer and partner time and travel) to ascertain the most accurate cost to the workforce system based on the complete recipe and availability of data. For the purpose of this study, all monetary data was adjusted for inflation to equal 2012 levels. To gather output data, the evaluators relied on the GCRWIBs Leadership to supply NYSDOL OSOS Data on participants who engaged in Steps Up to STEM throughout the four stages.  

Steps Up to STEM, as a Project Type A, was unable to use other interventions as a comparison for the cost of these expected outputs, and thus prevented a full cost-effectiveness analysis. However, a study of the model over time and by workforce area did enable the evaluators to compare Steps Up to STEM to itself, to provide a secondary cost-effectives analysis.  The Cost Evaluation as a whole established a baseline for future evaluations to execute a more detailed cost study, such as a cost-benefit analysis, where a total cost of the program could be compared to the gain or loss of its outcomes.

\[143 \text{ Appendix C provides a detailed methodology of data sources and estimated cost associated with Steps Up to STEM.} \]

\[144 \text{ A full descriptions of the limitations to the Cost Evaluation can be found in Appendix C.} \]
Findings Overview

The Cost Evaluation findings are separated into the three research questions below. The evaluation team analyzed the data and drew conclusions to provide a cost allocation analysis of the intervention and establish a comparison group for future cost studies of similar models. The analysis reviewed the cost per participant through the four stages of *Steps Up to STEM* engagement and compared it over time by calendar year (i.e., 2012, 2013, 2014, and 2015) and by the four consortium members and their respective workforce areas. Given the limitations of the study, as discussed in the *Cost Evaluation* section, these findings apply to the GCRWIBs and can only be used as a general guide for other workforce areas, based on similarities in demographics, standard of living, Career Center and WIB staff composition and experience, and cost accounting capabilities.

Below are highlights related to the analysis:

**High-Level Data**

Through *Steps Up to STEM*, the GCRWIBs exposed 14,436 individuals to STEM, trained 147 participants in STEM related fields, and had 35 Two-Step contract completers for a total cost of $1,986,367. This total cost consisted of WIF and non-WIF funding allocated to the consortium members and employer and partner contributions to *Steps Up to STEM*.

**Data Variation**

One key theme across all three research questions was the variation of cost estimates. These variations were caused by multiple factors including: number of participants per area; cost estimations for partner and employer contribution; types of training (e.g., OJT and ITAs); area grant responsibilities and staffing levels; and other factors described in the sections that follow.

Another theme was the variation in participant counts. As discussed in the *Implementation Evaluation* section, the workforce areas contained different strengths as it related to participant counts for the total exposed to STEM, career plans developed (i.e. Total number participants who participated in a One-Step or Two-Step contract regardless of goal attainment), and Two-Step contracts developed. The variations in workforce area output appear most strongly in findings for Research Question #2, but cumulatively impact the other two research question findings.

**Employer Engagement**

The analysis of the progression of *Steps Up to STEM* over time revealed the increased engagement of employers by the increase in the cost of the program. Employers invested time and money into the project typically though OJT contract development and implementation. The cost increased over the first three years and was on pace to reach its highest total in 2015. This total signified a corresponding increase in employer engagement and participation by the conclusion of the analysis period.

**Cost Ranges**

In addition to examining the variation within the analysis, the difference between total training cost and total sum cost is an important distinction to understand.\textsuperscript{145} Total Training Cost includes WIF-funding, non-WIF funding, and Employer and Partner Cost. Total Sum Cost looks purely at Employer and Partner Cost. Neither of these cost totals capture the precise cost of the program, once data was broken out by training stages; thus ranges will be provided within the analysis.

\textsuperscript{145} Data variable definitions provided in the *Cost Evaluation* section and in Appendix C.
Overall Cost

Cost Evaluation

Overall Cost of *Steps Up to STEM* per Output

Research Question #1: What is the overall cost of *Steps Up to STEM* per output?

The total overall cost of *Steps Up to STEM* was calculated by combining all available data and creating a total sum for each variable. The total cost for *Steps Up to STEM* over the life of the program was $1,986,367 and included WIF funding, non-WIF funding (i.e., WIA/WIOA, National Emergency Grant, etc.), and partner and employer cost.\(^{146}\) This cost reflects both estimated and actual dollars spent to implement *Steps Up to STEM* whereby 14,436 individuals where exposed to STEM from 2012-2015.

The program resulted in the training of 147 participants at a cost of $720,959, of which, $308,949 was leveraged from employers and partners. The majority of the leveraged funds came as a result of 73 OJT contracts. The employer and partner share totaled $341,611, which included $308,948 in employer-paid training cost and $32,663 of employer and partner payroll, travel, and other expenses associated with training contact development.\(^{147}\) The total cost of *Steps Up to STEM* assumed there was already a workforce system in place, and, while overhead (rent, utilities, fees, etc.) was calculated as part of the Two-Step contract negotiation, it was not factored in to account for the total sum of participants exposed to STEM or those with a One-Step contract. To that end, the cost of a physical and virtual location, workforce center staff, data and fiscal system development and maintenance, and other infrastructure that was already in place did not count as contributing to the overall cost.

*Table 18: Cost Evaluation Question #1 – Variables*

<table>
<thead>
<tr>
<th>Variables</th>
<th>GCRWIBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Consortium Member Costs</td>
<td>$1,644,756</td>
</tr>
<tr>
<td>Total Employer and Partner Costs</td>
<td>$341,611</td>
</tr>
<tr>
<td>Total <em>Steps Up to STEM</em> Cost</td>
<td>$1,986,367</td>
</tr>
<tr>
<td>Total Training Cost for Consortium Members</td>
<td>$412,011</td>
</tr>
<tr>
<td>Total Training Cost for Employers and Partners</td>
<td>$308,949</td>
</tr>
<tr>
<td>Total Training Cost for <em>Steps Up to STEM</em></td>
<td>$720,959</td>
</tr>
<tr>
<td>Total number of individuals who participated within the <em>Steps Up to STEM</em> Model</td>
<td>14,436</td>
</tr>
<tr>
<td>Total number of participants who participated in a One-Step or Two-Step contract (regardless of goal attainment)</td>
<td>147</td>
</tr>
<tr>
<td>Total number of participants who participated in a Two-Step contract (regardless of goal attainment)</td>
<td>83</td>
</tr>
<tr>
<td>Total number of participants who successfully completed Step Two of the Two-Step contract</td>
<td>35</td>
</tr>
</tbody>
</table>

\(^{146}\) Total cost does not include any cost associated with evaluation activities.

\(^{147}\) Of the four continuum members, only two provided estimated cost for leveraged funds from employers and partners. Those two regions made up 40% (32 of 80) of the Two-Step contracts meaning employers in those regions would have incurred some cost for *Steps Up to STEM*, which would have increased the total cost of the program. If the $32,663 represents 60% of employer leverage share, adding the corresponding 40% would increase the total employer and partner share to $54,438 which in turn would increase the total cost of *Steps Up to STEM* to $2,030,194.33.
Overall Cost

Cost Evaluation

Table 19: Cost Evaluation Question #1 – Findings

<table>
<thead>
<tr>
<th>Findings for GCRWIBs</th>
<th>Total Training Cost</th>
<th>Total Sum Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per participant exposed to STEM</td>
<td>N/A</td>
<td>$138</td>
</tr>
<tr>
<td>Cost per participant who participated in a One-Step, Train First, TF&amp;TS, or Two-Step contract</td>
<td>$4,904</td>
<td>$13,513</td>
</tr>
<tr>
<td>Cost per participants who participated in a Two-Step contract</td>
<td>$8,686</td>
<td>$23,932</td>
</tr>
<tr>
<td>Cost per participants who successfully completed Step Two of the Two-Step contract</td>
<td>$20,599</td>
<td>$56,753</td>
</tr>
</tbody>
</table>

There was no training cost directly associated with the “exposed to STEM participants,” but many of the training participants were exposed to STEM and are counted in that initial stage. The cost to expose one participant to STEM was $138 as compared with the $13,513 to engage a participant in ITA, Train First, TF&TS, or Two-Step contract. The wide difference was a reflection of the two-fold approach of Steps Up to STEM: both STEM exposure and STEM training. All costs were included in the total cost, where some 14,000 were exposed and 147 entered training. This difference in participant volume between STEM exposure and STEM training is important to consider when reviewing the Cost Evaluation data, as these outputs drive many cost trends. This is especially true with the Total Sum Cost calculations, as the changes between the Total Sum Cost figures are driven solely by changes in the outputs (e.g. cost equation’s denominator).

Similarly, the range between Total Training and Total Sum Cost was an important element within the analysis. For example, cost of training for each Two-Step completer\(^{148}\) was $20,599 (e.g. tuition, fees, books, OJT reimbursement, and employer’s share of wages). This cost does not consider variables including WIF-funded staff time that was used to expose the completer to STEM, provide any needed assessments, and develop a Two-Step or TF&TS contract. Thus this figure under-represents the total cost associated with a successful Two-Step completer. Conversely, the Total Sum Cost for a Two-Step completer was $56,753. This difference of $36,154 includes costs for the individual completer associated with WIF-funded staff time, previously missing from the total cost of training. However, the Total Sum Cost also includes WIF-funded staff time spent on any Steps Up to STEM-related activity not necessarily associated with the Two-Step completer (e.g. STEM workshops or professional development cost for consortium members).

This spread in Total Training verses Total Sum Costs is represented in Figure 17.

\(^{148}\) A Two-Step completer was someone who has participated and finished either Two-Step or TF&TS training.
Overall Cost

Cost Evaluation

Figure 17: Cost Comparison

GCRWIBs Total Cost Ranges from **Training Cost** to **Sum Cost**

Exposed to STEM: $138

Two-Step, Train First, TP&TS, or ITA Participant: $4.9K - $13K

Two-Step or TP&TS Participant: $8.7K - $24K

Two-Step or TP&TS Completer: $20K - $79K

Cost Range: $0 - $60,000
Per-Output Cost Variance by Consortium Member

Research Question #2: How did the cost per output vary per consortium member?

A review of cost per output by consortium member provides a deeper understanding of the overall cost for Steps Up to STEM. The cost varied by workforce area, which provided four examples for review. Potential implementers of similar programs can utilize these four implementation examples to display the potential cost per participant (in all four stages) on a regional or workforce area level as compared with a total cost of Steps Up to STEM. In addition, Research Question #2 includes additional refinement in the cost allocation analysis, because individual consortium member reporting varied within the total figures, as described in question one. Table 20 provides a review of the consortium member cost as compared with the median of those same costs. A percent close to the median, or 100 percent, indicates the members cost corresponded with the other members whereas a deviation from 100 percent shows degree of variance. The descriptions below provide interpretations of this variance across consortium members.

Overall, the median total cost for Steps Up to STEM per consortium member was $554,880 with a median of 3,529 individuals exposed to STEM. The total cost variance was relatively consistent across the four members with three of the four stages varying by 13 percent. While the overall cost was relatively consistent, the variance in consortium member cost and employer cost varied widely. Some of this variance was a reflection of the additional costs associated with the FMS WDB being the fiscal agent and grant recipient, and receiving grant-funding for grant oversight, fiscal management, and reporting. Other variance was from the categories of data reported or not reported from each consortium member (e.g. two members did not report employer and partner cost outside the cost of training). The cost to consortium members reflected staff cost (e.g. payroll, fringe, etc.) in each workforce area.
### Table 20: Percent to Median with highest (gray, diagonal shading) and lowest (green, solid shading)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Median</th>
<th>CR</th>
<th>CG</th>
<th>FMS</th>
<th>SWW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Costs for Consortium Member</td>
<td>$461,235</td>
<td>47%</td>
<td>95%</td>
<td>110%</td>
<td>105%</td>
</tr>
<tr>
<td>Total Employer and Partner Costs for Workforce Area</td>
<td>$60,469</td>
<td>63%</td>
<td>302%</td>
<td>90%</td>
<td>110%</td>
</tr>
<tr>
<td>Total Cost for Steps Up to STEM for Workforce Area</td>
<td>$554,880</td>
<td>46%</td>
<td>112%</td>
<td>101%</td>
<td>99%</td>
</tr>
<tr>
<td>Total Training Cost for Consortium Member</td>
<td>$88,203</td>
<td>45%</td>
<td>223%</td>
<td>76%</td>
<td>124%</td>
</tr>
<tr>
<td>Total Employer and Partner Training Costs for Workforce Area</td>
<td>$48,917</td>
<td>78%</td>
<td>353%</td>
<td>111%</td>
<td>89%</td>
</tr>
<tr>
<td>Total Training Cost for Steps Up to STEM for Workforce Area</td>
<td>$137,120</td>
<td>57%</td>
<td>269%</td>
<td>89%</td>
<td>111%</td>
</tr>
<tr>
<td>Total Number of individuals who participated within the Steps Up to STEM Model for Workforce Area</td>
<td>3529</td>
<td>150%</td>
<td>47%</td>
<td>86%</td>
<td>114%</td>
</tr>
<tr>
<td>Total number participants who participated in a One-Step or Two-Step contract (regardless of goal attainment) for Workforce Area</td>
<td>36</td>
<td>83%</td>
<td>133%</td>
<td>75%</td>
<td>117%</td>
</tr>
<tr>
<td>Total number of participants who participated in a Two-Step contract (regardless of goal attainment) for Workforce Area</td>
<td>19</td>
<td>42%</td>
<td>195%</td>
<td>132%</td>
<td>68%</td>
</tr>
<tr>
<td>Total number of participants who successfully completed Step Two of the Two-Step contract for Workforce Area</td>
<td>7</td>
<td>77%</td>
<td>277%</td>
<td>62%</td>
<td>123%</td>
</tr>
</tbody>
</table>

The difference in training cost was due to the variance in the number of individuals in training, meaning the more training participants, the higher the cost for the member. The difference in the number of individuals included in the four stages varied substantially across the four workforce areas. In general, workforce areas tended to be more successful with participant training where: GCRWIBs Leadership had greater control (e.g. non-profit structure) and/or Center leadership were brought into the grant early; GCRWIBs Centers had existing skilled WIA/WIOA-funded BSRs, and were aided when there were existing industry collaborations or strong company needs; and GCRWIBs Centers already offered OJTs. Additional details for each workforce area and for the GCRWIBs region is available in the Implementation Evaluation section.

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149 FMS WDB was the grant WIF grant recipient and fiscal agent, which added total consortium member cost to their total, which was not included in the other three members total consortium member cost. These additional cost included staff time for grant oversight, fiscal management and reporting, and equipment.

150 Prior to February, 2014 the OSOS system was not designed to track the total number of individuals who participated within the Steps Up to STEM model.
Table 21: Cost Evaluation Question #2 – Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>CR</th>
<th>CG</th>
<th>FMS</th>
<th>SWW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Costs for Consortium Member</td>
<td>$216,390</td>
<td>$439,543</td>
<td>$505,896</td>
<td>$482,927</td>
</tr>
<tr>
<td>Total Employer and Partner Costs for Workforce Area</td>
<td>$38,317</td>
<td>$182,357</td>
<td>$54,219</td>
<td>$66,718</td>
</tr>
<tr>
<td>Total Cost for Steps Up to STEM for Workforce Area</td>
<td>$254,706</td>
<td>$621,901</td>
<td>$560,115</td>
<td>$549,645</td>
</tr>
<tr>
<td>Total Training Cost for Consortium Member</td>
<td>$39,257</td>
<td>$196,347</td>
<td>$67,166</td>
<td>$109,240</td>
</tr>
<tr>
<td>Total Employer and Partner Training Costs for Workforce Area</td>
<td>$38,317</td>
<td>$172,799</td>
<td>$54,219</td>
<td>$43,614</td>
</tr>
<tr>
<td>Total Training Cost for Steps Up to STEM for Workforce Area</td>
<td>$77,574</td>
<td>$369,146</td>
<td>$121,385</td>
<td>$152,854</td>
</tr>
<tr>
<td>Total Number of individuals who participated within the Steps Up to STEM Model for Workforce Area</td>
<td>5303</td>
<td>1652</td>
<td>3022</td>
<td>4035</td>
</tr>
<tr>
<td>Total number participants who participated in a One-Step or Two-Step contract (regardless of goal attainment) for Workforce Area</td>
<td>30</td>
<td>48</td>
<td>27</td>
<td>42</td>
</tr>
<tr>
<td>Total number of participants who participated in a Two-Step contract (regardless of goal attainment) for Workforce Area</td>
<td>8</td>
<td>37</td>
<td>25</td>
<td>13</td>
</tr>
<tr>
<td>Total number of participants who successfully completed Step Two of the Two-Step contract for Workforce Area</td>
<td>5</td>
<td>18</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

Capital Region (CR) WIB Findings

The CR WIB had the highest number of participants exposed to STEM, which resulted in a cost of $48 per participant exposed to STEM – the least amount of the four members. As the CR WIB is located in Albany, the capital of New York State, this higher volume of job seeker traffic was anticipated.\(^{151}\)

The total cost for Steps Up to STEM for the CR WIB was $254,706 or 13 percent of the GCRWIBs’ total cost, and the CR WIB accounted for 14 percent of the total number of Two-Step contract completers. The lower number of completers resulted in an inflated cost per completer at $50,951. The CR WIB employer and partner cost was $38,317, which did not include any estimates of employer or partner leveraged cost. The CR WIB’s cost for any Two-Step or ITA\(^{154}\) participant was $2,586, the lowest among the four workforce areas. This was due in part to the lower number of training participants, but equally due to the lower cost of training per participant because of the volume of ITA as a training step.

