



SOUTHERN REGIONAL
TECHNICAL COLLEGE

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TAACCCT:

Healthcare Career Works!
(HCW) Program

THIRD-PARTY EVALUATION FINAL REPORT

September 2018

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About This Publication

WorkED Consulting, LLC, a small business management consulting firm located in Burke, Virginia, and its evaluation partner, MN Associates, located in Fairfax, Virginia, wish to thank and acknowledge staff at Southern Regional Technical College for their many hours of time and effort spent providing qualitative and quantitative data.

1.0 Executive Summary

Southern Regional Technical College (SRTC), located in Thomasville, Georgia, was officially formed in 2015 as a result of the merger of two previously independent institutions: Southwest Georgia Technical College and Moultrie Technical College. SRTC is a unit of the Technical College System of Georgia and is a public two-year college that provides access to academic and occupational credit courses; associate degree, diploma, and technical certificate of credit programs; continuing education opportunities; business and industry training; and adult education programs. Through traditional and distance delivery methods at multiple instructional sites, SRTC supports workforce development serving primarily the citizens of Colquitt, Decatur, Early, Grady, Miller, Mitchell, Seminole, Thomas, Tift, Turner, and Worth counties.

In 2014, SRTC applied for, and was successfully awarded, a Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant from the U.S. Department of Labor. Healthcare Career Works! (HCW) is a sector strategy project with a goal of serving 525 TAA-eligible, unemployed and dislocated workers, and veterans with accelerated training leading to certificates, diplomas, and degrees in high demand, high wage healthcare careers. The program had five primary goals:

1. Increasing accessibility to healthcare careers by adding a new associate degree program in Health Information Technology and expanding the Nursing program;
2. Redesigning the delivery of nursing coursework through technology-enhanced instruction, embedded technology, and an enhanced infrastructure;
3. Expanding current certificates in healthcare with technology-enhanced pedagogy to be used as stacked and latticed credentials,
4. Allowing students entry into the associate degree programs in healthcare;
5. Redesigning the delivery of learning support coursework (developmental); and
6. Providing wrap-around support services to students in health careers.

The **program implementation study** was designed to answer sets of research questions in four key areas: (1) Curriculum Review, Use and Selection; (2) Program Delivery, Design, and Administration; (3) Assessment Tools and Processes; and (4) Partner Contributions. While the program implementation study design incorporated these required research areas, it also extended further in assisting SRTC program staff and administration with continuous improvement by cross-walking the activities and deliverables in SRTC's Statement of Work (SOW) with the research questions in the four research areas, and providing a comprehensive picture of ongoing implementation progress, accomplishment of deliverables, and continuous improvement. Therefore, the implementation design provided SRTC leadership with qualitative information and feedback on areas of improvement.

The **outcomes and impact analysis** utilized a quasi-experimental, matched comparison group design in which treatment group members who were exposed to the HCW program were matched with equivalent comparison group members pursuing similar technical programs at SRTC.

Matching procedures included the use of propensity scores as weights to maximize the equivalence of the treatment and comparison groups in observed characteristics at baseline. The completion and employment impacts of the intervention were estimated with regression-based covariate adjustment modeling, difference-in-differences (DID), or comparative short interrupted time-series (CSITS) depending on pre-program data availability and baseline patterns.

In the absence of random or an otherwise ignorable treatment assignment, the evaluators employed a matched comparison group with propensity score weighting strategy, coupled with analytic modeling procedures that sought to remove observed endogeneity effects that may otherwise bias impact estimates. Although there are limitations to this approach, the WorkED team could be certain that the quasi-experimental contrast is with programs that more closely represented a related educational pathway as opposed to programs that were substantively different to the treatment intervention.

Individual-level matching (propensity score weighting) further maximized equivalence and permitted the evaluators to explicitly assess the extent of observed bias that remained after adjustment. Finally, analytic modeling procedures added further robustness by permitting covariate adjustment (regression modeling), removing any un-controlled-for baseline differences (DID), and adjusting for any difference in pre-program trends (CSITS) that existed between the treatment and comparison groups.

Outcomes examined by both methods included: program completion rates, credentials earned, enrollment in further education, entered employment, job retention, and wages.

Implementation Findings

TAACCCT grant funds allowed SRTC to build capacity in the Nursing program. SRTC's goal of building increased capacity for Nursing students was successful. SRTC faculty were able to enhance "hands on" laboratory experience for Nursing students and reconfigure curriculum to provide a foundational understanding of expectations and opportunities in Nursing. All curriculum aligned to industry standards and licensing requirements.

Implementation of the HIT program was not finalized mainly due challenges meeting national industry accreditation requirements. SRTC committed to a HIT pathway during the application process that met CAHIIM national accreditation requirements. SRTC faced challenges recruiting qualified faculty that met CAHIIM standards and was never able to hire a

second full-time HIT faculty member. SRTC did make progress in developing new HIT courses that will be sustained beyond the grant period of performance.

Technology enhancements have improved opportunities for hybrid and online learning. SRTC was able to meet the goal of embedding new technology to expand capacity and options for student learning in Nursing. Implementation of new technology, in combination with curriculum improvements, likely contributed to SRTC meeting its participants-served outcome.

SRTC maintained an industry-focused approach to curriculum and course development with revisions and modifications based on employer feedback and industry standards. SRTC demonstrated employer support for the Nursing program as employer partners contributed to curriculum development, practicum opportunities for participants, and post-program employment opportunities. An outstanding question that exists is whether job opportunities exist to justify a full two-year associate degree pathway for HIT.

SRTC met milestones for purchasing equipment and developing laboratories and other learning spaces for the Nursing program. Medical equipment and supplies used by participants for learning were properly purchased and implemented and usable in a timely fashion. Equipment and supplies positively impacted participants' experience as they promoted applied learning and provided options for online and hybrid learning.

While staff positions, such as the Project Director and Occupational Coach, were filled by the same people throughout the grant period of performance, challenges with hiring faculty and staff for the HIT program ultimately impacted the efficacy of a HIT pathway. Having consistency in grant-funded positions provided consistent direction and focus on achieving grant deliverables and outcomes. Concurrently, Nursing faculty assigned to the HCW program remained constant and allowed for consistent curriculum development processes. However, the inability to meet HIT industry accreditation requirements by hiring qualified staff and faculty to accomplish deliverables hindered the implementation of a HIT pathway. Going forward, a "lesson learned" for SRTC is to conduct appropriate research regarding industry requirements and occupational opportunities prior to seeking resource support.

Grant-funded staff and faculty resided in the appropriate academic department; however, the HCW Project Director was housed in Institutional Advancement, which created administrative challenges. The HCW Project Director did not have straight-line management authority over the activities conducted under the grant; therefore, limiting the Project Director's ability to make course corrections and implement continuous improvement during the period of performance. It is strongly recommended that this approach to managing grants be modified to allow the appropriate academic department to manage the project with Institutional Advancement tracking grant compliance on behalf of the College as a whole.

The Occupational Coach played the primary role in helping HCW participants with career guidance, so SRTC should identify how these services will continue and expand as a sustainability strategy. An important component of workforce education and training programs is the link to employment and earnings upon completion of the program and credentialing attained. In the HCW model, the Occupational Coach had primary responsibility for career guidance and coordinating with the Director of Career Services for post-program employment placement. SRTC is committed to sustainability of improved advising and career guidance, so staff and executive leadership should continue acting proactively to incorporate lessons learned from the Occupational Coach position into larger college efforts.