\(^{151}\) The total number of Exposed to STEM was 14,436; however, when that number was divided by region, an anomaly occurred. Since some participants were exposed to STEM in more than one workforce area, it was decided to remove them from the individual consortium member count. The total number of multi-member individuals exposed to STEM was 424.

\(^{152}\) The evaluation data was collected through June 2015, however, participants continued to engage in training activities including Two-Step contracts. It is reasonable to conclude that as time continues there will be additional completers, which would in turn decrease the total cost per participant. The total cost of the training was connected to the start date and is discussed in the Cost Study Limitations section.

\(^{153}\) Albany, Schenectady, and Rensselaer counties have a population of 625,173 in 2015, according to demographic data from Economic Modeling Specialists Intl.

\(^{154}\) CR WIB only had Two-Step or ITA participants, there were no Train First or TF&TS participants.
Of the 30 training participants, 73 percent (22) were ITAs, as compared to the next highest workforce area at 24 percent. These ITA trainings resulted in a lower expense, which was a cost incurred only by the workforce area, as compared to an OJT where the shared workforce area and employer costs created a higher total training cost. The significant difference in the cost per Two-Step or ITA participant was a direct result of the number of One-Step contracts (22 of 30 participants). The overall findings for the CR WIB was a higher cost per participant because of the type of training conducted and the total number of individuals trained.

Table 22: Cost Evaluation Findings – CR WIB

<table>
<thead>
<tr>
<th>Findings for CR WIB</th>
<th>Total Training Cost</th>
<th>Total Sum Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per participant exposed to STEM</td>
<td>N/A</td>
<td>$48</td>
</tr>
<tr>
<td>Cost per participant who participated in a One-Step or Two-Step contract</td>
<td>$2,586</td>
<td>$8,490</td>
</tr>
<tr>
<td>Cost per participants who participated in a Two-Step contract</td>
<td>$9,697</td>
<td>$31,838</td>
</tr>
<tr>
<td>Cost per participants who successfully completed Step Two of the Two-Step contract</td>
<td>$15,515</td>
<td>$50,941</td>
</tr>
</tbody>
</table>

Columbia-Greene (CG) WIB Findings

The cost per participant exposed to STEM for the CG WIB was $376. This was the highest among the four workforce areas as a result of smallest number of individuals exposed to STEM, a total of 1,652. As the CG WIB is located in the most rural workforce area for the consortium and has only one Career Center (instead of three), a smaller volume of job seeker traffic was in-line with location and population density. The CG WIB reported the lowest cost per Two-Step or TF&TS participant and completer, which correlates to the total number of participants in training: 48 participants (Train First, Two-Step, TF&TS, or ITA), 37 Two-Step or TF&TS participants, and 18 Two-Step or TF&TS completers, all of which were the highest among the four consortium members. The 37 Two-Step contracts resulted in a high number of OJTs that noted the highest total employer and partner cost at $172,799. This resulted in the CG WIB having the highest total cost for Steps Up to STEM at $621,901. The cost of $34,550 per Two-Step contract completer was $16,391 less than the next lowest region. The training cost of $7,691 per individuals in any type of training was comparable to the $9,976 cost per individual in a Two-Step contract because 79 percent of the total trainings were Two-Step contracts.

---

155 Columbia and Greene counties have a population of 109,757 in 2015, according to demographic data from Economic Modeling Specialists Intl.

156 For the remainder of this paragraph, Two-Step contracts include both Two-Step and TF&TS participants.
Table 23: Cost Evaluation Findings – CG WIB

<table>
<thead>
<tr>
<th>Findings for CG WIB</th>
<th>Total Training Cost</th>
<th>Total Sum Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per participant exposed to STEM</td>
<td>N/A</td>
<td>$376</td>
</tr>
<tr>
<td>Cost per participant who participated in a One-Step or Two-Step contract</td>
<td>$7,691</td>
<td>$12,956</td>
</tr>
<tr>
<td>Cost per participant who participated in a Two-Step contract</td>
<td>$9,977</td>
<td>$16,808</td>
</tr>
<tr>
<td>Cost per participants who successfully completed Step Two of the Two-Step contract</td>
<td>$20,508</td>
<td>$34,550</td>
</tr>
</tbody>
</table>

Fulton-Montgomery-Schoharie (FMS) WDB Findings

The cost per participant to be exposed to STEM for the FMS WDB was $185, or 115 percent of the median cost per participant exposed. The total cost of Steps Up to STEM for the FMS WDB was $560,115, due in part to their role as the grant recipient and fiscal agent, which increased administrative cost. FMS WDB accounted for 97 percent of WIF dollars spent on other cost (e.g. copying/printing, phone, postage, insurance, video conference equipment, and travel), which was used for the consortium as a whole and represented $57,367 or 10 percent of their total cost. This additional cost drove up the total cost for all four stages, which was reflected by the difference in total training cost per participant versus the total sum cost per participant in all four stages.

FMS WDB total training cost per Two-Step or ITA participant was 89 percent of the median, and the cost of $4,855 per Two-Step contract completer was the lowest among the workforce areas. This stemmed from 93 percent (25 of 27) of all the trainings being Two-Step contracts. Four of the 25 completed the second step of their Two-Step contract, which resulted in the highest cost per completer at $140,029. In addition, FMS WDB saw a considerable number of job seekers entering the Career Centers and receiving some form of STEM-related information or training, at 3,022 individuals. These higher figures are important to consider as, similar to CG WIB, the FMS WDB workforce area is comprised of a relatively small population.

---

157 FMS WDB only had Two-Step or ITA participants, there were no Train First or TF&TS participants.

158 The evaluation data was collected through June 2015, however, participants continued to engage in training activities including Two-Step contracts. It is reasonable to conclude that as time continues there will be additional completers, which would in turn decrease the total cost per participant. The total cost of the training was connected to the start date and is discussed in the Cost Study Limitations section.

159 Fulton, Montgomery, and Schoharie counties have a population of 135,073 in 2015, according to demographic data from Economic Modeling Specialists Intl.
Table 24: Cost Evaluation Findings – FMS WDB

<table>
<thead>
<tr>
<th>Findings for FMS WDB</th>
<th>Total Training Cost</th>
<th>Total Sum Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per participant exposed to STEM</td>
<td>N/A</td>
<td>$185</td>
</tr>
<tr>
<td>Cost per participant who participated in a One-Step or Two-Step contract</td>
<td>$4,496</td>
<td>$20,745</td>
</tr>
<tr>
<td>Cost per participants who participated in a Two-Step contract</td>
<td>$4,855</td>
<td>$22,405</td>
</tr>
<tr>
<td>Cost per participants who successfully completed Step Two of the Two-Step contract</td>
<td>$30,346</td>
<td>$140,029</td>
</tr>
</tbody>
</table>

Saratoga, Warren, Washington (SWW) WIB Findings

The SWW WIB cost to expose participants to STEM was $136 for each of the 4,035 individuals exposed. This was the second highest number of individuals exposed to STEM among the four workforce areas, in line with the area’s larger population. SWW WIB had 42 total training participants, of whom 10 were Two-Step contract participants. Of the 42 training participants 29 (69 percent) were One-Step (ITA) or Train First participants. This reduced the overall training cost for SWW WIB because there was only one actual phase of training. The emphasis on Train First and ITA resulted in the $42,280 cost per Two-Step or TF&TS participants the highest among the four workforce areas. However, with eight Two-Step and TF&TS completers, training costs of $19,107 per completer were the second lowest in the consortium. The number of Train First and ITA participants resulted in the disparity between the cost per all participants versus the cost of a Two-Step or TF&TS participant. The total cost for the area’s partners and employers was $66,718, and the SWW WIB reported $23,104 in employer and partner leveraged funds or 74 percent of all the GCRWIBs reported leveraged funds.

Table 25: Cost Evaluation Findings – SWW WIB

<table>
<thead>
<tr>
<th>Findings for SWW WIB</th>
<th>Total Training Cost</th>
<th>Total Sum Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per participant exposed to STEM</td>
<td>N/A</td>
<td>$136</td>
</tr>
<tr>
<td>Cost per participant who participated in a One-Step or Two-Step contract</td>
<td>$3,639</td>
<td>$13,087</td>
</tr>
<tr>
<td>Cost per participants who participated in a Two-Step contract</td>
<td>$11,758</td>
<td>$42,280</td>
</tr>
<tr>
<td>Add Cost per participants who successfully completed Step Two of the Two-Step contract</td>
<td>$19,107</td>
<td>$68,706</td>
</tr>
</tbody>
</table>

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160 Saratoga, Warren, and Washington counties have a population of 353,607 in 2015, according to demographic data from Economic Modeling Specialists Intl.

161 Of the 29 One-Step participants 19 were Train First and 10 were ITA. Many of these Train First participants intended to become Two-Step participants whereas the ITA were only intend to be One-Step. The Train First path allowed for additional flexibility for employers who could either continue a formalized trading (OJT) with the consortium member, or proceed with placement as many of the participants received employment without the second step.

162 Two-Step, Train First, TF&TS, or ITA.
To review the evolution of the cost of *Steps Up to STEM* over time, program years were divided by calendar year to accommodate for the adjustment of each figure for inflation. The presence of 2012 and 2015 as partial years, programmatically and for purposes of evaluation, created a limitation in the actual comparison (e.g. 6 months instead of 12 months); however, the analysis detailed the cost over time showing a rise, climax, and falling activity. With the implementation beginning in the later part of 2012, few participants were engaged in activities, and systematic tracking for exposure to STEM was not in place. For these reasons the findings in 2012 are not applicable for examination.

Participants were categorized based on the actual start date of the first step, even if participation occurred over multiple years. Since every individual had a start date, this was the most consistent manner to categorize the participants by year. The cost incurred by both the GCRWIBs and employers was directly linked to the participant and was assigned to the same year that the participant was counted. Therefore, a Two-Step contract that began in 2013 may have had training costs that transcended into 2014 or 2015 but for the purposes of this analysis, those training costs were all included in 2013. Provided these limitations, the analysis is a comparison of the actual cost (e.g. staff, overhead, travel) and obligated training cost (or total future cost), examining the resources by year.

Table 26: Cost Evaluation Question #3 – Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Consortium Member Costs</td>
<td>$169,876</td>
<td>$608,741</td>
<td>$567,222</td>
<td>$298,917</td>
</tr>
<tr>
<td>Total Employer and Partner Costs</td>
<td>$5,940</td>
<td>$78,918</td>
<td>$161,158</td>
<td>$95,596</td>
</tr>
<tr>
<td>Total <em>Steps Up to STEM</em> Cost</td>
<td>$175,816</td>
<td>$687,659</td>
<td>$728,380</td>
<td>$394,512</td>
</tr>
<tr>
<td>Total Training Cost for Consortium Members</td>
<td>$5,760</td>
<td>$136,684</td>
<td>$179,044</td>
<td>$90,523</td>
</tr>
<tr>
<td>Total Training Cost for Employers and Partners</td>
<td>$5,760</td>
<td>$60,667</td>
<td>$151,540</td>
<td>$90,981</td>
</tr>
<tr>
<td>Total Training Cost for <em>Steps Up to STEM</em></td>
<td>$11,520</td>
<td>$197,351</td>
<td>$330,584</td>
<td>$181,504</td>
</tr>
<tr>
<td>Total number of individuals who participated within the <em>Steps Up to STEM Model</em></td>
<td>0</td>
<td>0</td>
<td>9092</td>
<td>5344</td>
</tr>
<tr>
<td>Total number of participants who participated in a One-Step or Two-Step contract (regardless of goal attainment)</td>
<td>1</td>
<td>42</td>
<td>54</td>
<td>50</td>
</tr>
<tr>
<td>Total number of participants who participated in a Two-Step contract (regardless of goal attainment)</td>
<td>1</td>
<td>24</td>
<td>34</td>
<td>24</td>
</tr>
<tr>
<td>Total number of participants who successfully completed Step Two of the Two-Step contract</td>
<td>0</td>
<td>7</td>
<td>13</td>
<td>15</td>
</tr>
</tbody>
</table>

The highest total cost for *Steps Up to STEM* was in 2014, at $728,380, or 37 percent of the four year cost. The yearly totals for 2013 and 2014 were similar with 2015 being on pace for a comparable total. The number of participants in Train First, Two-Step, TF&TS, or ITA for 2015 and 2014 were 50 and 54 respectively, which in turn created similar findings for the total training cost per Two-Step or TF&TS.

163 Prior to February, 2014 the OSOS system was not designed to track the total number of individuals who participated within the *Steps Up to STEM Model*. 
contract participant at $9,723 and $7,563. This indicates that the GCRWIBs were most success at developing Two-Step contracts toward the latter half of program implementation – findings supported by qualitative data within the Implementation Evaluation.

In addition, the greatest number of completers occurred in 2015 (15), and, as such, the number of completers is anticipated to rise through the duration of the intervention because of the actual time required to train, which the findings support. The $98,237 cost per Two-Step completer\(^\text{164}\) in 2013 was due to the limited number of participants that started or finished Two-Step contracts. As the number of completers rose, the cost per completer decreased with the lowest being $26,301 in 2015. The highest training cost of $330,584 occurred in 2014, which was consistent with the highest number of Two-Step contracts in 2014. The cost per participant across all four stages displayed a decrease in cost over time. For example, the total cost per participant in a Two-Step, Train First, TF&TS, or ITA in 2013 was $28,652 and $16,438 in 2015. Similarly, the cost per Two-Step completers decreased from $98,237 in 2013 to $26,301 in 2015. These are indicative of the number of participants increasing over time as the Steps Up to STEM became an established project.

Table 27: Cost Evaluation Question #3 – Findings

<table>
<thead>
<tr>
<th>Findings for GCRWIBs</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Training Cost</td>
<td>Total Training Cost</td>
<td>Total Training Cost</td>
<td>Total Training Cost</td>
</tr>
<tr>
<td>Cost per participant exposed to STEM</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>$80</td>
</tr>
<tr>
<td>Cost per participant who participated in a One-Step or Two-Step contract</td>
<td>$11,520</td>
<td>$175,816</td>
<td>$4,699</td>
<td>$16,373</td>
</tr>
<tr>
<td>Cost per participants who participated in a Two-Step contract</td>
<td>$11,520</td>
<td>$175,816</td>
<td>$8,223</td>
<td>$28,652</td>
</tr>
<tr>
<td>Cost per participants who successfully completed Step Two of the Two-Step contract</td>
<td>N/A</td>
<td>N/A</td>
<td>$28,193</td>
<td>$98,237</td>
</tr>
</tbody>
</table>

The Cost Evaluation provided an understanding of the overall cost Steps Up to STEM required for various stages of participation. Costs analyzed included actual dollars spent (e.g. WIF funding) and estimated quantitative cost of time and resources donated by partners and employers. The findings now provide a baseline for future related workforce programs for more rigorous studies, such as a cost-benefit or cost-effectiveness study. These types of investigations would provide familiar “return or investment” findings, by calculating additional variables such a participant gaining employment, wage increase of existing employment, public assistance no longer needed by a participant, and other cost effects of participation, which would create a different set of statistical data for analysis and findings. This would allow conclusions on the cost benefit of these types of projects in terms of cost and investment.