The HCW program incorporated an approach that assessed and provided initial exposure to the field of Nursing early in the program to help participants understand alignment of their interests and aptitudes. As part of the pathway change for Nursing, assessments and early courses designed to expose participants early in the process to the field of Nursing—the opportunities and the challenges—provided an important targeting of the program to those who had interests and aptitudes to likely complete the program. This approach provides a roadmap for other programming at SRTC.

HCW demonstrated employer support for the Nursing program. Employers in the local region have provided assistance with curriculum development, practical experiences needed for permanent employment, and interviews of qualified program candidates. The HIT program has received some employer support, such as development of an Employer Advisory Committee, but the lack of program maturity has hampered further employer involvement. SRTC should use these initial results to implement a more comprehensive employer engagement strategy and tracking approach throughout the College to track successes in business support for workforce and education programs.

The local one-stop/workforce system did not significantly contribute to the HCW program. While there was no indication of particular issues between SRTC and the local workforce/one-stop system, resource availability, such as Individual Training Account (ITA) support, did not materialize or have an impact on program results.

Participant Outcomes and Impact Findings

HCW met its program enrollment numbers by the end of the grant. The program exceeded the participation numbers by 83 participants.

Overall, while there were gains in enrollment and program completion, some target numbers were not met. A total of 608 unique participants were served in the four years of the grant and 186 credentials were awarded. In both cases, the targets were met. However, the program fell short of meeting its targets in the areas of program completion, retention, and post-completion employment and wage gains.

By the end of year 4, 34% of the TAACCCT participants completed their programs in about one year, exceeding the comparison group by 11 percentage points. Fifty-three percent of the TAACCCT participants, who did not earn a credential, were still enrolled in HCW or other grant-funded programs and 10% were enrolled in other programs.

Time of Completion. On average, the TAACCCT participants took 12.5 months, which was about two months shorter than the average time that the comparison group took to complete their programs. The highest differences between the two groups in completion time were observed in two Health Information degree programs.

The program completion rate of TAACCCT participants exceeded the comparison group by 11 percentage points. At the program level, the highest difference in the completion rates between the two groups was observed in the Associate of Science/Nursing – Generic degree program. In Health Information Mgt. Tech. -- Degree program, the comparison group was found to have higher completion rate (21%) than the TAACCCT participants (12%).

Program completion rate by demographic status. The completion rate among female (35%) participants was higher than their male (31%) counterpart. Whites (36%) completed at slightly higher rate than Blacks (34%); however, the differences were not found to be statistically significant in both cases. Full-time (41%) participants completed at much higher rate than part-timers (32%). This difference appeared to be statistically significant at 5% significance level.

The HCW program promoted a variety of employment outcomes, including wage increases, employment gains, and industry-recognized credential attainment. Several incumbent workers realized wage increases, and a portion of unemployed participants obtained and kept employment after program completion. Sixty-five percent of the unemployed participants gained employment after completion and average wage for incumbent workers was 46%.

Overall, 84% of the HCW TAACCCT participants were employed after program completion, of which 94% retained employment at the time of preparation of this report. Both Associates of Science in Nursing – “Bridge” (84%) and “Generic” (86%) programs showed remarkable gains in employment.

Program Satisfaction. Overall, the majority of the respondents (91%) were satisfied or very satisfied with the education and support services offered by the program. At least three quarter of the respondents reported that the program was of high quality and helped developing necessary skills to find employment.

Program logistics such as course schedule and program length also were reported by the majority of the respondents to be convenient. However, a few respondents (30%) felt that the laboratory equipment could be improved, particularly the virtual hospital laboratory at the Tifton campus which was considered not as updated as the Thomasville campus.

Final Conclusions

The following final conclusions are drawn from SRTC's TAACCCT-funded program:

1. ***SRTC should institutionalize comprehensive support and processes for managing federal discretionary awards.*** SRTC's management of the overall grant award was sufficient, but the structure of the management of the HCW program made it challenging for the Project Director, who did not have direct responsibility or control for the activities and deliverables. Additionally, the Project Director cost allocated time against multiple projects, which took focus away from the time needed to manage outcomes for HCW. In the future, SRTC should look for implementing process improvements for managing grant projects.
2. ***TAACCCT-allowable funded activities, such as equipment and supply purchases and curriculum development, were critical to the implementation of the HCW program.*** HCW training in the field of Nursing was greatly enhanced with the laboratory equipment and revitalized curriculum developed with TAACCCT funds. Critical capacity was developed to meet employer skill and competency needs in the local region.
3. ***SRTC should institutionally invest in academic support and occupational coaching based on "lessons learned" for the HCW program.*** A core program component was the hiring and use of an Occupational Coach to facilitate program persistence and post-program employment outcomes. There is some evidence this approach had a positive impact, so SRTC should isolate the most helpful practices and look to sustain them across the entire college and slate of academic programming.

2.0 Introduction

Southern Regional Technical College (SRTC), located in Thomasville, Georgia, was officially formed in 2015 as a result of the merger of two previously independent institutions: Southwest Georgia Technical College and Moultrie Technical College. SRTC is a unit of the Technical College System of Georgia and is a public two-year college that provides access to academic and occupational credit courses; associate degree, diploma, and technical certificate of credit programs; continuing education opportunities; business and industry training; and adult education programs. Through traditional and distance delivery methods at multiple instructional sites, SRTC supports workforce development serving primarily the citizens of Colquitt, Decatur, Early, Grady, Miller, Mitchell, Seminole, Thomas, Tift, Turner, and Worth counties.

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3.0 Evaluation Design

WorkED Consulting, LLC was procured as the third-party evaluator at the midpoint of the grant period of performance. Therefore, WorkED Consulting did not develop the original evaluation plan and did not draft the Interim Evaluation Report. WorkED Consulting was hired due to SRTC needing an evaluation team that provided continuous improvement feedback and specific assistance on using formative evaluation results to instigate program improvements.

Upon hiring, the WorkED team immediately implemented bolstered data collection, data analysis, and review procedures. Elements of the Evaluation Plan developed by the prior evaluation team were used as a baseline, and the WorkED team enhanced this design using prior and existing TAACCCT evaluation experience and accepted methodologies. Overall, the HCW evaluation design incorporated the two major required study elements—a program implementation analysis and an outcomes and impact study.

3.1 Implementation Design

The program implementation study incorporated by the WorkED team was designed to answer sets of research questions in four key areas: (1) Curriculum Review, Use, and Selection; (2) Program Delivery, Design, and Administration; (3) Assessment Tools and Processes; and (4) Partner Contributions. The implementation design utilized by the WorkED team sought to provide SRTC leadership with qualitative information and feedback on areas of improvement as the project progressed over the final two years of activities. The research questions addressed by the implementation design include the following:

How was the particular curriculum selected, used, or created? SRTC's goal was to build a new Health Information Technology associate degree track and bolster the Nursing program through enhanced laboratory equipment and technology. The WorkED team's approach to evaluating curriculum development included: 1) assessing and monitoring new curriculum and laboratory equipment implemented, including alignment with national industry and accreditation/certification standards; 2) describing the rationale for new curriculum or refinements to curriculum implemented as a result of employer feedback; and 3) monitoring curriculum implementation progress and timelines.