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\(^{164}\) Two-Step completer and Two-Step contracts in this paragraph refer to both Two-Step and TF&TS participants.
Conclusion
Lasting Effects of the Grant

Conclusion

Lasting Effects of the Grant

It is beyond the scope of this evaluation to make value judgments about whether the degree of tangible and intangible success obtained as a result of Steps Up to STEM was sufficient to warrant the amount of public investment made, or to otherwise draw conclusions about the cost-benefit ratio of Steps Up to STEM. Qualitative evidence suggests, however, that effects of Steps Up to STEM are likely to continue through the end of the grant and beyond.\(^{165}\) Although Steps Up to STEM took more time to implement, and more time to evaluate, than originally anticipated, the time that has been invested has positioned the consortium, employers, and program participants for certain kinds of continued success. This includes:

Workforce Capacity Building – Steps Up to STEM has facilitated capacity building within the consortium by allowing the GCRWIBs to try programming innovations. While some programmatic elements of these innovations will last – Two-Step contracts, STEM Youth Summer Institutes, and a STEM career-focus – even more so the effects will be on the capacity of the workforce areas to prepare for and adapt to WIOA legislation. Grant-funded activities that contributed to GCRWIBs’ readiness for WIOA are detailed in the Implementation Evaluation: Beyond the Grant section and include: career pathways, demand driven approach, work-based learning, strategies for regional planning, and labor market data.

Employer Engagement – Because program success was heavily dependent on workforce area responsiveness to the business as the customer, the grant facilitated an increased connection between the workforce system and regional employers. Employer engagement findings are qualitatively described within the Implementation Evaluation: Employer Partner section and are highlighted by an overall increasing trend in employer and partner investment as measured by total employer and partner costs in the Cost Evaluation.\(^{166}\) Additionally, new employer-workforce training partnerships modeled after Steps Up to STEM, formed even after grant training funds ended. Such partnerships include a craft beer brewer training, which is a partnership between local craft brewers, community college, and GCRWIBs and is anticipated to lead to customized, employer-specific stackable training and credentials.\(^{167}\)

Participant Training – Interviewed participating businesses identified that Steps Up to STEM allowed their business to: 1) hire the participant when company funding alone would not have allowed the hire, 2) hire locally and train an under-skilled worker when the company would have usually recruited from outside of the region, 3) invest more time into training an employee because of the offset salary, and/or 4) participate in a process to fill unmet needs and develop an applicant pipeline.

\(^{165}\) Training funds end in December 2015 and all other grant funding ends in March 2016. As of October 2015, 16 percent of participants were still actively pursuing Step One or Step Two of training, and the GCRWIBs were continuing to enroll new participants into the program.

\(^{166}\) This trend includes the highest volume of employer and partner cost investments made during 2015, despite 2015 data including less than 12 months (January – October 2015).

\(^{167}\) The craft beer brewers training is noted in the Implementation Evaluation sections Accelerators & Strengths and Program Outputs.
As a result of this ability to hire and invest in training, interviewed employers and participants highlighted the mobility and applicability of the participants’ training, allowing the participant to stay at the employer and perform well, or bring transferrable skills to a different employer in- or out-side of the region. The significant average wage gains for participants will continue to benefit the individuals who retain employment or leverage those skills elsewhere, and many of the credentials earned will be portable for other job opportunities.

Recommendations for Adaptation and Further Study

In line with the stated goals of the evaluation, the evaluators provide the following conclusions for the U.S. Department of Labor and workforce agencies considering adoption or adaptation of Steps Up to STEM.

For Model Adaptation:

The program’s significant outcomes on participant wages for all variations of training contracts suggests it is a good investment in areas where obtaining higher wages is a priority — However, a full cost-benefit analysis should be conducted to determine if the increase in training costs justifies the higher wage benefits realized.

The Two-Step model need not be limited to STEM and is appropriate for a wide range of occupations — Indeed, the GCRWIBs found greater success when they broadened the definition of STEM and considered a wide range of employers and occupations. At least one workforce area plans to continue the model with WIOA funds, beyond the bounds of STEM occupations.

The Train First adaptation of the model may be a lower barrier to entry in regions that lack stronger employer support of the workforce investment system — WIF-funded staff found many employers were reluctant to commit to two steps of training for an “untested” worker or without strong confidence in the workforce system. The lower pre-program wages of participants in the Train First model also suggest it may be most appropriate for lower-skilled job seekers.

A consortium approach, versus a single workforce area, likely helps control administrative costs — The total consortium cost for FMS WDB was the highest among the four members, due in part to the FMS WDB acting as the fiscal agent and grant administrator. The total cost was inflated due to their sole share of cost for marketing, outreach, equipment, and higher auditing cost. The ability for only one workforce area to incur these costs within a consortium approach, may lead to cost savings over the implementation of the program by four separate workforce areas — further research would be necessary before confirming this hypothesis.

For Further Study:

Non-participating employees, located with participating employers, do not make for an appropriate comparison group — Although the program had significant wage outcomes for participants compared to themselves pre-program, it is not reasonable to expect that the program will have an
effect on job seekers **compared to employees who can be hired without the assistance of the program.** Therefore, future studies should consider a comparison group design or randomized control trial in areas where there is high confidence the region can recruit an adequate number of employer participants – one of the program’s most significant challenges – to then place enough job seeker participants for adequate study power.

*A cost-benefit study would shed light on whether the program is a good investment* – The Cost Evaluation provided an understanding of the overall cost **Steps Up to STEM** required for various stages of participation, but the evaluators cannot draw conclusions about whether the quantitative and qualitative benefits of the program are “worth” the per-participant and total costs. Future studies should consider additional variables such as a participant gaining employment, wage increase of existing employment, public assistance no longer needed by a participant, and other cost effects of participation.

*Additional time would allow for study of effects on employment retention* – One hypothesis of the program is that the Two-Step model creates a stronger sense of shared investment and mutual loyalty on the part of the job seeker and employer; that is, job seekers are less likely to separate from employment if they have confidence an employer is invested in their career path, and employers are less likely to let go of an employee in whom they have invested and who demonstrates a commitment to skill development. Statistical support of such a hypothesis could compel additional employer participation, given the significant costs associated with recruiting, hiring, and retaining a skilled workforce. Rejection of this hypothesis could inform program design and policy and may lead to modifications. Although qualitative interview data supports this hypothesis anecdotally, this study does not have adequate data to either support or reject it. Time and sample size limit the conclusions that can be drawn.
Appendices
Appendix A: Implementation Evaluation Methods

As an untested idea, an important component of the evaluation was that the GCRWIBs received ongoing and accessible feedback to build upon any early evidence as it emerged throughout the evaluation. Throughout the execution of the evaluation, and especially through the Implementation Evaluation, the evaluators employed principles of a utilization-focused framework. The substantiated assumptions of utilization-focused evaluation are: 1) intended users are more likely to utilize evaluation findings if they understand and value the evaluation’s processes; 2) intended users are more likely to understand and value the evaluation’s process if they are engaged in evaluation decisions; 3) engaged intended users both enhance the credibility of evaluation findings and possess greater capacity for utilizing findings to improve the program; and 4) capacity for utilizing findings relies heavily on a collaborative, functional relationship between evaluators and intended users.

Additionally, the formative component of the Implementation Evaluation offered real-time feedback as the program rolled out, as opposed to offering information only retrospectively, through frequent phone calls and rapid reports following evaluation site visits. This provided the opportunity to identify early evidence of strengths and areas for growth throughout the development of the program.

Research Questions

Table A1 summarizes the research questions examined through the Implementation Evaluation plan, including ties to the logic model, data sources and collection tools/protocols, and analysis methods. Further details on data sources and collection plans, analysis methods, and potential limitations of the Implementation Evaluation are detailed in subsequent sections. Note, the Logic Model referenced is included within The Intervention section and in Appendix D.

Table A1: Implementation Evaluation Research Questions

<table>
<thead>
<tr>
<th>Logic Model Component</th>
<th>Data Sources &amp; Collection</th>
<th>Analysis Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program Performance &amp; Variance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) How has Steps Up to STEM rolled out in each workforce area and overall? How have those processes varied across time? Across workforce areas? Why?</td>
<td>● Inputs, Activities, Outputs, Outcomes, and first three Long-Term Outcomes</td>
<td>● Implementation Update Calls&lt;br&gt;● In-Person Interviews&lt;br&gt;● NYSDOL OSOS Data</td>
</tr>
<tr>
<td>2) What have been successes and obstacles to program performance?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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# Appendix A: Implementation Evaluation Methods

<table>
<thead>
<tr>
<th>Logic Model Component</th>
<th>Data Sources &amp; Collection</th>
<th>Analysis Methods</th>
</tr>
</thead>
</table>
| ● Inputs, Activities, Outputs, Outcomes, and first three Long-Term Outcomes | ● Implementation Update Calls  
● In-Person Interviews | ● Document themes and report on qualitative data provided by GCRWIBs Leadership and WIF-funded staff |

## 3) What program outputs have been generated to date? How have results varied across workforce areas? Why?

| Outputs | Bi-Monthly Progress Calls  
● In-Person Interviews  
● Program Artifact Reviews  
● NYSDOl OSOS Data | Bi-Monthly Progress Calls  
● In-Person Interviews  
● Program Artifact Reviews  
● NYSDOl OSOS Data | Bi-Monthly Progress Calls  
● In-Person Interviews  
● Program Artifact Reviews  
● NYSDOl OSOS Data |

## 4) Did the GCRWIBs collectively meet its target output? What barriers hindered output achievement? What factors unexpectedly improved output achievement?

| Outputs | Bi-Monthly Progress Calls  
● In-Person Interviews  
● Program Artifact Reviews  
● NYSDOl OSOS Data | Bi-Monthly Progress Calls  
● In-Person Interviews  
● Program Artifact Reviews  
● NYSDOl OSOS Data | Bi-Monthly Progress Calls  
● In-Person Interviews  
● Program Artifact Reviews  
● NYSDOl OSOS Data |

## Use of Grant Funds

5) How did the workforce areas allocate grant funds? Were resources leveraged?

| Inputs | Bi-Monthly Progress Calls  
● Implementation Update Calls  
● Quarterly USDOL Program Reports | Bi-Monthly Progress Calls  
● Implementation Update Calls  
● Quarterly USDOL Program Reports | Bi-Monthly Progress Calls  
● Implementation Update Calls  
● Quarterly USDOL Program Reports |

## Employers & Partners

6) Were employers more satisfied with Steps Up to STEM Enrolled Participant workers, compared to workers who did not participate in the program?

| Employer Commitment; Partner Commitment (Inputs)  
● Last five Activities  
● Last five Outputs  
● Last four Outcomes | Employer Commitment; Partner Commitment (Inputs)  
● Last five Activities  
● Last five Outputs  
● Last four Outcomes | Employer Commitment; Partner Commitment (Inputs)  
● Last five Activities  
● Last five Outputs  
● Last four Outcomes |

7) How were training strategies developed and implemented? How involved were employers in the program design process?

| Connect employers, participants & workforce system to develop customized Two-Step career paths; Work with employer, participant & training providers to implement Step One and Two of career path; Create sector training programs (Activities)  
● Two-Step Career Path employment plans developed; Employers participate in Two-Step Career Path contracts (Outputs) | Connect employers, participants & workforce system to develop customized Two-Step career paths; Work with employer, participant & training providers to implement Step One and Two of career path; Create sector training programs (Activities)  
● Two-Step Career Path employment plans developed; Employers participate in Two-Step Career Path contracts (Outputs) | Connect employers, participants & workforce system to develop customized Two-Step career paths; Work with employer, participant & training providers to implement Step One and Two of career path; Create sector training programs (Activities)  
● Two-Step Career Path employment plans developed; Employers participate in Two-Step Career Path contracts (Outputs) |

8) How satisfied are employers with the program? Why? 170

| Employer Commitment; Partner Commitment (Inputs)  
● Last five Activities  
● Last five Outputs  
● Last four Outcomes | Employer Commitment; Partner Commitment (Inputs)  
● Last five Activities  
● Last five Outputs  
● Last four Outcomes | Employer Commitment; Partner Commitment (Inputs)  
● Last five Activities  
● Last five Outputs  
● Last four Outcomes |

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170 The original research question “How satisfied are program partners, staff, and employers with the program? Why?” was separated into two questions for purpose of the analysis: “How satisfied are program partners (GCRWIBs Leadership) and staff with the program? Why?” and “How satisfied are employers with the program? Why?”
Appendix A: Implementation Evaluation Methods

<table>
<thead>
<tr>
<th>Logic Model Component</th>
<th>Data Sources &amp; Collection</th>
<th>Analysis Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beyond the Grant</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) How can program processes, tools, and/or systems be modified to improve performance?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● All Inputs, Activities, Outputs, and Outcomes; first three Long-Term Outcomes</td>
<td>● In-Person Interviews</td>
<td>● Document and synthesize general themes and details generated in interviews and interpret and summarize qualitative data in report format</td>
</tr>
<tr>
<td>10) How satisfied are program partners (GCRWIBs Leadership) and staff with the program? Why?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| ● Career Center Staff (Input)  
● Activities  
● Staff professional development opportunities (Output)  
● Staff better trained in STEM career paths and opportunities; Staff more knowledgeable when sharing about STEM; Preparation for WIOA (Outcomes)  
● Improved services for workforce system job seekers (Long-Term Outcome) | ● In-Person Interviews | ● Document themes, interpret, and report on qualitative data provided by WIF-funded staff |
| 11) Did the program promote systematic change in collaboration of the public workforce system, higher education, and industry? Did partners institutionalize changes in policies or offerings that will continue beyond the life of the grant? Did the program result in changes in perceptions, attitudes or behavior? What evidence demonstrates program value for community? What is the legacy of the program? |   |   |
| ● All Outcomes, and first three Long-Term Outcomes | ● In-Person Interviews | ● Document and synthesize general themes and details from interviews and interpret and summarize qualitative data in report format |

**Data Sources & Collection**

Data for the Implementation Evaluation was collected from the following data sources:

- Implementation Update Calls with all GCRWIBs Leadership members – Monthly in Year 1 followed by quarterly starting in Year 2
- Bi-Monthly Progress Calls with the grant recipient and fiscal agent and the evaluation liaison – starting in Year 2
- In-person interviews with GCRWIBs Leadership, WIF-funded staff, non-WIF-funded staff, regional employers, and Steps Up to STEM participants
- *Steps Up to STEM* documents and artifacts, including quarterly program reports, news articles, newsletters, program-related flyers, and other documents
- NYSDOL OSOS data

**Implementation Update Calls**

Implementation Update Calls between the evaluators and program leadership took place monthly during Year 1 and quarterly starting in Year 2. Members of GCRWIBs Leadership included the executive directors FMS WDB, CR WIB, and SWW WIB, and the Center Director of the CG WIB, who the GCRWIBs designated as the evaluation liaison.

The Implementation Update Calls allowed GCRWIBs Leadership to provide the evaluation team with timely information regarding *Steps Up to STEM* processes, progress, obstacles, and successes. These findings were elaborated upon during site visit interviews, but calls provided GCRWIBs Leadership with
an opportunity to recall events and challenges more frequently than the semi-annual-to-annual site visits. TPMA’s evaluation project manager maintained detailed notes from each call. These notes were stored on TPMA servers and provided a timeline of relevant occurrences used as a reference point for staff and employer interviews. Face-to-face meetings substituted for the Implementation Update Calls when TPMA conducted evaluation site visits.

**Bi-Monthly Progress Calls – Years 2 and 3**

Bi-Monthly Progress Calls were held starting in Year 2 with the GCRWIBs grant recipient and fiscal agent, the FMS WDB Executive Director, and the CG WIB Center Director, who was the evaluation liaison. These calls provided an opportunity to discuss topics including: evaluation-related scheduling, progress toward evaluation reports, data tracking and reporting clarifications, and the Year 3 extension. Face-to-face meetings substituted for the Bi-Monthly Progress Calls when TPMA conducted evaluation site visits.

**In-Person Interviews**

Initial site visit plans included a series of three site visits for one-on-one and small-group interviews, in September 2013, April 2014, and November 2014. When USDOL granted a nine-month extension, the evaluation site visit schedule was adjusted to better capture the full range of grant-related activities, and an additional site visit occurred in September 2015.

The evaluation team developed an interview facilitation guide to be used with each of the first three site visits (see Appendix G). It was originally deployed during the September 2013 site visit in Year 2 and was used in subsequent site visit meetings in April 2014 of Year 2 and November 2014 of Year 3. For the final site visit in September 2015, the guide was revised to focus on themes and issues that had emerged throughout the three years of implementation as well as program sustainability and lessons learned (see Appendix H).