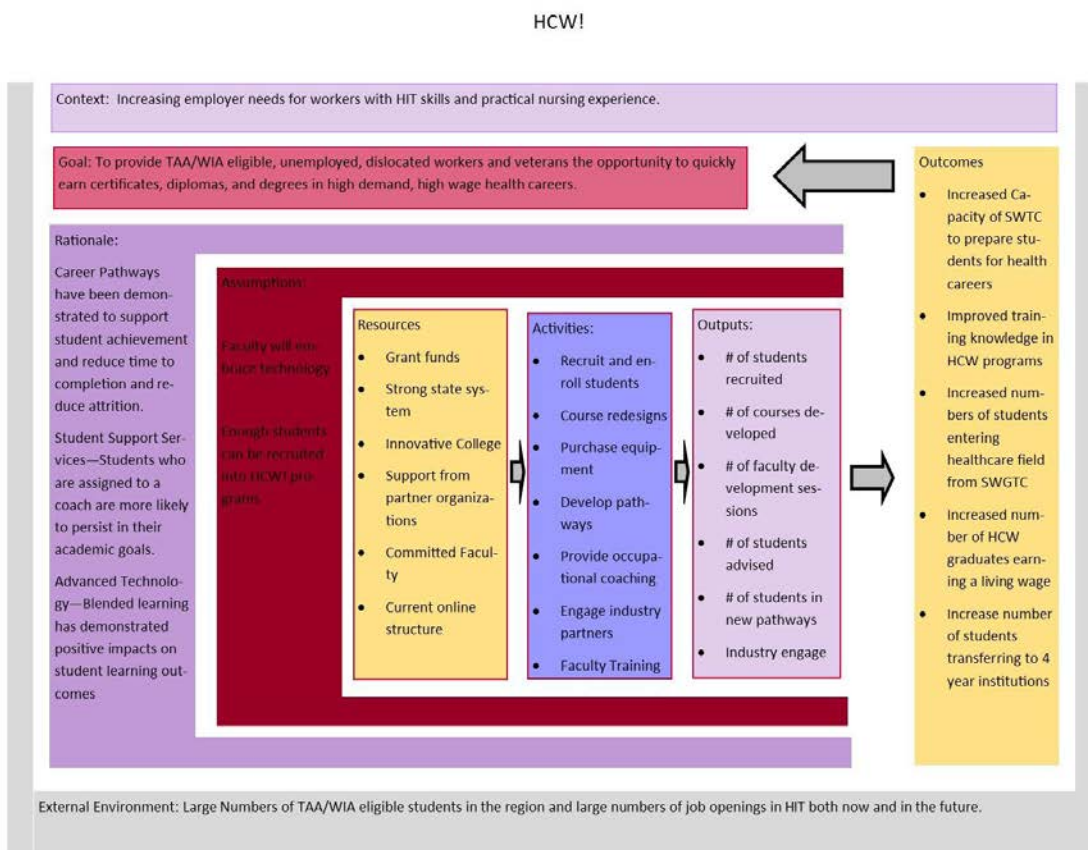
How were programs and program design improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support service and other service were offered? The HCW program commenced due to improvements and new career pathways needed for healthcare careers in the SRTC service region. Program improvements consisted of use of online and hybrid learning and more intensive student support through a grant funded Occupational Coach position, who conducted intake and ongoing academic advising to promote participant completion. Because this was the first large federal grant obtained by SRTC, the evaluation looked at the structure of program administration internally and effectiveness of communication and collaboration among different college departments.

Was an in-depth assessment of participants' skills, abilities, and interests conducted, and how was it conducted? What assessment tools and processes were used? Who conducted the assessment? Were the assessment results useful in determining the appropriate program and course sequence for participants? Was career guidance provided, and if so, through

what methods? The evaluation focused on the impact of the Occupational Coach position on assessment strategies, intake, persistence, and career guidance leading to employment.

What contributions did partners make? What factors contributed to partners' involvement or lack of involvement? Which contributions from partners were most critical to the success of the program? Which contributions from partners had less of an impact? Employer partners made a number of key contributions, and the evaluation documented their participation in the HCW program and its impact.

The logic model was developed by the first evaluation team and included in the SRTC evaluation plan. The WorkED team did not make changes to this logic model and used it to evaluate program implementation fidelity. The HCW Logic Model is depicted below:



Additionally, the evaluation plan outlined two activities for accomplishing the implementation analysis, which are outlined below:

(1) Steps taken by institution to create and run the training program. The WorkED team held periodic conference calls to gather data and gain updates to the program. In 2017, a comprehensive site visit was conducted to gather qualitative data and document activities and deliverables accomplished during the formative phase of the project. The site visit consisted of

facility tours and interviews with program staff, faculty, administration, and employer partners. Interview protocols were developed prior to site visits, and a site visit report was completed and provided to staff.

(2) How operations might be strengthened. During the final two years of the grant period of performance, while the WorkED team was procured as third-party evaluators, WorkED team members continually communicated and provided SRTC with recommendations and information to be used for continuous improvement and best practices to consider sustaining after the end of the grant-funded program.

3.2 Outcomes and Impact Design

The outcome study methodology assesses the impact of the HCW TAACCCT program on participant outcomes. The four areas addressed in this section are: evaluation questions, research design, data collection methods, and limitations and challenges. The purpose of this section is to highlight the type of outcomes that the evaluation focuses on, share the process used to obtain information, and clarify the type of information the evaluation is able to provide.

1. Evaluation Questions

The outcome evaluation questions were designed to help understand how well the SRTC HCW TAACCCT program improved student persistence in training, employment and career outcomes, and student career pathways. The research questions are listed below in Table 1 and includes the data sources used to address each question.

#	Evaluation Question	Outcome Data Source		
		Online Student Surveys	Administrative Data	State Unemployment & Education Data
1	<i>Persistence¹</i>			
1a	Does the enhanced HCW program result in increased graduation/certification rates relative to the comparison group?		X	
1b	Does the workplace-based trainings program result in decreased time to achieve certification/ graduation?		X	
1c	Does the workplace-based trainings program result in increased retention in training programs?		X	
1d	Does the workplace-based trainings program result in increased course completion rates?		X	
1e	Does the workplace-based trainings program result in improved industry and occupational skills/ program-related credentials?			

1f	Does the HCW program result in increases in the # and % of students who pursue additional education post program participation relative to the comparison group?			
2	<i>Employment/Career outcomes</i>			
2a	Does the HCW/workplace-based trainings program result in increased rates of employment (relative to comparison group)?	X		
2b	Does the workplace-based trainings program result in increased earnings?	X		
2c	Does the program result in a decreased time lapse between graduation and job placement relative to the comparison group? ¹			
2d	Does the workplace-based trainings program result in a decreased time lapse between completion and job placement?			
2e	Does the workplace-based trainings program result in higher quality jobs (benefits, wages, etc.)?	X		
3	<i>Career pathways</i>			
3a	Does the workplace-based trainings program result in sustained employment in the target industry? ¹			
3b	Does the workplace-based trainings program result in an increase in promotions? ¹			

Notes: ¹Question could not be addressed with the available data.

2. Research Design

To assess the outcomes and impact of HCW TAACCCT, the outcome evaluation questions were addressed using multiple research designs. In selecting the designs, the most rigorous ones possible were used to understand the program’s effects, given feasibility constraints. Since the comparison groups were available for students in all four HCW programs, the evaluation focused on understanding outcomes for all four comparison groups. The study uses a combination of quasi-experimental and pre-post design to study program impacts on the available outcome measures.