The evaluation team visited each of the four consortium workforce areas and conducted interviews with the stakeholder groups outlined in Table A2.

*Table A2: Implementation Evaluation Stakeholders*

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Description</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCRWIBs Leadership</td>
<td>The evaluation team conducted a semi-structured 60-90 minute interview with GCRWIBs Leadership, focusing on program activities and integration, collaboration, resources, lessons learned, and sustainability.</td>
<td>&gt;15 individual interviews</td>
</tr>
<tr>
<td>WIF-Funded Staff</td>
<td>A semi-structured 60 minute small-group interviews were held for WIF-funded staff, covering program activities and integration, collaboration, resources, lessons learned, and sustainability. WIF-funded staff included staff focused on business engagement (e.g. Business Services Representatives) and staff focused on job seeker training and service provision (e.g. Workforce Advisors).</td>
<td>&gt;15 group interviews</td>
</tr>
<tr>
<td>Non-WIF-Funded Staff</td>
<td>As available, a 30 minute semi-structured small-group interviews conducted with non-WIF-funded staff, including Career Center staff not funded by the grant, NYSDOL staff, and other staff. Discussions centered on program integration and intersections with non-WIF-funded staff jobs.</td>
<td>Six group interviews</td>
</tr>
</tbody>
</table>
Regional Employers & Partners
Semi-structured 30-60 minute interviews were held with regional employers. These interviews typically took place at the employer’s location of business. Employer discussions focused on program engagement, feedback on the participant, impacts to the business, and overall satisfaction. In addition, most visits included a tour of the employer location (when available). On average, the evaluation team visited two employer locations per WIB per site visit.

Steps Up to STEM Participants
The evaluation team held semi-structured 30 minute interviews with grant participants. On average, two participants per workforce area were interviewed on each visit, and most interviews took place at the employment location. Discussions focused on the individual’s goals, the Two-Step contract, and overall program feedback.

Interviews were semi-structured with a majority of open-ended questions and probing, and conversational inquiry. In line with the principles of applied thematic research, this interview approach allowed research participants to speak about experiences in their own words, free of the constraints imposed by fixed-response questions. Inductive probing allowed the evaluation team to clarify statements, meaning, and the feelings associated with experiences, to promote accuracy in detailed observational notes. This interview framework also provided the means to “[learn] from the participants’ talk and dynamically [seek] to guide the inquiry in response to what is being learned.”

To increase validity of the interviews, the same two evaluators were present for all four site visits and participated in the implementation update calls, program artifact reviews, and report writing. This consistency helped build and preserve institutional knowledge across site visits. In addition, these methods are consistent with recommendations made by qualitative researchers, and allow a member of the evaluation team to focus on facilitation and a second member to take detailed notes.

Program Artifact Reviews
The evaluation team reviewed a variety of program artifacts including:

- Quarterly fiscal and program narrative reports, sent by the GCRWIBs to USDOL;
- FMS WDB newsletters, highlighting Steps Up to STEM;
- News articles around the STEM Youth Summer Institutes;
- Flyers and training plans for the Machine Tool Technology training;
- Correspondence between GCRWIBs and the Center for Economic Growth (CEG); and
- Agendas and handouts from the monthly WIF-funded staff development meetings.

These documents provided additional context and information to evaluate program implementation at each stage – program challenges, successes, unintended consequences (both positive and negative), and the reasons for accelerated or delayed program progress. Context from these documents informed questions for the Quarterly Implementation Calls and site visits and informed content within the evaluation reports.

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NYSDOL OSOS Data
The FMS WDB and CG WIB provided quantitative data for outputs (i.e., the number of STEM activity “touches” achieved in Year 2), from participant self-reported data collected by WIF-funded staff and entered into the NYSDOL OSOS. Regular receipt of the data allowed the evaluation team to remain up to date on program output progress, yearly updates of which were included within the previous evaluation reports.

Analysis Methods
A general inductive thematic approach, with influences of applied phenomenology, was used to analyze the qualitative data generated from the interviews. This approach was selected because of its usefulness in drawing clear links between research questions or objectives and data collection results, and because it provided a theoretical foundation for subjective meaning to be interpreted and extrapolated from discourse. The analytical framework used for the analysis included a time-dependent gradient (before the program, changes occurring in each year of program implementation, and post program scaling) and a program-component gradient (analyzing the STEM-awareness components and the Two-Step Model as separate portions of the intervention).

Units of analysis included the consortium-wide program; each participating workforce area; and group-level pairings including BSRs, WATs, GCRWIBs Leadership, employers, and participants.

Emerging themes were then developed according to the analytical frame and through a review of 1) the notes taken during monthly and quarterly calls; 2) Steps Up to STEM documents and artifacts; 3) detailed notes taken during the site visits; and 4) the evaluation team’s extensive experience with workforce and technical training programs and the body of implementation evaluation knowledge built through their work. Guidance about what was important came from the grant narrative, the evaluators’ knowledge of the workforce development systems, required research questions, and calls that had occurred throughout the grant period. Following this initial theme development, additional evaluation team members reviewed the results, adding contextual details and examples. These themes were divided into the following six categories:

- **Interim Progress** – Documentable steps that had been taken to advance or achieve grant outcomes, deliverables, milestones, and/or goals;
- **Accelerators/Strengths of Progress** – Factors that had enhanced grant progress and improved the ability of grant staff to carry out grant initiatives, focused on internal factors (program design, modification, implementation, and application);
- **Barriers/Challenges to Progress** – Persistent difficulties grant staff had faced in accomplishing grant initiatives;

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173 It is important to note that the definitions of what constituted a STEM activity “touch” varied among the workforce areas during Year 1. Therefore, data from the Year 1 evaluation report cannot be compared to the standardized definitions in the Year 2 and Final evaluation reports.


176 ibid.
Environmental Factors – External factors beyond the control of those implementing the program;
Recommendations – Opportunities the evaluation team identified for improving progress toward grant outcomes (in Interim Reports), and recommendations for other workforce areas looking to start the program; and
Sustainability – Components of the program that will continue once funding ends.

The results were again compared to the analytic frame and the anticipated reporting elements. The final step in the analysis was to send the summarized results for the GCRWIBs consortium and each workforce area to GCRWIBs Leadership for clarification and additional contextual details when needed.

To strengthen the accuracy and credibility of implementation study findings, the evaluation team relied on triangulation and collaborative inquiry. By comparing findings based on different data sources and using approaches that incorporated both evidence and negative evidence, the evaluation team created a robust and dynamic depiction of implementation.\(^\text{177}\) By presenting findings to *Steps Up to STEM* stakeholders for elaboration, corroboration, and modification,\(^\text{178}\) the evaluation team confirmed and updated analyses. Additionally, by sharing findings with intended users as they emerged, the evaluation team built a collaborative relationship with stakeholders that encouraged higher quality first-person data and increased the likelihood the evaluation could produce timely, user-relevant findings.\(^\text{179}\)

**Reporting**

Data were interpreted, analyzed, and included in two Interim Reports, in December 2013 and December 2014, and the final report, drafted in Fall 2015 and finalized in March 2016. The reports contain the results of the analysis, recommendations for improvements, rationale for recommended modifications, and any threats or challenges that may arise as a result of recommended modifications. An in-depth review of these reports was conducted with GCRWIBs program leadership for member checking, factual verification, and elaboration on findings and recommendations. Subsequently, the reports were submitted to the Workforce Innovation Fund National Evaluation Coordinator.

**Limitations**

Limitations for the Implementation Evaluation included four main elements:

*Partial and Biased Findings* – Qualitative and perceptual research methods offer good insights, but are, by nature, partial and biased. To attempt to address this limitation, the evaluation team took advantage of an opportunity embedded in mixed-methods evaluation, the triangulation of data.\(^\text{180}\) Triangulating results from multiple sources, such as comparing findings among stakeholder interviews and with documents reviewed, creates more credible evaluation results and is considered


critical to the validity and reliability of findings. Findings that have been corroborated through triangulation tend to be sufficiently robust and credible.\(^\text{181}\)

**Selection Bias** – To address the threat of non-response and non-consent, and to improve the likelihood that sufficient data could be collected to draw valid conclusions, the evaluation team relied on purposive and convenience sampling coordinated by program staff. This approach introduced selection bias into the findings. Participants and employers more interested in providing feedback or more involved in the program may have chosen to participate in interviews at a higher rate than less-interested or less-engaged participants and employers, and program staff responsible for coordinating interviews may have selected only those cases where they anticipated favorable responses to interview questions. Neutral and critical feedback from participants and employers at each program site, however, supported the notion that these research participants were chosen primarily for their willingness to participate in the study rather than the likelihood that they would cast the program in a favorable light.

**Researcher Extrapolation** – Analysis conducted with an interpretive analytical framework, influenced by phenomenology, suffers from the threat that researcher extrapolation and interpretation may go too far beyond what is present in, and supported by, data.\(^\text{182}\) Indeed, the recommendations provided in this report are based on a combination of what was learned and supported by data and the experiences and findings of the evaluators’ previous experience designing, implementing, and evaluating various workforce development programs.

**Human Error** – The evaluation team relied on WIF-funded staff to collect and track much of the data required for the Implementation Evaluation (tracking outputs in OSOS). Human error and competing priorities could lead to imperfect and delayed data entry and tracking, which impacts the validity of the analysis. To mitigate this as much as possible, the GCRWIBs worked with NYSDOL representatives to integrate grant-specific program services tracking into the OSOS system. GCRWIBs data staff joined with NYSDOL staff to conduct data training and were available for technical assistance and questions throughout the project. Receipt and review of data by the evaluation team and by GCRWIBs Leadership assisted in identifying and addressing data quality challenges, however, there may still be data imperfections with the outputs tracking.

### Informing Outcome and Cost Evaluations

The implementation findings provided context for the outcome and cost analyses by documenting the timing and nature of adjustments to program design. The Outcome and Cost Evaluations utilized this documentation to understand whether changes to the program might impact various participants or cost allocations.

### Impact-to-Outcomes Evaluation

As originally designed, the evaluation plan for *Steps Up to STEM* included a comparison group evaluation. The anticipated treatment group was *Steps Up to STEM* Enrolled Participants only, as Enrolled Participant numbers were anticipated to be the vast majority of participants, with only a

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handful of Referral Participants. The comparison group would be comprised of individuals employed at similar levels within the company as the Enrolled Participants, and data for this group would come from directly from employers. However, as *Steps Up to STEM* was being implemented, the evaluation team, through the Implementation Evaluation, identified three main challenges facing the Impacts Evaluation:

1) **The program had many more “reverse referral” participants than originally anticipated** – A large portion of the Two-Step contracts came from employers who knew about the program, interviewed an individual, and then found out if that person was eligible for a Two-Step contract. These individuals did not go through all of the STEM workshops and screening activities that “traditional path” workforce customers went through, and so the evaluation had not planned to include them in the treatment group. This was always built into the design as one possible entry path to the program, but the evaluation team and GCRWIBs Leadership did not realize that such a large portion of participants would enter this way.

At the same time, individuals who *did* go through the initial STEM activities had a difficult time connecting directly with a willing employer. There were interested individuals, and there were employers who wanted to participate in the program, but the connection between the two was not functioning the way the GCRWIBs thought it would. Again, the evaluation had not planned to include Referral Participants in the impacts analysis. However, if Referral Participants continued to not be included, then the evaluation would face a very small sample size of individuals who even start a Two-Step plan, let alone finish one or more steps.

2) **Employers were not as responsive with data as anticipated** – TPMA held a data collection feasibility call in November 2012, prior to the start of any data collection, with employers who were targets for program participation. At that time, employers assured the evaluation team that the plan to collect comparison group data from employer records was feasible. However, attempts to collect data in 2013 and early 2014 were unsuccessful. Therefore, employers were ruled out as a feasible data source.

3) **Finally, and perhaps most importantly, the evaluation team came to believe the original planned comparison was not reflective of program realities** – It became apparent that Two-Step contracts did not necessarily promote better outcomes for workforce customers *compared with individuals who did not need workforce services*. In Year 2 the evaluation team spoke with several employers who asserted they would not have been able to hire the participant, or allow as much training time as they had, without *Steps Up to STEM*. The outcome of merely getting the job, even though the participant often started at the same wage as other employees in similar positions, was a positive outcome for that workforce client that, according to the employer, would not have happened but for the program. By this logic, even if the incremental wage gains for a STEM participant were $0 compared with another employee in the same position, that participant would not be in the job at all without the program. Carrying forward the impacts analysis as originally designed would, under this example, show no impact, even though that is not what the evaluation team heard directly from employers.

As a result of these issues, and in an effort to balance feasibility with accuracy, GCRWIBs leadership, TPMA, and WIF NEC recognized it was necessary to revise the impact evaluation to an Outcomes Evaluation.
Adjusting Cost Evaluation Stages

The Implementation Evaluation identified greater participation in secondary models of the program training than originally anticipated, through One-Step training contracts and Train First Model participants. Both of these models were originally envisioned in the grant narrative, but were anticipated to play a secondary role when compared to the Two-Step contract. With the rise in importance of One-Step and Train First Model trainings, the evaluation team identified the need to include One-Step and Train First Model-only participants in the Cost Evaluation.

In addition to the increase in secondary training models, the original concept of a linear or sequential participant flow, as described within the Evaluation Design Report, was modified to account for the realities of program roll-out. The Implementation Evaluation identified this shift from a sequential participant flow to a model with multiple program on-ramps, especially through Referral Participants. As a result, one of the original output stages of analysis for the Cost Evaluation – the number of Activity Participants who participated up to, but not including, the Two-Step Career Plan – required adjustment.

Addressing both the increase in secondary training models and increase in program on-ramps, the evaluation team adjusted the Cost Evaluation methods to strengthen and more accurately reflect training cost analyses. Specifically, the evaluation team shifted one of the outputs from number of Activity Participants who participated up to, but not including, the Two-Step Career Plan to total number of participants who participated in a One-Step or Two-Step contract, regardless of goal attainment.
Appendix B: Outcomes Evaluation Methods

The Outcomes Evaluation set forth a basic understanding of program effects on the job seeker participants during the following training models: Train First; Train First & Two-Step (TF&TS); Individualized Training Account (ITA); and Two Step. From this foundation, Quasi-Experimental Design (QED) or Randomized Control Trial (RCT) studies could be conducted to expand upon findings and enhance understanding of program impacts.\(^{183}\)

Research Questions

To assess outcomes on goal attainment, wages, and job retention, the evaluation team examined the research questions listed in Table B1.\(^ {184}\)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Logic Model Alignment</th>
<th>Analysis Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) What trends are present in participant goal attainment in Step One and in Step Two?</td>
<td>Outcomes – Participants complete Step One of career path, Participants complete Step Two of career path - Focusing on the total number of participants who completed each training type (Train First; Train First &amp; Two-Step; Individualized Training Account; and Two Step)</td>
<td>Descriptive Statistics, Chi-square Tests, T-Tests, Logistic Regression</td>
</tr>
<tr>
<td>2) Is there significant improvement in participants’ wages from before they entered the program to after their time in the program, and which types or groups of people show the greatest gains?</td>
<td>Outcomes – Participants complete Step One of career path, Participants complete Step Two of career path - Focusing on wage changes at four time points (wage at last employment prior to participation, wage during Step One, wage during Step Two, and wage during post-program employment)</td>
<td>Descriptive Statistics, Repeated Measures in Linear Mixed Model</td>
</tr>
<tr>
<td>3) Is there significant improvement in job retention from before participants entered the program to after their time in the program, and which types or groups of people show the greatest gains?</td>
<td>Outcomes – Participants complete Step One of career path, Participants complete Step Two of career path - Focusing on retention time before and after program participation</td>
<td>Descriptive Statistics, Survival Analyses, Cox-Regression Analyses</td>
</tr>
</tbody>
</table>

Data Sources & Collection

Data for the Outcomes Evaluation were collected from three primary sources: the NYSDOL OSOS, NYS UI wage data, and communication with GCRWIBs Leadership.

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\(^{184}\) Data for all three Outcomes Evaluation research questions included New York State Department of Labor (NYSDOL) One Stop Operating System (OSOS) Data, New York State (NYS) Unemployment Insurance (UI) wage data, and communication with Greater Capital Region Workforce Innovation Boards’ (GCRWIBs’) Leadership.
NYSDOL OSOS Data

All four workforce areas collected and provided quantitative data on program participants. The data consisted of both participant self-reported and staff-verified data collected by WIF-funded staff and entered into the statewide data management system, NYSDOL OSOS. Data WIF-funded staff entered in NYSDOL OSOS throughout the duration of Steps Up to STEM consisted of specific services the participant received at different time points in the program. The data included information such as:

- Participant identification numbers (used in NYSDOL OSOS and unique identification number)
- Participant name
- Service location
- Goals and pertaining dates (enrollment and exit)
- Training and pertaining dates (enrollment and exit)

UI Wage Data

Demographic data and employment data were retrieved through the NYS UI database. The data included information such as:

- Date of birth
- Race
- Gender
- Education level
- Employment dates and corresponding wages

GCRWIBs Leadership Calls

Data collected through NYSDOL OSOS was designed for use by Center staff and Directors. Because the system was not created specifically for the Workforce Innovation Fund (WIF) grant, but instead used to support grant functions, including the Outcomes Evaluation, the evaluation team conducted as-needed calls with GCRWIBs Leadership—especially the grant recipient and fiscal agent, the FMS WDB Executive Director, and the evaluation liaison, the CG WIB Center Director—to better understand the nuances and complexities of NYSDOL OSOS data.

Variables

A list of variables included within the analysis is included below, while the list of variables included in the raw data provided to the evaluators is included in the Data Dictionary.
### Table B2: Outcomes Evaluation Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description / Levels</th>
<th>Variable Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal Attainment</td>
<td>* Step One Goal Attainment * Step Two Goal Attainment * Cancelled by Participant * Cancelled by Employer * Not Attained * Attainment pending * Attained</td>
<td>Nominal categories</td>
</tr>
<tr>
<td></td>
<td>* Step One Goal Attained * Step Two Goal Attained * 0 - Goal Not Attained (Cancelled, or Not Attained) * 1 - Goal Attained * Attainment pending was missing on these variables for analysis.</td>
<td>Nominal categories</td>
</tr>
<tr>
<td>Wage change</td>
<td>* Prior Wage * Step One Wage * Step Two Wage * Post Wage * Hourly wages reported prior to the program enrollment, at Step One and Step Two, and Post-program.</td>
<td>Continuous scale</td>
</tr>
<tr>
<td>Job retention</td>
<td>* Prior Retention * Post Retention * Retention was calculated as the number of days of employment (End date minus Start date) before and after program enrollment. * If the End date was not specifically observed, but UI data indicated the participant worked at least one day in a given quarter, then Retention was censored at 1, 91, 181, or 271 days.</td>
<td>Continuous scale</td>
</tr>
<tr>
<td></td>
<td>* Prior Censoring * Post Censoring * Event (1), where End date observed * Censored (0), where End date was censored from quarterly data.</td>
<td>Nominal categories</td>
</tr>
<tr>
<td>Age</td>
<td>* Age * Age of participants calculated from date of birth to Enrollment in WIF services. * Age Group * 18-24 * 25-35 * 36-75</td>
<td>Continuous scale, Ordinal categories</td>
</tr>
<tr>
<td>Gender</td>
<td>* Gender * Female (0) * Male (1)</td>
<td>Nominal categories</td>
</tr>
<tr>
<td>Race</td>
<td>* Race * White * Black * Other * Race Group * White * Non-White (Black and Other) * Grouped for larger sample sizes for analysis.</td>
<td>Nominal categories</td>
</tr>
<tr>
<td>Education</td>
<td>* Education Level * Less than High School * High School * GED * Some College * Vocational Degree * Associates Degree * Bachelor’s Degree * Master’s Degree * Education Group * 1 - Less than High School, High School Diploma, GED * 2 - Some College * 3 - Vocational Degree, Associates Degree, Bachelor’s Degree, Master’s Degree * Grouped for larger sample sizes in each level for analysis.</td>
<td>Nominal categories</td>
</tr>
<tr>
<td>Type of Training</td>
<td>* Type of Training * TF - Train First * TS - Two-Step * ITA - Individualized Training Account * TF&amp;TS - Train First and Two-Step</td>
<td>Nominal categories</td>
</tr>
</tbody>
</table>
Data Cleaning

The evaluators combined information from the NYSDOL OSOS database and NYS UI work history data to create the following new variables for analysis:

- Start date and end date of employment prior to program enrollment;
- Start date and end date of employment following the program;
- Job retention prior to program enrollment;
- Job retention following program;
- Hourly wage prior to program enrollment;
- Hourly wage during Step One;
- Hourly wage during Step Two; and
- Hourly wage following program enrollment.

Dates and Wages

Employment prior to program enrollment included an hourly wage, but the NYSDOL OSOS data did not contain employment dates. The evaluators searched the separate sheet of NYS UI work history data to identify employment with start and end dates for each participant. The most recent job was selected for each participant which had both start date and end date available, and ended before enrollment in the program.

By comparing the starting employment date with the actual grant start date, the evaluators discovered that some of the 45 participants with employment listed under “Starting Employment Prior to Training” in NYSDOL OSOS were not employed prior to program training. Rather, these participants may have been employed during Step One of the training. If dates listed in the UI work history indicated that the job in OSOS was after program enrollment and consistent with Step One dates, then the job wage from NYSDOL OSOS was listed for Step One instead of prior to program enrollment. The evaluators searched the UI work history data to identify prior employment records.

The available datasets contained wage information for the majority of the participants. However, some wages were listed in amounts that were not hourly. After discussion with GCRWIBs Leadership the following cleaning was performed. Values of 0.01 or 1 were treated as missing data; values of 120, 150, 250, and 300 were treated as weekly wages in U.S. dollars. These wages where then divided by 37 hours to determine hourly wage. Values of more than 10,000 were considered to be annual salaries and divided by 50 weeks per year and 37 hours per week to determine hourly wage. One value of 300,000 was changed to 30,000 per year, per instruction of the GCRWIBs Leadership who deemed there was an error in data entry for that particular participant.

Post-program employment was listed with a start date and wage for 55 participants, but no end date. Start date and wage information was obtained through a supplemental survey, but there was no follow up to record when this employment ended. Again, the evaluators searched NYS UI work history for start date and end dates of the first job after exiting the program.185

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185 The start and end dates of employment may relate to a different job than the job from which the hourly wage was taken, depending on whichever was available in the corresponding time frame.
Some additional data on post-program employment was included from NYS UI quarterly wage data, which potentially identified if a subject worked for one, two, three, or four quarters in the post-program period. However, this data did not contain specific start and end dates or wages, and was not available for most participants as the collection of NYS UI data was usually delayed by 90 days after exiting the program.

### Job Retention

Job retention was calculated as the number of days from employment start date to employment end date, where available. For post-program employment, when no end date was available, quarterly data was used to indicate a minimum number of days worked. If quarterly data indicated a participant was employed in Quarter 1, the evaluators coded the participant as working at least one day after exiting the program. If the data indicated continuous employment in Quarter 2, the evaluators coded the participant as working for at least 91 days. The same coding method was used for Quarter 3 (employed for at least 181 days) and Quarter 4 (employed for at least 271 days).

In the above mentioned cases the data were "censored" for job retention, meaning that the end date was not observed, but it was known that the participant worked at least for the period indicated. The dataset will indicate the censored values in the dataset for job retention (i.e., 1, 91, 181, or 271). Another variable (Post_Job_Censor) indicates whether this was an observed event with a specific end date (Post_Job_Censor=1) or a censored event where only a minimum number of days employed was known (Post_Job_Censor=0). Note that a variable was also included for censoring prior to program enrollment (Prior_Job_Censor), but these were all observed events if an end date was recorded (Prior_Job_Censor=1) because there was no way to measure censoring if end dates were missing.

After the described cleaning process, the data listed in Table B3 were available.

#### Table B3: Clean Data

<table>
<thead>
<tr>
<th>Number of participants with:</th>
<th>n</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both start date and end date of employment prior to WIF enrollment</td>
<td>111</td>
<td>Start dates with no end dates were available for additional 28 participants.</td>
</tr>
<tr>
<td>Hourly wage of employment prior to WIF enrollment</td>
<td>129</td>
<td></td>
</tr>
<tr>
<td>Both start date and end date of employment following WIF enrollment</td>
<td>6</td>
<td>At least some quarterly data were available for 35 additional participants. Start date with no end date or quarterly info was available for 11 additional participants.</td>
</tr>
<tr>
<td>Hourly wage of employment following WIF enrollment</td>
<td>49</td>
<td></td>
</tr>
</tbody>
</table>

### Data Recoding

#### Age

The age distribution was strongly skewed to the right with one person nearly 75 years old and three people more than 60 years old. Almost half of the participants were between 18 and 23 years old (n=58, 41.4 percent). Age was split into three age groups to facilitate analysis and interpretations, and to allow
non-linear effects of age on the outcome measures. The three categories were created to have nearly a third of the participants in each age group and also to increase sample sizes in each cell of the cross-tab for age group by Step One goal attainment (to prevent quasi-complete separation of data). The three age groups were 18 to 24, 25 to 35, and 36 to 75.

Race
In the NYSDOL OSOS data set, the participants indicated their race by checking all options that applied to them. That means the participants could indicate multiple categories at the same time. To prepare for analysis, groups were initially created for White, Black, or Other. Participants selecting only White, or White and Hispanic, or White and Other were classified as White (n=107). Participants selecting only Black, or Black and Hispanic or Latino, or Black and Other were classified as Black (n=14). Participants selecting White in addition to Black, Asian, Alaskan or American Indian, or Hawaiian were classified as Other, as well as if they selected only Hispanic or only Other (n=7). Due to small counts, the Black and Other variables were combined for Non-White (n=21) compared to White (n=107) for analyses.

Education
Education levels were also combined to provide larger sample sizes in each group and create meaningful cut-offs. Less than High School, High School Degree, and GED were coded as No College; Some College remained Some College; and Vocational Degree, Associates Degree, Bachelor’s Degree, and Master’s Degree were coded as College Degree.

Goal Attainment
Since the evaluation for both Step One and Step Two attainment was based on whether the participants attained their goals or not, Goal attainment (five categories) was recoded into Goal Attained (two categories: Attained or Not Attained) for Binary Logistic Regression analysis. “Attained” was coded as Goal Attained=1, while “Cancelled by Participant,” “Cancelled by Employer,” and “Not Attained” were coded as Goal Not Attained=0. Pending was coded as System Missing and not included in the analysis of Goal Attained.

Analysis Methods
The evaluators selected three outcome measures (goal attainment, wages, and job retention) to evaluate program effectiveness. While Step One and Step Two goal attainment are specific measures of goal attainment for Steps Up to STEM, the outcomes of wages and job retention are traditional measures considered to be standard for workforce development. Using three different, but related outcome measures helps to address outcome validity, as they combine to give a more complete picture of the effectiveness of the program, beyond one single measure.

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186 Treating age as a continuous scale would look at how the outcomes change for each unit increase of age. This was problematic for skewed data and, even if log-transformed, it would assume that older ages were consistently correlated with increasing (or decreasing) outcomes. In fact, data exploration showed that this linear trend was not the case, and age groups allowed the evaluation team to see how middle aged people might behave differently than both younger and older.

187 The available choices were: White, Black, Hispanic or Latino, Alaskan or American Indian, Asian, Hawaiian, and Other.
The outcome measures for participants in *Steps Up to STEM* are considered to be generalizable to a larger population of potential employees with similar work histories, goals, and motivations, under similar training experiences. However, these participants and employers were not randomly selected and there may be unique characteristics of the participants and employers in this program which may limit the generalizability to different populations, settings, and times.

No composite scores or psychometric constructs were used to require tests of instrument reliability and validity.

**Research Question #1**

What trends are present in participant goal attainment in Step One and in Step Two?

Descriptive statistics were computed to describe the participants in each group of Step One goal attainment (*Attained, Pending, Cancelled by Participant, Cancelled by Employer, or Not Attained*). The counts and percentages of participants were calculated overall, as well as within each demographic group. For participants in each attainment group, means and standard deviations were also calculated for age, prior wage, and prior job retention.

Pearson Chi-square tests compared the percent of participants who attained their goals or not between demographic groups (age, race, education) and training type (ITA, Train First, Train First & Two-Step, or Two-Step). Independent samples T-Tests were used to compare demographics and training type who attained their goals or not, based on average age, prior job wage, and prior job retention. Logistic regression was then used to detect which variables were most predictive of successful goal attainment in both Step One and Step Two goal in multiple regression models while holding the other variables constant. Independent variables considered in the model were *Training Type, Age Group, Education, Race, Gender, Prior Wage,* and *Prior Job Retention*.

The unit of analysis for these analyses on goal attainment were the individual participants, where data on participants’ goal attainment were available.

Prior wage data was skewed to the right, partially due to one outlier for a participant earning $48.60 per hour. Prior job retention data was also skewed to the right. The evaluators transformed prior wage and retention with a log-transformation (base 10) to make a more symmetric distribution and provide more reliable estimates as covariates in the model.

Because the sample sizes were limited for these analyses, the evaluators used model selection methods to identify the smallest set of most significant variables rather than including all potential variables in the model simultaneously.

A forward stepwise selection method was used to first check the significance of each variable one at a time on goal attainment. The most significant variable is selected first, and then other variables are added to the model one at a time based on whichever is most significant when added to the model with the first variable (based on the Likelihood Ratio test). Variables were only included if they were at least marginally significant (p<.10).

188 Note that separate models were fit for Step One attainment and Step Two attainment.
This process was done manually rather than using the stepwise selection procedure in SPSS software, because the automated procedure allowed for deletion of participants who were missing on any variable considered in the procedure (i.e., list wise deletion). With large amounts of missing data on many of the variables—seven on age, 19 on race, 18 on prior wage, and 36 on prior job retention—the model procedure including all variables would have had very few participants remaining with data available on all variables. In contrast, running each model manually allowed the evaluators to include participants as long as they had data on the variables included in the given model.

Research Question #2
Is there significant improvement in participants’ wages from before they entered the program to after their time in the program, and which types or groups of people show the greatest gains?

Descriptive statistics and exploratory analyses were first performed to assess participants’ average hourly wage at each of four time-points: wage at last employment prior to program enrollment, wage at Step One, wage at Step Two, and wage post-program employment.

A Linear Mixed Model was performed to assess whether there was significant improvement in participants’ wages across four time points: from employment before enrolling in the program, at Step One and Step Two, and following the program. Because of the lack of a suitable comparison group with others who did not use Steps Up to STEM, this provided a test of improvement within the program. The mixed model accounted for the repeated measures within person (using compound symmetry correlation structure), and allowed for different participants to have wage data at only some of the four time points.

Because data for wages were skewed to the right, the wages were log-transformed (base 10) to provide a normally distributed outcome measure for the linear model.

The unit of analysis was the individual job wage for each participant, where the correlation within participant was accounted for with repeated measures in the mixed model.

Again, a manual forward stepwise selection procedure was used, as described above under Research Question #1, to identify the best set of significant variables while maintaining sample size.

In addition to testing for overall differences across time points, the analysis also tested if some groups or types of participants experienced significantly higher or significantly lower wage changes. This was done by considering demographic variables (Race, Age, Education, and Gender), Training Type, and Prior Wages and Prior Job Retention as main effects, and also testing for their interactions with Time.

Research Question #3
Is there significant improvement in job retention from before participants entered the program to after their time in the program, and which types or groups of people show the greatest gains?

Job retention was recorded as the days of employment when both start dates and end dates were available. Censoring was used for participants’ post-program employment if a start date was present.
Appendix B: Outcomes Evaluation Methods

and the end date was missing, but quarterly employment data was available. See description of censored data under Job Retention in Data Cleaning.

Average job retention before and after program employment was calculated through average (mean and median) number of days of employment in each time period based on observation and censored data.

Kaplan-Meier curves were used to plot the survival curves (i.e. time to end of employment) for each participant group (e.g. participants’ retention before and after Steps Up to STEM) by showing the proportion of participants in each group who were still working at each point in time. Every time an event happened (i.e. a participant’s employment ended) the proportion of retention in that group decreased causing a down-step in the group’s survival curve. Log-rank tests were used to test for significant differences in job retention times as seen in the Kaplan-Meier curves. The log-rank test and Kaplan-Meier curves are non-parametric and have no assumption for normally distributed data.