The evaluation used the following designs for each type of training program:

HCW participants in TAACCCT-funded programs. For the participants who enrolled in the HCW program, the study used a quasi-experimental design that examined the impact of the program TAACCCT participants’ completion time and completion rates. The availability of program completion data for the comparison groups allowed the evaluation team to carry out this analysis.

The study employed a pre-post design that examine changes in HCW participants’ employment and wage outcomes after completing the training. This design was used because comparable employment outcomes were not available from the comparison groups.

3. Data Collection Sources

To answer the outcome evaluation questions, different data collection sources were used, including surveys and school administrative data.

HCW-Enrolled TAACCCT Participants

Surveys. A paper survey was administered to participants once: during the semester. Completers were also given a paper survey either when they came to campus to receive their credential/certification or via email. The analysis, therefore, only includes current and exit survey data.

Administrative data. The HCW provided the evaluation team with administrative data on the individuals participating in TAACCCT-funded programs and the comparison group of Nursing and Health Information Science students in four programs. HCW provided data on students from Fall 2015 to Spring 2018. The Spring 2018 semester was the final semester for grant participant enrollment.

4. Limitations & Challenges

Study design. To measure the program impact on employment outcomes, the evaluation used a pre-test/post-test design that examined changes over time. The available data allowed the evaluation team to analyze only post-completion employment and wage gains. Actual wage figures (in dollar amount) were not available for the program participants; therefore, it was not possible for the evaluation team to determine whether the observed wage gain for the incumbent workers was statistically significant. Also, due to unavailability wage data for the comparison group, it is unclear how much of a change was due to the program or other circumstances. For example, if a participant's wage increased, it is possible it could have occurred simply because time had passed since he/she started the program, rather than due to the training itself. Therefore, while the design can suggest what employment outcomes resulted from the program, it cannot definitively show that the program caused them.

Comparison group. The comparison groups were created from students who enrolled in four HCW degree programs between Spring 2011-Spring 2017. First, in attempting to control for differences between the TAACCCT and comparison groups, the analysis used program, and student characteristics such as gender, age, race/ethnicity, registration status (full-time/part-time), disability, veteran, incumbent worker, and Pell grant status. There are potentially other unobserved differences between the two groups that were not possible to control for due to data limitation.

Survey sample and response rate. Since not all participants in the TAACCCT program completed both the baseline and exit surveys, the survey data only represents a sample of TAACCCT participants. Further, the baseline survey was not always administered in the same semester that the participant started the program, and the exit survey was not given in the same

semester of completion. In those cases, the data was not included in the analysis below. As a result, the final sample for the survey data was 99 of the 608 students in the intervention (16%).

Wage and Employment data. The data was obtained either via student report or UI report. However, due to missing data/under report, data was not as reliable for a rigorous analyses and comparison.

5. Research Design

To assess the outcomes and impact of HCW, the outcome evaluation questions were addressed using multiple research designs. In selecting the designs, the most rigorous ones possible were used to understand the program's effects, given feasibility constraints. The study used a combination of quasi-experimental and pre-test/post-test designs to study program impact.

The evaluation used the following designs for each type of training program:

HCW participants in TAACCCT-funded programs. For the participants who enrolled in the HCW program, the study used a pre-test/post-test design that examined changes in participants' employment and career outcomes before, and after, completing the training. This design was used because a comparison group was not available for the overall TAACCCT program.

4.0 Implementation Findings

4.1 Curriculum Review, Use, and Selection

Research Question: How was the particular curriculum selected, used, or created?

At the onset of the project, SRTC sought to impact two program pathways: Nursing and Health Information Technology (HIT). The Nursing pathway realized positive impacts due to TAACCCT funding, while the HIT program impacts were slower to materialize due to industry accreditation requirements.

Nursing: The main goal of Nursing program enhancements was the integration of technology to enhance course delivery and increase capacity to serve more students. Two Nursing program options were enhanced due to TAACCCT funding:

1. **Two-year Nursing Degree**—This is the main program, which is four semesters of courses/curriculum after core general education courses.
2. **PN to RN Bridge**—This is a shorter track for students with Nursing education/experience. The Bridge is three semesters of courses/curriculum after general education courses with articulation of credits from prior learning after the introductory Nursing course.

Course and curriculum modifications were aligned to licensing and accreditation standards. This alignment included requirements around learning outcomes and length of program. Standards did not change through the modification process; delivery was modified.

A number of courses were improved with curriculum and/or technology enhancements. Examples include:

1. **RNSG 1911:** Health Assessment Through the Lifespan—enhanced curriculum
2. **RNSG 1920:** Foundations for Nursing—enhanced curriculum and laboratory experience to provide a better baseline of knowledge for students
3. **RNSG 1940:** Life Transitions I—enhanced curriculum and laboratory experience with integration of technology
4. **RNSG 1960:** Transition to Associate Degree Nursing: PN to RN Bridge—improved, accelerated curriculum to better meet needs of students with nursing experience

A three-prong rationale was provided for the modification of courses:

1. The Foundations course was offered in the first semester of a student’s educational experience, and it had an important impact on the student and his/her understanding and pursuit of the field of Nursing.
2. Department leadership identified courses in need of modifications and improvements that also enhanced student learning.
3. Faculty recognized courses needing modifications and committed to implementing changes that were necessary.

All course modifications met required accreditation and licensing standards and were taught during the grant period of performance.

Health Information Technology: The Health Information Technology (HIT) program was slow to implement, mainly due to challenges meeting industry accreditation requirements. CAHIIM is the accrediting body for HIT educational programs, and CAHIIM requires full-time faculty as an accreditation requirement in the delivery of HIT educational programming. SRTC had a goal at the start of the program of hiring two full-time faculty members, one of whom would also serve as the HIT Program Director. SRTC was not able to hire the second full-time HIT faculty member due to unsuccessful recruitments (which is not unusual and has been observed as an issue by a number of other community colleges by WorkED Consulting), but did successfully hire a full-time Program Director in January 2017. The Program Director has two master’s degrees and appropriate industry credentialing and experience.

Since her hire in January 2017, the Program Director made the following curriculum and related improvements to SRTC’s HIT program:

- Updated course sequencing to provide students with a more streamlined academic experience
- Updated course materials, such as syllabi and applied learning materials
- Modified and added competencies, as necessary to meet CAHIIM standards
- Identified competencies learned for each HIT course and uploaded the information to Blackboard
- Ensured pre-requisite and co-requisite courses were in place and aligned properly for student learning
- Identified adjunct faculty
- Discussed articulation options with other higher education institutions
- Identified courses, and modified curriculum, for online and hybrid learning
- Taught various HIT courses

An additional course modified and taught by grant-funded staff is the 1500 Health Assessment course. Starting spring semester 2016, the Health Assessment course was taught as an introduction to the Nursing and Health programs at SRTC and was intended as a course that instills expectations and realities of being a Nursing and Health Sciences student. The course reinforced learning for students with prior health sciences academic or professional backgrounds and utilized technology and online content to teach in a hybrid learning environment.

Each of the programs had employer and industry involvement through Advisory Committees and strong employer partnerships. Advisory Committees reviewed curriculum, provided peer review, and offered program improvements based on changing workplaces. The HIT Program Director created the HIT Advisory Committee and recruited members to participate.