The unit of analysis for these survival analyses on time to job end was the individual job retention before and after the program for each person. With 147 total participants there was potential for 294 total observations. However, with missing data, a total of 152 observations were available for analysis: 111 prior to program and 41 post-program.

One limitation of these analyses is that the evaluators were not accounting for the multiple observations within subject (pre/post) by fitting a correlation parameter within subject, as is done typically for repeater measures data. Rather, this survival analysis treated these 152 observations as independent observations cross-sectionally, ignoring that 33 participants had employment data at both before and after the program. The reason for ignoring the correlated data within subject is a limitation of the statistical software to account for the repeated measures in a survival analysis with censored data. The consequence of this more crude analysis was that the degrees of freedom were slightly inflated, as there were only 119 unique individuals in this analysis. However, the evaluators believe the effect of this limitation is modest, and Pre vs. Post comparisons are likely to be slightly conservative without having the power of the within-subject tests for correlated data.  

Once an individual left employment, the survival analysis considered him/her to be at the end of employment, independent of whether the participant left for a similar occupation at another employer (i.e. remained in employment in field trained), which represented another limitation of the analyses.

After testing for an overall difference Pre vs. Post, Cox-Regression models were used to test for differences in demographic groups as main effects overall, and also in interactions with time (pre and post), to test if any demographic groups increased in job retention more or less than other groups. Small numbers of observations for job retention following the program limited these larger models (particularly for observed events, compared to censored).

All of the analyses were performed using IBM SPSS Statistics, version 23.

A paired T-Test is more powerful than an independent samples T-Test. In these analyses, the data were treated as “independent” and not capitalizing on the power of the paired data. Due to this, the results were more conservative (i.e. significant results could be missed). However, only 33 of the people had paired data and it is likely that there would be no significant differences.
Limitations

Key limitations to the Outcomes Evaluation included:

Selection Bias – The evaluation did not allow for random sampling. As a result, there was likely bias in the self-selection process which could bias inferences to the larger population. The evaluators could only make inferences from this sample to the larger population of people that would have similar demographics, experiences, skills, and motivations to the participants in this study.

Lack of Counterfactual – Because Steps Up to STEM was the first of its kind, the evaluation team was not able to identify a suitable comparison group for analysis. Instead of basing the analyses on comparing the treatment group with the comparison group, the evaluators compared participants before and after the program on wages and job retention as an estimate of the effect of the program. This was not as robust as using a comparison group to isolate the treatment effect, because there may be other reasons in that time and place that affected the increase in wages or job retention.

Missing Data – One of the key limitations was data availability and data quality. Data were particularly limited for job dates (retention190) and wages before and after the program. Out of 147 total participants, 129 had wages listed prior to program, 80 at Step One, 29 at Step Two, and 49 after the program. Job retention data was recorded for 111 participants who had dates of employment prior to program, but only 41 had dates following the program. This included six participants with specific event dates and 35 who were censored quarterly. The small sample sizes limited the power and variance of the model estimates. The limitation of missing data was handled by using the observed data as much as possible, which meant removing non-significant variables with missing data from the analyses in the final model.

Self-Report Bias – Data received included missing variables, however the data were not truly missing at random. There are likely reasons that participants did not report their employment before or after the program. For example, they may not be forthcoming if their job ended quickly or their wage was less than they hoped for (e.g. self-report bias). This bias may inflate the estimated effect of the program such that the people who took lower paying jobs after exiting WIF program may not report their wage, and the ones who did not get jobs do not have wages to report. The evaluation team attempted to minimize self-report bias by using the NYS UI work history data. However, this data usually did not have end dates for the last job prior to program, and included a time-lag for participant exit/retention data.

Human Error – The evaluation team relied on WIF-funded staff to collect and track much of the data required for the Outcomes Evaluation (NYSDOL OSOS data). Human error and competing priorities could lead to imperfect and delayed data entry and tracking, which impacts the validity of the analysis. Additionally, different workforce areas may have tagged data differently within NYSDOL OSOS – this was especially common during Year 1, but some smaller inconsistencies in data tracking

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190 NYS UI wage data lag-time created uncertainty around completer retention. While participants’ UI data was tracked on an on-going basis, it took several quarters before the data was available to be pulled from the NYS UI system and sent to the evaluation team.
Appendix B: Outcomes Evaluation Methods

Receipt and review of data by the evaluation team and by GCRWIBs Leadership assisted in identifying and addressing data quality challenges, however, there may still be data imperfections with the outputs tracking.

**Retention Data Tracking** – Once an individual left employment he/she was treated as being at the end of employment in the survival analysis on retention, independent of whether the participant left for a similar occupation at another employer (i.e., remained employed within the field of training). This was a limitation to the study because the outcome for the participant would still be successful if the individual was progressing within his/her career pathway with a different employer. Therefore, it is possible that the retention analysis underestimates the effects of retention within the participant’s career pathway.

**Statistical Model Limitations** – A limitation to the models was the amount of missing data which were treated as missing at random, and therefore observations with missing data were dropped from analysis. This could lead to bias if the data available do not accurately represent the total sample or population. As the number of valid data points decreases, the analysis power also decreases, particularly for analyses of subgroups. An additional limitation to our models was the possibility for omitted variables which could better account for the variability in goal attainment but are unavailable for analysis (e.g., internal motivations, personal stress, job characteristics, etc.).

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191 For example, different WIF-funded staff seemed to code “Prior Program Employment” as prior to program and other used it for Step One Training.

192 Employer interviews through the Implementation Evaluation noted that some employers did have participants leave their business, because they were offered a better job, in their field, elsewhere.
Appendix C: Cost Evaluation Methods

The Cost Evaluation centered on a cost allocation analysis. This analysis provided a foundational understanding of spending and efficiency, which can be built upon with future studies, such as a Cost Benefit Analysis.\(^\text{193}\)

Research Questions

The cost allocation analysis addressed the research questions outlined in Table C1.

**Table C1: Cost Evaluation Research Questions\(^\text{194}\)**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Logic Model Components</th>
<th>Data Sources &amp; Collection</th>
<th>Analysis Methods</th>
</tr>
</thead>
</table>
| 1) What is the overall cost of *Steps Up to STEM* per output? | ● Inputs – Grant $, Partner commitment (time/$), Staff commitment (time/$)  
● Outputs – Individuals exposed to STEM, Two-Step/One-Step plans developed  
● Outcomes – Participants complete Step One of career path, Participants complete Step Two of career path | ● NYSDOL OSOS Data  
● Cost Allocation Worksheet  
● Fiscal Reports  
● OJT Contracts  
● Communication with GCRWIBs Leadership and consortium member fiscal staff | Quantitative data analysis, see Analysis Methods for formulas |
| 2) How did the cost per output vary per consortium member? | | Quantitative data analysis, see Analysis Methods for formulas |
| 3) How did the cost per output vary over time? | | Quantitative data analysis, see Analysis Methods for formulas |

Data Sources & Collection

The Cost Evaluation includes analysis of two primary variable groupings (separate from Logic Model groupings): inputs and outcomes. Inputs include estimated and actual cost values associated with *Steps Up to STEM*. Outcomes variables include participant outcomes as tracked by the GCRWIBs. The sections that follow describe each in greater detail.

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\(^{194}\) The primary research questions have been modified from their original versions presented within the Evaluation Design Report to better depict the intent of a Cost Evaluation. It was determined the Cost Evaluation provided an understanding of the total cost of the program per participant as opposed to a return on the investment. In addition, a change in the language used in outputs was modified from “Two-Step Career Plan” to “Two-Step contract” for a better interpretation of the process a participant experiences in *Steps Up to STEM* and a consistent progression of activities throughout the life of the intervention.
Inputs Data

*Table C2* defines the inputs that comprise each variable used for the Cost Evaluation. The input table provides an explanation as to which costs were estimated or based on an actual expenditures.

*Table C2: Cost Evaluation Inputs*

<table>
<thead>
<tr>
<th>Estimated Cost</th>
<th>Consortium Member Cost (WIF Funds)</th>
<th>Consortium Member Cost (Non-WIF Funds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer and Partner Cost</td>
<td>● Payroll cost for time spent developing and executing Two-Step contracts</td>
<td>● Contract negotiation and development—overhead cost for implementation of <em>Steps Up to STEM</em> estimated at 8% of <em>Steps Up Two STEM</em> contract (^{195})</td>
</tr>
<tr>
<td></td>
<td>● Payroll cost for time engaged with the program though presentation and workshop activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Travel</td>
<td></td>
</tr>
<tr>
<td>Actual Cost</td>
<td>● Training Cost including wages paid by employer during OJTs</td>
<td>● Payroll for WIF funded staff including fringe benefits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Other Cost directly associated with <em>Steps Up to STEM</em> (e.g., equipment, advertisement, marketing, travel, supplies, etc.)</td>
</tr>
</tbody>
</table>

Outcomes Data

Terms and explanation for the outcomes data variables by participant type, including:

*Two-Step* (TS) – A participant who engaged in a Two-Step contract, the primary career pathway design of the *Steps Up to STEM* model.

*Individualized Training Account* (ITA) – A participant who was engaged in a One-Step contract for training. The One-Step training was a secondary design of the primary model of Two-Step training and was primarily used at the end of Year 2 and then in Year 3 and the extension.

*Train First* (TF) – Train First Model was a sector strategy initiative led by employers where participants, selected by the employers, received training for the first step of the Two-Step contract. Train First model participants did not necessarily have a Two-Step plan. Employers had the opportunity to hire graduates of the training, and ideally engage them in an OJT opportunity for their second step – these participants were described as TF&TS.

*Enrolled Participants* – Participants who entered into a One or Two-Step contract through the traditional engagement at the Career Center. Enrolled Participants went through some element of *Steps Up to STEM* activities (including receiving STEM Labor Market Information, STEM Comprehensive Assessment, STEM IEP Development, and/or STEM Two-Step Plan Job Referrals) before signing a Two-Step contract.

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195 The GCRWIBs Leadership determined that each region would be reimbursed 8% of the cost of Two-Step contracts to offset the overhead cost (i.e. rent, utilities, fees, etc.).
Referral Participants – Participants who were eligible to create a Two-Step contract but were referred to the program through an employer. These individuals may not have gone through all the activities that occurred prior to the development of a Two-Step Career Plan contract compared to Enrolled Participants but were required to, at minimum, create an IEP.

The table that follows aligns the outcomes variables with the OSOS data tracking reference.

Table C3: Cost Evaluation Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>OSOS Data Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of individuals who participated within the Steps Up to STEM Model</td>
<td>An individual that was exposed to any aspect of STEM within the Career Center including labor market information, job availability, career pathways, STEM training, etc.</td>
<td>OSOS Activity – Exposed to STEM</td>
</tr>
</tbody>
</table>
| Total number participants who participated in a One-Step or Two-Step contract | Enrolled or Referral participants that were categorized as Two-Step, Train First, TF&TS, or ITA regardless of goal attainment. | Short Term Goal (Step One of the Training Program) Actual Start Date WIF – Steps Up to STEM  
- OJT  
- Customized Training  
- Occupational Skills Training |
| Total number of participants who participated in a Two-Step contract | Enrolled or Referral participants that were categorized as Two-Step or TF&TS regardless of attainment. | Long Term Goal (Step Two of the Training Program) Actual Start Date WIF – Steps Up to STEM  
- OJT  
- Customized Training  
- Occupational Skills Training |
| Total number of participants who completed Step Two of the Two-Step contract | Enrolled or Referral Participants that were categorized as Two-Step or TF&TS that completed Step Two of the Two-Step contract. | Long Term Goal (Step Two of the Training Program) Actual End Date and Attained WIF – Steps Up to STEM  
- OJT  
- Customized Training  
- Occupational Skills Training |

NYSDOL OSOS Data

The NYSDOL OSOS is the statewide workforce data management system. WIF-funded staff entered customers and services into the system throughout the program. Staff were trained to enter specific services based on the activities of their participants. Based on the services entered, the GCRWIBs provided quantitative data for the following outputs:

- Total Number of individuals who participated within the Steps Up to STEM model
- Total number of participants who participated in a One-Step or Two-Step contract (regardless of goal attainment)
- Total number of participants who participated in a Two-Step contract (regardless of goal attainment)
- Total number of participants who successfully completed Step Two of the Two-Step contract

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196 Referral Participants can include an incumbent worker (an individual who was already employed by the employer who provided the referral to Steps Up to STEM) or a reverse referral (a job seeker who was identified by an employer as an individual the entity would like to hire, then the employer recommended this individual to Steps Up to STEM).
The service count data was supplemented by the fiscal component of OSOS to provide the evaluation team with the dollar amount spent (WIF or non-WIF funds) on training for each Two-Step contract participant.

Cost Allocation Worksheet

The Steps Up to STEM Cost Allocation Worksheet (see Appendix I) was a data collection tool designed to capture various costs associated with the project, excluding the training for the workforce areas and employers. Each consortium member provided the evaluation team with four completed worksheets, one for each calendar year from 2012 to 2015. A fiscal staff member from each consortium member utilized their corresponding quarterly and annual fiscal reports to complete the Cost Allocation Worksheet. The forms documented the following:

- WIF Grant Expenditures – Payroll including fringe of all WIF-funded staff including BSRs, WATs, and GCRWIBs Leadership; and other cost associated with Steps Up to STEM such as supplies, equipment, travel, outreach, etc.
- Non-WIF WIB Expenditures (e.g., WIA, now WIOA; National Emergency Grant) – Payroll including fringe for any staff engaged in Steps Up to STEM activities, and other cost associated with the project such as supplies, equipment, travel, outreach, etc.
- Cost of Contract Negotiating and Development – an estimated overhead expense for the development of the Two-Step contract
- Leveraged Funds – Estimated quantitative dollar amount of non-consortium member activities related to Steps Up to STEM including training program design, employer contract development, and employer meetings with BSRs, etc.

OJT Contracts

Data regarding dollar amount employers contributed to OJT for Two-Step contract participants were retrieved from OJT Contracts. GCRWIBs cross-referenced individuals from the four workforce areas that participated in OJTs with their individual contracts to determine the amount of funding the employer contributed to participant training.

Analysis Methods

The theory behind the Cost Evaluation was to analyze the technical efficiency of Steps Up to STEM. Broadly, the technical efficiency examined the total cost required to create one unit of a desired output, in this case, the four identified stages of participation. Technical efficiency with Steps Up to STEM combined the total costs associated with Steps Up to STEM and divided that cost across the total number of participants in each of the following stages:

- Total Number of individuals who participated within the Steps Up to STEM model
- Total number participants who participated in a One-Step or Two-Step contract (regardless of goal attainment)
- Total number of participants who participated in a Two-Step contract (regardless of goal attainment)
- Total number of participants who successfully completed Step Two of the Two-Step contract
Appendix C: Cost Evaluation Methods

Because *Steps Up to STEM* had two distinct goals of 1) exposing individuals to STEM occupations and labor market information, and 2) training individuals in STEM career paths, a subset of the total cost was calculated; total training cost provided an additional analysis of the cost per participant for the training stages.197 This training cost was calculated and divided across the following stages:

- Total number participants who participated in a One-Step or Two-Step contract (regardless of goal attainment)
- Total number of participants who participated in a Two-Step contract (regardless of goal attainment)
- Total number of participants who successfully completed Step Two of the Two-Step contract

The evaluation team gathered the total amount of funding, WIF and non-WIF, spent on *Steps Up to STEM* through OSOS data and the Cost Allocation Worksheet that documented staff time and related expenditures such as supplies, travel, and outreach. In addition, the total amount spent by consortium members was combined with total employer expenses related to the program including time and financial support as reported through Two-Step contract, OJT contracts, and OSOS documentation.

The cost allocation analysis focused on the technical efficiency—or cost to the workforce system and employers per participant—across three domains of analysis:

1. What is the overall cost of *Steps Up to STEM* per output?
2. How did the cost per output vary per consortium member?
3. How did the cost per output vary over time?

Formulas for each dimension are included in *Table C4*.