Curriculum development practices using TAACCCT funding have improved because consistency was applied across the entire program. Due to the SRTC merger after the HCW program began, curriculum development under TAACCCT helped ensure that curriculum and courses were consistent as part of a merged program across multiple campuses.

EVALUATION FINDINGS-CURRICULUM

TAACCCT grant funds allowed SRTC to build capacity in the Nursing program. SRTC's goal of building increased capacity for Nursing students was successful. SRTC faculty were able to enhance "hands on" laboratory experience for Nursing students and reconfigure curriculum to provide a foundational understanding of expectations and opportunities in Nursing. All curriculum aligned to industry standards and licensing requirements.

Implementation of the HIT program was not finalized mainly due challenges meeting national industry accreditation requirements. SRTC committed to a HIT pathway during the

application process that met CAHIIM national accreditation requirements. SRTC faced challenges recruiting qualified faculty that met CAHIIM standards and was never able to hire a second full-time HIT faculty member. SRTC did make progress in developing new HIT courses that will be sustained beyond the grant period of performance.

Technology enhancements have improved opportunities for hybrid and online learning.

SRTC was able to meet the goal of embedding new technology to expand capacity and options for student learning in Nursing. Implementation of new technology, in combination with curriculum improvements, likely contributed to SRTC meeting its participants served outcome.

SRTC maintained an industry-focused approach to curriculum and course development with revisions and modifications based on employer feedback and industry standards. SRTC demonstrated employer support for the Nursing program as employer partners contributed to curriculum development, practicum opportunities for participants, and post-program employment opportunities. An outstanding question that exists is whether job opportunities exist to justify a full two-year associate degree pathway for HIT.

4.2 Program Design, Delivery, and Administration

Research Questions: How were programs and program design improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support service and other service were offered?

PROGRAM ADMINISTRATIVE STRUCTURE

The program design as initially conceived in the Statement of Work was maintained with some minor modifications. HCW program staff indicated that one small issue, which developed early in the period of performance, was that faculty were not engaged in the design process when the SRTC TAACCCT application was written and submitted, so it took some effort to integrate faculty efforts into the implementation of the program. Additionally, SRTC placed a greater focus on up-front student support through the Health College Success class and student advising supported by grant funds.

Staffing for the grant funded project has been maintained with the exception of finding a full-time faculty member for HIT. One issue that SRTC should address in future grant-funded projects is almost all grant-funded staff were aligned through the appropriate academic department, and supervision and reporting occurred through the academic department to the Vice President over Academic Affairs. However, the Program Director for the entire project reports to the Vice President of Institutional Advancement. As a result, the Program Director had a limited opportunity to manage and make decisions on grant activities and deliverables, and lacked the supervisory authority to influence program direction. One example of this

challenge was SRTC's requirement to conduct quarterly outcomes reporting. The Program Director was responsible for ensuring that the report was drafted and submitted on time, but she had little impact on ensuring that the actual activities and deliverables were accomplished on a timely basis and that commitments made in the Statement of Work came to fruition.

SRTC maintained integrity for equipment and supplies identified in the Statement of Work. In fact, equipment and supply purchases were a key asset in the SRTC service delivery model as the integration of technology provided student access to supplemental instruction, and applied learning was a core component of the Nursing program improvements.

OUTREACH AND RECRUITMENT OF PARTICIPANTS

Outreach and intake occurred primarily through the Occupational Coach position. Interested candidates met with the Occupational Coach, who also taught sections of the introductory Health Assessment course. The Occupational Coach provided information on courses and course sequencing, as well as provided assistance on who to discuss financial aid and other college-related issues with internally at SRTC. The Occupational Coach also made appropriate referrals to community groups for supportive services or barriers to educational success.

The Occupational Coach position was a unique role at SRTC, as it is a more intensive counseling model not employed through standard academic advising. TAACCCT provided SRTC with an opportunity to sustain an impactful model of recruitment and advising and learn from the HCW approach to occupational coaching. Quotes from participants regarding student advising included the following:

1. *My advisor made time to meet with me at the end of each semester to make sure that I stayed on track.*
2. *Ms. H met with me a few times to guide me through the program and the courses I needed to take in order to complete the program on time.*
3. *I contacted SW about the nursing program and she told me exactly what I needed to do to apply and who to speak with. I am satisfied with the information I received.*
4. *The admissions ladies helped me apply and my advisor, Mrs. H brought me the rest of the way by directing my path and guiding me through the required courses I needed.*
5. *Admissions all the way is great. They went the extra mile to ensure my complete knowledge of what is needed, expected, etc.*

EVALUATION FINDINGS-PROGRAM ADMINISTRATION

SRTC met milestones for purchasing equipment and developing laboratories and other learning spaces for the Nursing program. Medical equipment and supplies used by participants for learning were properly purchased and implemented and usable in a timely fashion.

Equipment and supplies positively impacted participants' experience as they promoted applied learning and provided options for online and hybrid learning.

While staff positions, such as the Project Director and Occupational Coach, were filled by the same people throughout the grant period of performance, challenges with hiring faculty and staff for the HIT program ultimately impacted the efficacy of a HIT pathway. Having consistency in grant-funded positions provided consistent direction and focus on achieving grant deliverables and outcomes. Concurrently, Nursing faculty assigned to the HCW program remained constant and allowed for consistent curriculum development processes. However, the inability to meet HIT industry accreditation requirements by hiring qualified staff and faculty to accomplish deliverables hindered the implementation of a HIT pathway. Going forward, a "lesson learned" for SRTC is to conduct appropriate research regarding industry requirements and occupational opportunities prior to seeking resource support.

Grant-funded staff and faculty resided in the appropriate academic department; however, the HCW Project Director was housed in Institutional Advancement, which created administrative challenges. The HCW Project Director did not have straight-line management authority over the activities conducted under the grant; therefore, limiting the Project Director's ability to make course corrections and implement continuous improvement during the period of performance. It is strongly recommended that this approach to managing grants be modified to allow the appropriate academic department to manage the project with Institutional Advancement tracking grant compliance on behalf of the College as a whole.

The Occupational Coach played the primary role in helping HCW participants with career guidance, so SRTC should identify how these services will continue and expand as a sustainability strategy. An important component of workforce education and training programs is the link to employment and earnings upon completion of the program and credentialing attained. In the HCW model, the Occupational Coach had primary responsibility for career guidance and coordinating with the Director of Career Services for post-program employment placement. SRTC is committed to sustainability of improved advising and career guidance, so staff and executive leadership should continue acting proactively to incorporate lessons learned from the Occupational Coach position into larger college efforts.

4.3 Assessment Tools and Processes

Research Questions: Was an in-depth assessment of participants' skills, abilities and interests conducted, and how was it conducted? What assessment tools and processes were used? Who conducted the assessment? Were the assessment results useful in determining the appropriate program and course sequence for participants? Was career guidance provided, and if so, through what methods?

SRTC utilized up-front assessment instruments, and due to Nursing program standards, used a comprehensive competency assessment as participants moved through the program. Because the nursing program is a credit-based pathway, SRTC used Accuplacer to assess basic math and reading competencies if a student had not taken another standardized entrance exam such as the SAT or ACT. Students also took the HESI, which is a pre-admission test prior to acceptance into the Nursing program. This test was proctored after a participant finished the second semester of coursework, prior to enrollment in specific nursing and health sciences courses.