*Table C4: Cost Questions and Methods Calculations*

<table>
<thead>
<tr>
<th>Research Questions &amp; Analysis</th>
<th>How to Calculate</th>
</tr>
</thead>
</table>
| 1. What is the overall cost of *Steps Up to STEM* per output? | \[
\frac{[(\text{Total Consortium Member Costs}) + (\text{Total Employer and Partner Costs})]}{[\text{Total number of individuals who participated within the *Steps Up to STEM* Model}]}
\]

Examination of technical efficiency for all of *Steps Up to STEM*. This analysis calculated the total consortium member and employer cost and divide this total cost by the total number of participants within the four stages of the program. This provided the evaluation team with the cost allocation of *Steps Up to STEM* as a whole.

\[
\frac{[(\text{Total Consortium Member Costs}) + (\text{Total Employer and Partner Costs})]}{[\text{Total number of participants who participated in a One-Step or Two-Step contract}]}
\]

\[
\frac{[(\text{Total Consortium Member Costs}) + (\text{Total Employer and Partner Costs})]}{[\text{Total number of participants who participated in a Two-Step contract (regardless of goal attainment)]}}
\]

\[
\frac{[(\text{Total Consortium Member Costs}) + (\text{Total Employer and Partner Costs})]}{[\text{Total number of participants who successfully completed Step Two of the Two-Step contract}]}
\]

197 The “total cost” included all variables under the Cost Evaluation Input table, while the total “training cost” included training funds expended by the consortium members and employers including estimated employer and partner cost for training related activities.
Appendix C: Cost Evaluation Methods

2. How did the cost per output vary per consortium member?
Examination of technical efficiency of Steps Up to STEM for each workforce area. Calculated the total consortium member and employer cost per region and divided that figure by the total number of participants in the region. The resulting measure of dollars spent per successful participant indicated the cost allocation analysis of the program for each workforce area, and identified those regions having the least relative cost per stage.

<table>
<thead>
<tr>
<th>Formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[\frac{\text{[Total Consortium Member Training Costs} \times \text{(Total Employer and Partner Training Costs per Year)}}{\text{(Total Number of individuals who participated within the Steps Up to STEM Model)]}}]</td>
<td>Cost per individual for the consortium member and employer combined, divided by the number of participants in the Steps Up to STEM Model.</td>
</tr>
<tr>
<td>[\frac{\text{[Total Costs of Individual Consortium Member} \times \text{(Total Employer and Partner Costs for Corresponding Region)]}}{\text{(Total Number of participants who participated within the Steps Up to STEM Model)}}]</td>
<td>Cost per individual for the individual consortium member and employer combined, divided by the number of participants in the Steps Up to STEM Model.</td>
</tr>
<tr>
<td>[\frac{\text{[Total Training Costs of Individual Consortium Member} \times \text{(Total Employer and Partner Training Costs for Corresponding Region)]}}{\text{(Total Number of participants who participated within the Steps Up to STEM Model)}}]</td>
<td>Cost per individual for the training component of the consortium member and employer combined, divided by the number of participants in the Steps Up to STEM Model.</td>
</tr>
</tbody>
</table>

3. How did the cost per output vary over time?
Examination of technical efficiency for the entire Steps Up to STEM project over time. This analysis examined the total consortium member and employer costs expended on the program per participant goal attainment of each of the four stages by calendar year of the program implementation. The results were used to indicate how quickly resources converted into outputs over the four years of the implementation.

<table>
<thead>
<tr>
<th>Formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[\frac{\text{[Total Consortium Member Costs per Year} \times \text{(Total Employer and Partner Costs per Year)]}}{\text{(Total Number of individuals who participated within the Steps Up to STEM Model per year)}}]</td>
<td>Cost per individual for the consortium member and employer combined, divided by the number of participants in the Steps Up to STEM Model per year.</td>
</tr>
<tr>
<td>[\frac{\text{[Total Consortium Member Costs per Year} \times \text{(Total Employer and Partner Costs per Year)]}}{\text{(Total Number of participants who participated within the Steps Up to STEM Model, regardless of stage)}}]</td>
<td>Cost per individual for the consortium member and employer combined, divided by the number of participants in the Steps Up to STEM Model, regardless of stage.</td>
</tr>
<tr>
<td>[\frac{\text{[Total Consortium Member Training Costs per Year} \times \text{(Total Employer and Partner Training Costs per Year)]}}{\text{(Total Number of participants who participated within the Steps Up to STEM Model, regardless of stage)}}]</td>
<td>Cost per individual for the training component of the consortium member and employer combined, divided by the number of participants in the Steps Up to STEM Model, regardless of stage.</td>
</tr>
</tbody>
</table>
Limitations

The following represent key limitations within the Cost Evaluation:

*Separating Cost Inputs across Outputs* – The cost allocation analysis examined workforce cost data for all program participants, regardless of whether they complete the program and/or remain employed at the end of the evaluation period. Therefore, the total workforce and employer costs include data for Activity, Enrolled, and Referral Participants.\(^{198}\) Other than individual training cost, it was infeasible to pull out cost data for each training participant.\(^{199}\) That is to say, GCRWIBs could not provide a breakdown of cost for such things as staff, overhead, marketing, travel, etc. and separate those costs by an individual simply exposed to STEM versus those who entered into training. To account for this limitation, the *Cost Evaluation* presents a range of results for each output or program stage. The total costs of the program for the stage overestimate the program cost and the training-only costs underestimate the program costs – leaving the true cost of the program per output to be within the range described. For later output stages (Two-Step contract completers), the actual dollars spent directly on training provide a more realistic cost per participant than what was reflected by the original total cost calculation.

*Human Error* – This analysis created several assumptions around the quality of estimated and reported data. Inherently, when estimates are used, limitations occur within the study. These assumptions included: 1) The assumption that employers and workforce staff accurately tracked their time throughout the program on Steps of to STEM activities and provided the evaluation team with accurate quantitative figures that accurately depicted the staff cost of implementation; 2) The assumption that all costs were accurately provided throughout the completion of the Cost Allocation Worksheets, with the acknowledgement that the fiscal staff utilized estimates when providing data for employer and partner costs; and 3) The assumption that fiscal policies and tracking vary per region. Through verbal and written communication, the evaluation team provided definitions and examples for *Steps Up to STEM* expenditures to mitigate the variations among regions and the ambiguity of estimating and reporting on costs, as best as possible.

*Separating Cost by Year* – As part of the study, comparisons were made by consortium member and year. Many participants participated for multiple years, which created a conflict in the data. It was decided that for grouping purposes, the actual start date for Step One (OSOS – Short Term Goal) for Two-Step, Train First, ITA, or TF&TS would determine which year the participated was categorized. Since every participant had a start date, it was a consistent way to capture the data, but because some participated in multiple years, it is reasonable to assume that the cost (i.e. staff time, overhead, etc.) continued for the entire length of participation. In addition, the cost of training was identified “per individual participant” so the cost of training for that participant was also categorized with the start date of Step One. By categorizing it this way, the evaluation team recognizes the

\(^{198}\) The definition of those participants changed from the initial program design. For the purposes of this Cost Evaluation the final definitions were utilized.

\(^{199}\) The total training and partner cost was the sum total of all reported training cost (ITA, TF, TS, and TF & TS) and the sum total of all estimated cost incurred by partners. This training total was used to calculate all cost per training participant regardless of training category because GCRWIB was unable to breakdown the estimated employer cost by participant.
Appendix C: Cost Evaluation Methods

limitation in the accuracy of the yearly dollar totals because some dollars may have been spent in multiple years.

OSOS Data Tracking – Data entry into the NYSDOL OSOS system was conducted by frontline staff throughout the four consortium members. The evaluation team assumed that each area followed the OSOS WIF guide, and accurately and consistently tracked participants for the entire course of participation for the four stages.

The evaluation team acknowledges that prior to February 2014, the OSOS system was not designed to track the total number of individuals who participated in Steps Up to STEM. The GCRWIBs Leadership attempted to capture the number exposed to the project retroactively, but the evaluation team assumed those statics did not capture all of the participants.
Appendix D: Evaluation & Logic Model Alignment

The three components of the evaluation each analyzed and aligned with different components of the *Steps Up to STEM* logic model:

**Implementation Evaluation** – The Implementation Evaluation qualitatively examined the whole intervention, including all Inputs, Activities, Outputs, and Outcomes, and the Long-Term Outcomes of improved services and improved results for workforce system job seekers – with a particular focus on the Two-Step contract model.

**Outcomes Evaluation** – The Outcomes Evaluation analyzed the participants who completed Step One and/or Step Two in Outcomes, and the improved results for workforce system job seekers and increased STEM workforce in Long-Term Outcomes. There was no counterfactual because the study was not Randomized Control Trial (RCT) nor Quasi-Experimental Design (QED).

**Cost Evaluation** – The Cost Evaluation studied the financial contributions and leveraged resources within the various Inputs to provide a cost allocation analysis of *Steps Up to STEM*.

In the *Steps Up to STEM* logic model that follows in Figure D1, each logic model component was coded to match the relevant evaluation. It is important to note that 1) the Implementation Evaluation also qualitatively examined the Inputs designated as aligning with the Cost Evaluation and Outcomes and Long-Term Outcomes designated as aligning with the Outcomes Evaluation; 2) The Cost Evaluation also includes Outcomes identified with the Outcomes Evaluation; and 3) One of the Long-Term Outcomes was not examined within the evaluation.
Appendix E: WIF Participant Flow Chart

The following represents the original WIF program flow chart as included in the 2013 Evaluation Design Report.

Figure E1: WIF Participant Flow Chart

Participant

1. Initial Assessment
2. Career Development Services
3. STEM Labor Market Information Workshop
4. STEM Comprehensive Assessment – Counseling Appointment
   - Alleviating Math/Science Anxiety Workshop
   - National Work Readiness Credential (NWRC) Pre Test
5. STEM IEP Development – Counseling Appointment
   - NWRC Preparation
   - NWRC Certification Exam
   - Prove It Assessments
   - Metrix Learning Classes
6. STEM Two-Step Plan Job Referrals
7. Two-Step Contract Developed (WIF Enrolled)
   - Step One Completed
   - Step Two Completed

Direct Employer Referral

Training for either step can be On-the-Job Training, classroom-based, or customized by the employer.

Job Search Ready

Opted out Back to WIA

No Options Back to WIA
Appendix F: Timeframes

Steps Up to STEM was carried out over three years, plus the no-cost grant extension of nine months. For program implementation, the majority of changes to the program occurred between six and 18 months. The Implementation Evaluation of Steps Up to STEM occurred from November 2012 through September 30, 2015. In measuring outcomes, participants’ quantitative data was recorded regularly between December 2012 and October 2015. In measuring changes in wages, data was required to be tracked prior to the program and it was examined at four different time points to observe the trends. The actual time varied by participant as it was based on their records at the following time points: before they entered the program, at Step One, at Step Two, and after they exited the program. To more effectively evaluate the program, the follow-up timeframe would have been extended to three to five years after participants’ goal attainment to account for extent of retention and lag-time in UI wage data for program completers (i.e. the fourth time point).

The table below highlights key milestones within the implementation and evaluation. Milestones are color coded as administrative (gray), programmatic (green, bolded), and evaluative (pink, italicized).

Table F1: Timeframes for Steps Up to STEM Implementation and Evaluation

<table>
<thead>
<tr>
<th>Key: Administrative</th>
<th>Programmatic</th>
<th>Evaluative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROGRAM YEAR 1</strong> (July 1, 2012-June 30, 2013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Milestones</td>
<td>Programmatic Milestones</td>
<td>Evaluation Milestones</td>
</tr>
<tr>
<td>− Program launched</td>
<td>Q1</td>
<td>− Evaluator selected</td>
</tr>
<tr>
<td>− First Steps Up to STEM Coalition meeting</td>
<td></td>
<td>− Evaluation launched</td>
</tr>
<tr>
<td>− Contract established with CEG</td>
<td>Q2</td>
<td>− Evaluation design report submitted</td>
</tr>
<tr>
<td>− Contract established with evaluators</td>
<td></td>
<td>− Monthly Update Call schedule established</td>
</tr>
<tr>
<td>− First Two-Step contract developed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Math Anxiety Workshop created</td>
<td>Q3</td>
<td>− Data collection instruments and protocols established</td>
</tr>
<tr>
<td>− STEM LMI workshops fully operational</td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Train First Model planning</td>
<td>Q4</td>
<td></td>
</tr>
<tr>
<td>− OSOS User Guide established with NYSDOL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Grant funding tracking sheet established</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **PROGRAM YEAR 2** (July 1, 2013-June 30, 2014) | | |
| Program Milestones | Programmatic Milestones | Evaluation Milestones |
| − First credentials earned with Two-Step model | Q1 | − First site visit conducted |
| − Regular WIF-funded all-staff meetings begin | | − Data collection began |
| − Common participant tracking tool established | | |
| − First STEM Youth Summer Institute held | | |
### More formal communication and reporting developed with CEG
- Additional data collection field added to OSOS used to identify customers exposed to STEM careers
- **Train First Model programming started**

### Math Anxiety Workshop adjusted
- Additional data collection field added to OSOS used to identify customers provided assessment activities related to STEM appropriateness
- **Federal Project Officer conducted site visit**
- **One-Step training model started**
- **Conducted first STEM business panel**

### PROGRAM YEAR 3
(July 1, 2014-June 30, 2015)
- **Second STEM Youth Summer Institute held**
- **STEM Readiness Assessment goal reached**
- **Capital Region WIB Executive Director retires, new director begins**
- **No-cost extension granted**
- **Additional options added to OSOS WIF Training fields to better identify activities and outcomes**
- **First employer visit for WIF-funded staff**
- **Subcontract with Trinity Alliance established for Two-Step contracts**

### PROGRAM YEAR 4 (no-cost extension)
(February 1, 2015-March 31, 2016)
- **Third STEM Youth Summer Institute held**
- **Program implementation scheduled to end**

---

200 The WIB Director, who took over for the WIB Executive Director, was already heavily engaged in the grant.
Appendix G: Site Visit Interview Guide

Key Stakeholders

- GCRWIBs Leadership
  - 60 minutes each
  - Final group ½ day meeting
- Staff
  - WIF-funded staff: 45 minute meetings if individual, 60-90 minute meeting if in group
  - Non-WIF-funded staff: 20 minute meeting if individual, 30-40 minute meeting if in group
- Businesses (including both participating business and potential participating businesses, or those who know about the program, have decided not to participate, but are willing to speak with us)
  - 30 minute meeting if one-on-one; 60 minute meeting if in groups
- Steps Up to STEM Participants
  - 20 minute meeting if one-on-one; 45-60 minute meeting if in groups

GCRWIBs Leadership
Grant (WIB/Center) Directors – 60 minute individual meeting

Interview Questions:

- Program Activities
  - How have program activities changed from the original plan and why? How has that impacted program success?
  - Which program elements do you feel have been the most and least effective so far? Why?
  - What successes have occurred, and what led to those successes?
  - What factors have hindered your ability to be effective?
  - What other tangible or intangible benefits have come out of the program that you didn't expect?
- Program Integration
  - How is Steps Up to STEM integrated into your Career Centers?
  - What formal processes or systems are in place for collaboration among GCRWIBs Leadership? Among staff?
  - Are there fundraising efforts for the long-term sustainability of the program?
- Collaboration
  - What organizations do you work collaboratively with to put forth Steps Up to STEM?
  - What organizations do you collaborate with in other programs that could be useful to integrate into this one?
  - How do current levels of collaboration impact community benefit and program sustainability?
  - Who in the community is currently involved with the program?
  - Who in the community needs to know about the program?
    - What do they need to know?
Appendix G: Site Visit Interview Guide

- What do you want them to do?
  - Who on your staff are dedicated to employer relationships?
    - How are these established?
    - How are they maintained?

- Resources
  - What resources are you currently using? ($, staff, space, etc.)
  - What additional resources, partnerships, and/or approaches do you feel you need to make the program successful?
  - How has this program changed your job? Do you have the tools and resources you need to be effective?
  - Looking ahead through the rest of Y2, what else do you need, or need to do, to be effective? What should be different? How does that fit into grant requirements?

- Overall Thoughts
  - What are the two or three most important things you’ve learned so far by operating this program?
  - What else do we need to know?

WIF-Funded Staff
WIF-Funded Business Service Representatives and Workforce Advisors — 60-90 minute group meeting

Interview Questions:

- Program Activities
  - Which program elements do you feel have been the most and least effective so far? Why?
  - What successes have occurred, and what led to those successes?
  - What factors have hindered your ability to be effective?
  - Can you describe how the process has gone for a few recent clients?
  - What other tangible or intangible benefits have come out of the program that you didn’t expect?

- Program Integration
  - How is Steps Up to STEM integrated into your Career Centers?
  - What formal processes or systems are in place for collaboration among staff?