Competency assessments measured learning retention in the areas of Anatomy, Physiology, Algebra, and English, among others. To advance in the Nursing program, participants were required to pass recognized competency assessments, while maintain certain GPA requirements. If a participant struggled in a certain area, or fell behind their peers in the cohort, the Occupational Coach assisted with resources, such as lining up college tutoring services. Participants also utilized online resources such as Blackboard to access supplemental instruction videos and learning exercises. Both the Nursing and HIT programs used stated learning outcomes to assess competency at the end of courses and throughout the respective career pathways.

Career guidance was facilitated by the Occupational Coach, who provided intensive advising services, and referrals to other resources, when appropriate. Referrals included services inside and/or outside SRTC. The Occupational Coach attended industry events and Career Fairs in order to obtain recent information on available jobs.

EVALUATION FINDINGS-ASSESSMENT

The HCW program incorporated an approach that assessed and provided initial exposure to the field of Nursing early in the program to help participants understand alignment of their interests and aptitudes. As part of the pathway change for Nursing, assessments and early courses designed to expose participants early in the process to the field of Nursing—the opportunities and the challenges—provided an important targeting of the program to those who had interests and aptitudes to likely complete the program. This approach provides a roadmap for other programming at SRTC.

4.4 Partner Contributions

Research Questions: What contributions did partners make? What factors contributed to partners' involvement or lack of involvement? Which contributions from partners were most critical to the success of the program? Which contributions from partners had less of an impact?

Employer partners made significant contributions, especially around curriculum and program development. Employers assisted with student transition to employment by conducting mock interviews, conducting onsite tours, and providing instructor support tied to skill and competency requirements for participant hiring. Employers came on campus for job interviews, and staff and participants interested in employment attended career fairs throughout the program period of performance. The HIT program developed a new employer advisory committee with roughly seven members from the community.

The Occupational Coach participated in a community Homeless Coalition to stay in touch with community resources for participants facing barriers to education. The local hospital also hosted a social services forum where community providers provided information on services. As a result, the Occupational Coach was connected with various community partners if a participant needed supportive services.

SRTC had a positive relationship with the local workforce development board and one-stop system; however, WIOA dollars were not leveraged to support program participants.

EVALUATION FINDINGS-PARTNER CONTRIBUTIONS

HCW demonstrated employer support for the Nursing program. Employers in the local region have provided assistance with curriculum development, practical experiences needed for permanent employment, and interviews of qualified program candidates. The HIT program has received some employer support, such as development of an Employer Advisory Committee, but the lack of program maturity has hampered further employer involvement. SRTC should use these initial results to implement a more comprehensive employer engagement strategy and tracking approach throughout the College to track successes in business support for workforce and education programs.

The local one-stop/workforce system did not significantly contribute to the HCW program. While there was no indication of particular issues between SRTC and the local workforce/one-stop system, resource availability, such as Individual Training Account (ITA) support, did not materialize or have an impact on program results.

5.0 Outcomes and Impact Findings

SRTC HCW TAACCCT student participant data, such as demographics (e.g., age, gender, race/ethnicity, education level), special status (e.g., Pell Grant eligibility, disability, veteran), and program performance (e.g., continued education, credits received, certificate and degree completion), were made available to the WorkED team in excel spreadsheets. Individual-level data were aggregated by the WorkED team across the four-years of the grant period of performance. Due to the process of aggregating quarterly and semi-annual data submissions,

data such as the last date of participation and certificates earned in the sample may not reflect what was included in the Annual Performance Report to the Employment and Training Administration (ETA).

HCW program administrators drew participants, who did not enroll in HCW TAACCCT programs to form the comparison groups. The WorkED team had been given access to the same demographic and special status variables for the comparison groups. The only program outcome variable that was made available for the comparison group was completion date, from which the completion time and completion rate were derived and compared with the TAACCCT participants. A quasi-experimental matching technique, called Genetic Matching, was employed to match the comparison groups with the HCW TAACCCT participants based on demographic and special status variables. The detailed methodological narrative of the technique and the balance statistics obtained from the model output can be found in the Appendix. The following employment outcome indicators were available for the TAACCCT participants through self-reported surveys: date of placement into employment, employment retention (as of September 2018), and wage increase for incumbent workers. The wage figures were not available for the participants, and no employment outcome data were available for the comparison group.

Analyses of data pertaining to the HCW evaluation consisted of qualitative and quantitative methods. Data from each collection source were analyzed separately, and then compared for consistent or conflicting findings. Statistical analyses were conducted using the software package R.

5.1 Persistence and Educational Outcomes

A key aim of the project was to provide individuals with training that would lead to high paying jobs. This included people building career-relevant skills and earning credentials that demonstrated their competencies to potential employers. Within the program, participants were able to earn different types of credentials including associate degrees and college certificates. The section presents findings on persistence in the program, such as completion of a program and receipt of credentials from training.

The outcome data presented in Table 2 were completed and shared by the HCW TAACCCT Program Director on September 19, 2018. HCW TAACCCT's final outcome numbers will be slightly different as final reporting will incorporate all results through the end of September 2018. In addition, some counts in Table 2 may differ from those presented in Section 5.2 onward, since these data were pulled from the HCW administrative database on an earlier date in August 2018.

Table 2: Actual to Target Comparison (Y1-Y4)						
	Outcome Measure	Goal	Numbers as of Evaluation Reporting		Status (Met/Not Met)	
1	Total unique participants served	Year 1: 150 Year 2: 175 Year 3: 200	525	192 108 248 60	608	Met
2	Total number of participants completing a TAACCCT-funded program of study	Year 1: 41 Year 2: 88 Year 3: 100	270	128 44 14	186	Not Met
3	Total number of participants still retained in their program of study or other TAACCCT-funded program	Year 1: 68 Year 2: 79 Year 3: 90	237	3 16 108 60	187	Not Met
4	Total number of participants completing credit hours	Year 1: 135 Year 2: 79 Year 3: 90	473	191 105 233	531	Met
5	Total number of participants earning credentials	Year 1: 33 Year 2: 71 Year 3: 80	184	128 44 14	186	Met
6	Total number of participants enrolled in further education	Year 1: 4 Year 2: 9 Year 3: 10	23	14 1 2	17	Not Met
7	Total number of participants employed after TAACCCT-funded program of study completion	Year 1: 32 Year 2: 68 Year 3: 76 Year 4: 94	270	74 30 10	114	Not Met
8	Total number of participants retained in employment after program of study completion	Year 1: 31 Year 2: 65 Year 3: 73 Year 4: 90	259	74 28 8	110	Not Met
9	Total number of those participants employed at enrollment who received a wage increase post-enrollment	Year 1: 30 Year 2: 35 Year 3: 40 Year 4: 42	147	37 13 13 7	70	Not Met

Source: HCW Program Administrative Database (as of September 2018)

While there were gains in enrollment and completion, some target numbers were not met. A total of 608 unique participants were served and 186 credentials were awarded during the four program years. In both cases, the targets were met. The program fell short of meeting its targets

in the areas of program completion, retention, and post-completion employment and wage gains.

5.2 Program Enrollment

Table 3 shows the total number of HCW TAACCCT program participants by project year. This dataset was pulled from the HCW administrative database in August 2018 and used for demographic analyses of the program participants in the subsequent sections. The headcounts differ from Table 2, which includes more current figures.

Table 3: Program Intake by Year

HCW TAACCCT Program	Y-1	Y-2	Y-3	Y-4	All Years
Associate of Science/Nursing – Bridge	33	20	64	14	131
Associate of Science/Nursing – Generic	122	65	90	38	315
Health Information Coding – Diploma	11	8	19	4	42
Health Information Mgt. Technology - Degree	10	4	15	4	33
Total	176	97	188	60	521

As of August 2018, HCW TAACCCT enrolled a total of 521 unique participants in four programs – “Associate of Science/Nursing –Bridge”, “Associate of Science/Nursing –Generic”, “Health Information Coding- Diploma”, and “Health Information Mgt. Technology - Degree” at the end of Y4. Associate of Science/Nursing – Generic degree program enrolled the highest share of the TAACCCT participants (60%), followed by Associate of Science/Nursing – Bridge (25%). The Health Information Coding – Diploma and Health Information Mgt. Technology – Degree programs accounted for the rest 15% and enrolled 75 participants.

5.3 Outcome Analysis

In this section, program outcomes are analyzed. Program outcomes such as completion rate and time to completion were compared between the TAACCCT participants and the (matched) comparison group for each program. In section 5.3, program outcomes were further analyzed by demographics characteristics such as gender, race/ethnicity, incumbent worker, and Pell Grant eligibility status for the TAACCCT participants.

By the end of year 4, 34% of the TAACCCT participants completed their programs in about one year, exceeding the comparison group by 11 percentage points. Fifty-three percent of the TAACCCT participants, who did not earn a credential, were still enrolled in HCW or other grant-funded programs and 10% were enrolled in other programs.

Participant demographics. The vast majority of the program participants were female (89%). About two-third of the participants were White. Thirty percent were enrolled as full-time students. Fifty-three percent were incumbent workers and 70% were eligible for Pell Grant.

Table 4: TAACCCT Participants' Demographic Characteristics

Characteristics	Statistic
Participants	521
Average Age	33 yr.
Female	89%
Race/Ethnicity	
Black	30%
White	69%
Other	1%
Hispanic	4%
Full-Time	30%
Incumbent Worker	53%
Pell Eligible	70%

Source: HCW Administrative Data (as of September 2018)

Program completion and credentials earned. The completion rates for the TAACCCT participants and comparison groups by program are shown in Table 5. A participant may have completed more than one program. Overall, the program completion rate of TAACCCT participants exceeded the comparison group by 11 percentage points. At the program level, the highest difference in the completion rates between the two groups was observed in the Associate of Science/Nursing – Generic degree program. In Health Information Mgt. Tech. – Degree program, the comparison group was found to have higher completion rate (21%) than the TAACCCT participants (12%). It should be noted that at the time of reporting some participants were still enrolled in their programs. Fifty-three percent of the TAACCCT participants, who did not earn a credential, were enrolled in HCW or other grant-funded programs and 10% were enrolled in other programs. However, program retention and continuing education data were not available for the comparison group.

Table 5: Program Completion Rates

HCW Program	Completion Rate		
	N	TAACCCT Participants	Comparison Group (Matched)
Associate of Science/Nursing – Bridge	131	37%	31%
Associate of Science/Nursing – Generic	315	36%	21%
Health Information Coding – Diploma	42	29%	17%
Health Information Mgt. Tech. - Degree	33	12%	21%
Total	521	34%	23%

Source: HCW Program Administrative Database (as of September 2018)

On average, HCW TAACCCT participants completed 22.4 credits hours of courses. As of August 2018, a total of 179 credentials was earned, and 166 associate degrees were awarded.

Table 6: Credentials Earned by TAACCCT Participants

HCW TAACCCT Programs	N	Average Number of Credit Hours Completed	Total Number of Earned Credentials	Earned Certificate	Earned Degree
Associate of Science/Nursing – Bridge	131	20.3	49	-	48
Associate of Science/Nursing – Generic	315	24.6	114	5	109
Health Information Coding – Diploma	42	18.3	12	6	4
Health Information Mgt. Tech. - Degree	33	16.0	4	-	5
Total	521	22.4	179	11	166

Source: HCW Program Administrative Database (as of September 2018)

Time to program completion. Table 7 shows the comparison of average time taken by the TAACCCT participants and the comparison group to complete their programs. On average, the TAACCCT participants took 12.5 months, which was about two months shorter than the average time that the comparison group took to complete their programs. The highest differences between the two groups in completion time were observed in two Health Information degree programs.

Table 7: Time to Program Completion (in Months)

HCW TAACCCT Programs	Number of Completers	TAACCCT Participants	Comparison Group
Associate of Science/Nursing – Bridge	49	11.2	12.4
Associate of Science/Nursing – Generic	114	14.2	16.3
Health Information Coding – Diploma	12	6.5	16.6
Health Information Mgt. Tech. - Degree	4	7.7	20.0
Total	179	12.5	14.8

Source: HCW Program Administrative Database (as of September, 2018)

5.4 Subgroup Analysis

In this section, program outcomes were analyzed by demographic subgroups of the TAACCCT participants. This analysis was carried out on the combined sample of 521 participants from all four programs. Statistical tests were conducted to measure statistical significance of observed group differences in program completion rates.

Program completion rate by demographic status. It was observed that completion rate among female (35%) participants was higher than their male (31%) counterparts. Whites (36%) completed at a slightly higher rate than Blacks (34%); however, the differences were not found to be statistically significant in both cases. Full-time (41%) participants completed at much higher rate than part-timers (32%). This difference appeared to be statistically significant at 5% significance level. No statistically significant difference in the completion rates were found between participants based on their incumbent worker and Pell Grant eligibility status.

Table 8: Completion Rate by Demographic Subgroups

	N	Completion Rate	Test Stat.
Total Enrolled	521		
Female	58	35%	<i>Two-prop. z-test*</i> (<i>p-value</i> = 0.572)
Male	463	31%	
Black	124	34%	<i>Chi-squared test</i> (<i>p-value</i> = 0.781)
White	349	36%	
Full-Time	155	41%	<i>Two-prop. z-test</i> (<i>p-value</i> = 0.049)
Part-Time	366	32%	
Incumbent Worker			<i>Two-prop. z-test (p-value</i> = 0.975)
Yes	277	34%	
No	244	34%	
Pell Grant Eligible			<i>Two-prop. z-test (p-value</i> = 0.066)
Yes	367	32%	
No	154	40%	

* all alternative hypotheses are two-sided ($H_a: p_1 \neq p_2$)

Source: HCW Administrative Data

Post-completion employment and wage gains. In this section, post-completion employment outcomes were presented for TAACCCT participants. The employment outcomes data were collected by HCW TAACCCT administrator via a self-reported participant survey. Table 9 shows that overall 84% of the TAACCCT participants were employed after completion, of which 94% retained employment at the time of preparation of this report. Both Associate of Science in Nursing – “Bridge” (84%) and “Generic” (86%) programs showed remarkable gains in employment.

Table 10 shows employment by incumbent worker status. Overall 26% of the incumbent workers reported wage gain and 79% of the unemployed participants found employment after completion. Associate of Science/Nursing – Bridge program reported highest percentage (30%) of incumbent worker who experienced post-completion wage gain.