- Collaboration
  - What organizations (if any) do you work collaboratively with to put forth Steps Up to STEM?
  - What organizations (if any) do you collaborate with in other programs that could be useful to integrate into this one?
  - How do current levels of collaboration impact community benefit and program sustainability?
  - Who in the community is currently involved with the program?
  - Who in the community needs to know about the program?
    - What do they need to know?
    - What do you want them to do?

- Resources
Appendix G: Site Visit Interview Guide

- What resources are you currently using? ($) staff, space, etc.)
- What additional resources, partnerships, and/or approaches do you feel you need to make the program successful?
- How has this program changed your job? Do you have the tools and resources you need to be effective?
- Looking ahead through the rest of Y2, what else do you need, or need to do, to be effective? What should be different? How does that fit into grant requirements?

**Overall Thoughts**
- What are the two or three most important things you’ve learned so far by operating this program?
- What else do we need to know?

**Non-WIF-Funded Staff**

Career Center Staff, NYSDOL staff, or other staff tangentially related to the project – 30-40 minute group meeting (Note: This meeting is contingent upon supervisor approval)

**Interview Questions:**

- **Program Activities and Integration**
  - Describe your overall understanding of the program.
  - Describe how your role relates to the program.
  - Has this program changed your job? Do you have the tools and resources you need to be effective?
  - What are some of the biggest challenges and successes you have noticed from the program?
  - Can you describe how the process has gone for a few recent clients?
  - Looking ahead through the rest of Y2, what else do you need, or need to do, to be effective? What should be different? How does that fit into grant requirements?

**Businesses**

Businesses include both participating businesses and potentially participating businesses whom the WIB and/or the WIF-funded Business Services Representatives has connected with to discuss *Steps Up to STEM*.

30-60 minute meeting if one-on-one; 60 minute meeting if in groups

**Interview Questions (If Participating Employer):**

- **Program Engagement**
  - How did you become involved in *Steps Up to STEM*?
  - How are relationships with employers established and maintained?
    - What could program administrators do to make the process of hiring a *Steps Up to STEM* worker easier?
  - How have you or your business been involved in program design and training?

- **Program Workers**
Appendix G: Site Visit Interview Guide

- Have you encountered any challenges or obstacles in hiring workers through this program? Why or why not?
  - What future challenges do you foresee?
- How well have your workers with Two-Step Career Plans met skill requirements compared to non-participants in similar jobs?
- In your experience, what has been the difference in the amount of onboarding/training required for Enrolled Participants versus non-participant employees?
- How has the Two-Step Career Plan design impacted employee advancement?

Community Engagement
- Who in the community needs to know about the program?
  - What do they need to know?

Overall Thoughts
- Overall, how satisfied are you with the program?
- Would you recommend Steps Up to STEM to your peer employers? Why or why not?
  - Additionally/Alternatively: How has the program impacted your view of the public workforce system?
- How has Steps Up to STEM impacted your business’s bottom line?
- Is there anything else you think we should know about the program?

Interview Questions (If Non-Participating)

Program Discussion
- What interested you in Steps Up to STEM?
- What challenges or obstacles have you faced in hiring workers through this program?
  - What future challenges do you foresee?
- What benefits do you see to this program?
- What could program administrators do to make the process of hiring a Steps Up to STEM worker easier?

Interview Questions:

Individual Goals
- Describe your current or previous employment
- What are your personal career goals?
  - How is this program helping you accomplish them?

Program Discussion
- How did you hear about the program?
- What components of the program have you participated in thus far?
  - Which ones were the most valuable? Why?
  - Are there certain parts of the program that you find least valuable? Why?
- Overall, how satisfied are you with the program? Would you recommend the program to your peers?
- What program improvements or changes would you recommend?

Overall Thoughts
- Is there anything else you think we should know about the program?
Appendix H: Final Site Visit Questions

GCRWIBs Leadership
90-120 minutes, one-on-one

General/open questions:

- Talk a little about Year 3 – how was it different from the previous two years? (Could include program activities, staffing, employer responses, etc.) How did the grant evolve over time?
- Revisit grant structure – who is grant-funded and what is the reporting structure?
- Who else internal to the workforce system was involved in the grant but not grant-funded?

Related to workforce customers:

- Talk a little bit about resources spent on workforce customers:
  - Which customer-related activities were most time intensive? (how did staff spend their time helping customers)
  - Which activities required the greatest amount of funding to carry out?
  - What other resources or tools, if any, could have improved the quantity of services provided? What could have improved quality?
- How do you define Steps Up to STEM success as it relates to workforce customers?
  - Which activities were most successful?
  - What contributed to your ability to be successful? What hindered it?
  - Which activities were not as successful as originally hoped? Why not?
- How did participation in a consortium impact (or not impact) program success for workforce customers?
  - Who external to the workforce development system contributed to that success?
  - What related, collaborative processes or relationships were in place prior to the grant?
  - What has grown as a result of the grant?
  - Who else would you have liked to bring to the table? (Probe specifically for colleges, who were mentioned in the grant)
  - Which external relationships did not occur as planned? What happened?
- What other factors, if any, impacted program success (policy shifts, economic conditions, staff changes, etc.)
- How did customer-related grant components change over time (originally conceived vs. reality)? What led to those changes?

Related to business engagement:

- Talk a little bit about resources spent on business engagement:
  - Which business-related activities were most time intensive?
  - Which activities required the greatest amount of funding to carry out?
  - What other resources or tools, if any, could have improved the quantity of business engagement? What could have improved quality?
Appendix H: Final Site Visit Questions

- How do you define *Steps Up to STEM* success as it relates to businesses?
  - Which activities were most successful?
  - What contributed to your ability to be successful? What hindered it?
  - Which activities were not as successful as originally hoped? Why not?
- How did participation in a consortium impact (or not impact) program success for business engagement?
  - Who external to the workforce development system contributed to that success?
  - What business-related collaborative processes or relationships were in place prior to the grant?
  - What has grown as a result of the grant?
  - Who else would you have liked to bring to the table?
  - Which external relationships did not occur as planned? What happened?
- What other factors, if any, impacted program success (policy shifts, economic conditions, staff changes, etc.)?
- How did business-related grant components change over time (originally conceived vs. reality)?
  - What led to those changes?

Program Integration and Sustainability

- How has the program promoted systematic change in collaboration of the public workforce system, higher education, and industry?
- How is *Steps Up to STEM* integrated into your Career Centers?
- What cultural or institutional challenges did you encounter integrating *Steps Up to STEM* activities into the Career Centers?
- Which elements of the program will carry on once grant funds are gone?
- Looking back, what impact, if any, did this program have on workforce system:
  - Operations
  - Culture
  - Way of doing business
  - Way of collaborating with external groups
  - Anything else?
- What do you wish you could continue, if funds weren’t an obstacle?

Overall Thoughts

- What are the two or three most important things you’ve learned by operating this program?
- What would you do differently if you could start over from the beginning?
- What opportunities emerged from program implementation that the GCRWIBs can capitalize on for the future?
- Do you believe this program would be successful in other areas of the country? Why or why not?
  - What would it take for another WIB to adopt this model?
  - What characteristics or traits would the organization need to have?
  - What non-financial resources are necessary to make it successful?
- What else do we need to know?
Appendix H: Final Site Visit Questions

**WIF-Funded Staff**

60-90 minute small-group interviews

**General/open questions:**

- Talk a little about Year 3 – how was it different from the previous two years? (Could include program activities, staffing, employer responses, etc.) How did the grant evolve over time?
- Revisit grant structure – what was your primary involvement in grant activities?

**Related to workforce customers:**

- Talk a little bit about resources spent on workforce customers:
  - Which customer-related activities were most time intensive? (how did staff spend their time helping customers)
  - Which activities required the greatest amount of funding to carry out?
  - What other resources or tools, if any, could have improved the quantity of services provided? What could have improved quality?
- How do you define *Steps Up to STEM* success as it relates to workforce customers?
  - How has this definition change for you (if at all)?
  - Which activities were most successful?
  - What contributed to your ability to be successful? What hindered it?
  - Which activities were not as successful as originally hoped? Why not?
- How did participation in a consortium impact (or not impact) program success for workforce customers?
  - Who external to the workforce development system contributed to that success?
  - What related, collaborative processes or relationships were in place prior to the grant?
  - What has grown as a result of the grant?
  - Who else would you have liked to bring to the table? (Probe specifically for colleges, who were mentioned in the grant)
  - Which external relationships did not occur as planned? What happened?
- What other factors, if any, impacted program success (policy shifts, economic conditions, staff changes, etc.)
- How did customer-related grant components change over time (originally conceived vs. reality)? What led to those changes?

**Related to business engagement:**

- Talk a little bit about resources spent on business engagement:
  - Which business-related activities were most time intensive?
  - Which activities required the greatest amount of funding to carry out?
  - What other resources or tools, if any, could have improved the quantity of business engagement? What could have improved quality?
- How do you define *Steps Up to STEM* success as it relates to businesses?
  - Which activities were most successful?
  - What contributed to your ability to be successful? What hindered it?
  - Which activities were not as successful as originally hoped? Why not?
Appendix H: Final Site Visit Questions

- How did participation in a consortium impact (or not impact) program success for business engagement?
  - Who external to the workforce development system contributed to that success?
  - What business-related collaborative processes or relationships were in place prior to the grant?
  - What has grown as a result of the grant?
  - Who else would you have liked to bring to the table?
  - Which external relationships did not occur as planned? What happened?
- What other factors, if any, impacted program success (policy shifts, economic conditions, staff changes, etc.)
- How did business-related grant components change over time (originally conceived vs. reality)?
  - What led to those changes?

Program Integration and Sustainability

- How has the program promoted systematic change in collaboration of the public workforce system, higher education, and industry?
- How is *Steps Up to STEM* integrated into your Career Centers?
- What cultural or institutional challenges did you encounter integrating *Steps Up to STEM* activities into the Career Centers?
- Which elements of the program will carry on once grant funds are gone?
- Looking back, what impact, if any, did this program have on workforce system:
  - Operations
  - Culture
  - Way of doing business
  - Way of collaborating with external groups
  - Anything else?
- What do you wish you could continue, if funds weren’t an obstacle?

Overall Thoughts

- What are the two or three most important things you’ve learned by operating this program?
- What would you do differently if you could start over from the beginning?
- What opportunities emerged from program implementation that the GCRWIBs can capitalize on for the future?
- Do you believe this program would be successful in other areas of the country? Why or why not?
  - What would it take for another WIB to adopt this model?
  - What characteristics or traits would the organization need to have?
  - What non-financial resources are necessary to make it successful?
- What else do we need to know?
Appendix H: Final Site Visit Questions

Non-WIF-Funded Staff
30 minute interview

General/open questions:

● Describe how your role relates to the program?
● Talk a little about year 3 – how was it different from the previous two years? (Could include program activities, staffing, employer responses, etc.) How did the grant evolve over time?

Related to workforce customers:

● How do you define Steps Up to STEM success as it relates to workforce customers?
  o How has this definition change for you (if at all)?
  o From your perspective, which activities were most successful?
  o What contributed to the program’s success? What hindered it?
  o From your perspective, which activities were not as successful as originally hoped? Why not?
● What other factors, if any, do you think impacted program success (policy shifts, economic conditions, etc.)?

Related to business engagement:

● Have you seen any impacts from the grant on business engagement? If yes:
  o From your perspective, which business-related activities were most impactful?
  o What contributed to that? What hindered it?
● What other factors, if any, impacted program success (policy shifts, economic conditions, staff changes, etc.)

Program Integration and Sustainability

● How did you see Steps Up to STEM integrated into your Career Centers?
  o How could it have been better integrated?
  o How much time passed before you felt like you really understood the grant’s concepts and activities?
● As it relates to your job, do you anticipate elements of the program will carry on once grant funds are gone?
● Looking back, what impact, if any, did this program have on workforce system:
  o Operations
  o Culture
  o Way of doing business
  o Way of collaborating with external groups
  o Anything else?
● What do you wish you could continue, if funds weren’t an obstacle?
Appendix H: Final Site Visit Questions

**Overall Thoughts**

- What are the two or three most important things you’ve learned by operating this program?
- What would you wish leadership or grant-funded staff would have done differently if you could rewind time?
- Do you believe this program would be successful in other areas of the country? Why or why not?
  - What would it take for another WIB to adopt this model?
  - What characteristics or traits would the organization need to have?
  - What non-financial resources are necessary to make it successful?
- What else do we need to know?

**Businesses**

30-60 minute interviews

**Program Engagement**

- How did you become involved in *Steps Up to STEM*?
- How are relationships with employers established and maintained?
  - What could program administrators do to make the process of hiring a *Steps Up to STEM* worker easier?
- How have you or your business been involved in program design and training?
  - Additionally/Alternatively: What resources did you contribute to the program? (e.g., training dollars, advice, data, etc.)

**Program Workers**

- Have you encountered any challenges or obstacles in hiring workers through this program? Why or why not?
  - What future challenges do you foresee?
- How well have your workers with Two-Step Career Plans met skill requirements compared to non-participants in similar jobs?
- In your experience, what has been the difference in the amount of onboarding/training required for Enrolled Participants versus non-participant employees?
- How has the Two-Step Career Plan design impacted employee advancement?
- What factors most impacted your ability to participate? (Both positively—what facilitated participation—and negatively—why not even greater participation?)

**Program Results**

- What were the most significant benefits to your business that resulted from this program?
- How has *Steps Up to STEM* impacted your business’s bottom line?
- Overall, how satisfied are you with the program?
- Would you recommend *Steps Up to STEM* to your peer employers? Why or why not?
- How has the program impacted your view of the public workforce system?
Overall Thoughts

- Who else should have known about this program? How could staff have marketed it better?
- What advice would you give to another employer participating in a program like this in the future?
- What advice would you give to the workforce system to improve program implementation in the future?
- What lasting impacts do you see, for your business or the community, as a result of this program?
- If you could redesign a program like this that is meant to increase workforce quality and retention, what would it look like (or what elements would it include)?
- Is there anything else you think we should know about the program?

Non-Participating Businesses

30 minute interviews

Program Discussion

- What interested you in Steps Up to STEM?
- What led to your decision not to participate in the program?
- Is there anything else staff could have done to facilitate your participation?
- What benefits do you see to this program?
- What could program administrators do to make the process of hiring a Steps Up to STEM worker easier?

Participants

30 minute interviews

Individual Goals

- Describe your current or previous employment
- What are your personal career goals?
  - How is this program helping you accomplish them?

Program Activities

- Talk about getting registered into the program?
  - How did you hear about the program?
  - What was the process like?
  - Is there anything staff could have done to make the process better?
- Which workshops, if any, did you attend any workshops at the Career Centers?
  - What, if anything, did you learn?
  - Did the workshops have any impact on your training or job search decisions?
- Talk for a minute about getting connected to this company:
Appendix H: Final Site Visit Questions

- How did that connection occur?
- How did your particular training program get selected?
  - Step 1?
  - Step 2?
- When do you plan to begin Step 2?
  - What impacts your ability to begin Step 2?

**Wrap-up**

- Of everything you’ve done so far under the program, what has been most beneficial to you? What has the program meant to you?
- What other challenges have you encountered?
- Is there anything else you think we should know about the program?
Appendix I: Cost Allocation Worksheet

WIB: ______________________  Date: ______________________

Representative completing worksheet: __________________  For Year: ________

I. WIF Expenditures

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<tr>
<th>Payroll WIF Funded Staff (including fringe benefits)</th>
<th>Other Costs (e.g., equipment, advertisements, marketing, travel, supplies, etc.)</th>
<th>Total WIF Funded Staff Cost</th>
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II. WIB Expenditures (Non-WIF Dollars)

<table>
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<tr>
<th>Estimated Payroll* (including fringe benefits)</th>
<th>Other Cost directly associated with Steps Up to STEM contracts (e.g., equipment, advertisements, marketing, travel, supplies, etc.)</th>
<th>Total Cost</th>
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*Estimated time includes business development for Two Step Career Plan contracts, hiring process of WIF funded staff, managing WIF funded staff, case management of participants, and staff support for Steps Up to STEM. Does not include any evaluation related activities.

III. Cost Reimbursement for Contract Negotiation and Development:
Total dollar amount for year reimbursed to WIB for contract negotiation and development. ______________

IV. Leveraged Funds

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<th>Dollar Amount</th>
<th>Description of Service or Cost Share</th>
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