Table 9: Employment Outcome and Retention

HCW TAACCCT Programs	N	Entered Employment	Retained Employment
Associate of Science/Nursing – Bridge	37	84%	100%
Associate of Science/Nursing – Generic	86	86%	92%
Health Information Coding – Diploma	9	67%	66%
Health Information Mgt. Tech. - Degree	1	100%	100%
Total	133	84%	94%

Source: TAACCCT participant employment survey

Table 10: Employment Outcome by Incumbent Worker Status

HCW TAACCCT Programs	Wage Gain for Incumbent Workers	Employment Gain for Non-Incumbent Workers
Associate of Science/Nursing – Bridge	30% (n=112)	83% (n=6)
Associate of Science/Nursing – Generic	24% (n=152)	82% (n=44)
Health Information Coding – Diploma	14% (n=7)	57% (n=7)
Health Information Mgt. Tech. - Degree	0% (n=6)	100% (n=1)
Total	26% (n=277)	79% (n=58)

Source: TAACCCT participant employment survey

5.5 Program Satisfaction

Paper surveys from the HCW TAACCCT participants were collected by WorkED team to capture their level of satisfaction about the program. This section of the report summarizes the aggregated survey results.

Overall, the majority of the respondents (91%) were satisfied or very satisfied with the education and support services offered by the program. At least three quarter of the respondents reported that the program was of high quality and helped developing necessary skills to find employment. Program logistics such as course schedule and program length also

were reported by the majority of the respondents to be convenient. However, some respondents (30%) felt that the laboratory equipment could be improved, particularly the virtual hospital laboratory at the Tifton campus which was considered not as updated as the Thomasville campus.

When asked what improvement(s) they would make to improve the HCW program, a few comments are worth sharing for future consideration:

Reorganize the program. Teach vital information. Don't stress information that is not important or on tests. Less reading the chapters by teachers. Allow students to study more. It is not beneficial to me to hear someone read the material to me, I would rather study at home. I would learn more that way. Allow more time to review mistakes on exams!

Please provide an area of group study. That way students may ask each other questions, discuss topics. Area in library is too small.

Make sure early applicants are aware of the costs of nursing school, such as drug test/background checks, uniforms, CPR certification, so they will have time to prepare for their costs. You don't want a student who has worked hard to get into the program hindered based on financial issues and ignorance.

Improve the Lab Tifton students deserve a Lab as nice as the Thomasville Campus.

Make a master syllabus vs. separate for each class. There are a ton of papers. Streamline this and only give what is absolutely necessary.

Table 11: Level of Satisfaction of the Program Participants

Aspects of the Program	Satisfied/Very Satisfied
The number of course(s) offered is what I need for learning a new skill	78%
Courses are scheduled at a convenient time of day for me	75%
I am learning the skills I need to find a job in my field	81%
The training program is high quality	74%
I am receiving timely and helpful feedback	76%
Equipment is readily available and is high quality	69%
Duration of course(s)	79%
Overall length of program	76%
N	99

Source: HCW Participant Survey

EVALUATION FINDINGS-OUTCOMES AND IMPACT

HCW met its program enrollment numbers by the end of the grant. The program exceeded the participation numbers by 83 participants.

Overall, while there were gains in enrollment and program completion, some target numbers were not met. A total of 608 unique participants were served in the four years of the grant and 186 credentials were awarded. In both cases, the targets were met. However, the program fell short of meeting its targets in the areas of program completion, retention, and post-completion employment and wage gains.

By the end of year 4, 34% of the TAACCCT participants completed their programs in about one year, exceeding the comparison group by 11 percentage points. Fifty-three percent of the TAACCCT participants, who did not earn a credential, were still enrolled in HCW or other grant-funded programs and 10% were enrolled in other programs.

Time of Completion. On average, the TAACCCT participants took 12.5 months, which was about two months shorter than the average time that the comparison group took to complete their programs. The highest differences between the two groups in completion time were observed in two Health Information degree programs.

The program completion rate of TAACCCT participants exceeded the comparison group by 11 percentage points. At the program level, the highest difference in the completion rates between the two groups was observed in the Associate of Science/Nursing – Generic degree program. In Health Information Mgt. Tech. -- Degree program, the comparison group was found to have higher completion rate (21%) than the TAACCCT participants (12%).

Program completion rate by demographic status. The completion rate among female (35%) participants was higher than their male (31%) counterpart. Whites (36%) completed at slightly higher rate than Blacks (34%); however, the differences were not found to be statistically significant in both cases. Full-time (41%) participants completed at much higher rate than part-timers (32%). This difference appeared to be statistically significant at 5% significance level.

The HCW program promoted a variety of employment outcomes, including wage increases, employment gains, and industry-recognized credential attainment. Several incumbent workers realized wage increases, and a portion of unemployed participants obtained and kept employment after program completion. Sixty-five percent of the unemployed participants gained employment after completion and average wage for incumbent workers was 46%.

Overall, 84% of the HCW TAACCCT participants were employed after program completion, of which 94% retained employment at the time of preparation of this report. Both Associates of Science in Nursing – “Bridge” (84%) and “Generic” (86%) programs showed remarkable gains in employment.

Program Satisfaction. Overall, the majority of the respondents (91%) were satisfied or very satisfied with the education and support services offered by the program. At least three quarter of the respondents reported that the program was of high quality and helped developing necessary skills to find employment.

Program logistics such as course schedule and program length also were reported by the majority of the respondents to be convenient. However, a few respondents (30%) felt that the laboratory equipment could be improved, particularly the virtual hospital laboratory at the Tifton campus which was considered not as updated as the Thomasville campus.

6.0 Final Conclusions

The following final conclusions are drawn from SRTC's TAACCCT-funded program:

1. ***SRTC should institutionalize comprehensive support and processes for managing federal discretionary awards.*** SRTC's management of the overall grant award was sufficient, but the structure of the management of the HCW program made it challenging for the Project Director, who did not have direct responsibility or control for the activities and deliverables. Additionally, the Project Director cost allocated time against multiple projects, which took focus away from the time needed to manage outcomes for HCW. In the future, SRTC should look for implementing process improvements for managing grant projects.
2. ***TAACCCT-allowable funded activities, such as equipment and supply purchases and curriculum development, were critical to the implementation of the HCW program.*** HCW training in the field of Nursing was greatly enhanced with the laboratory equipment and revitalized curriculum developed with TAACCCT funds. Critical capacity was developed to meet employer skill and competency needs in the local region.
3. ***SRTC should institutionally invest in academic support and occupational coaching based on "lessons learned" for the HCW program.*** A core program component was the hiring and use of an Occupational Coach to facility program persistence and post-program employment outcomes. There is some evidence this approach had a positive impact, so SRTC should isolate the most helpful practices and look to sustain them across the entire college and slate of academic programming.

7.0 Appendix

Multivariate Matching with Automated Balance Optimization of TAACCCT Observational Student Data Using Genetic Search Algorithm

1. Introduction

For this project, the team applied Genetic Matching,¹ a method of multivariate matching, which uses an evolutionary search algorithm to improve covariate balance. Matching is being increasingly applied as a method of causal inference in many fields, including education and labor market studies. However, when we use matching methods to estimate treatment effects, the central problem relates to deciding how best to perform the matching. There is no consensus on how exactly matching ought to be done and how to measure the success of the matching procedure. Two common approaches are propensity score matching and multivariate matching based on Mahalanobis distance.² These methods have appealing theoretical properties if covariates have distributions such as the normal or t . If covariates are so distributed, the methods have the property of “equal percent bias reduction (EPBR)”. When this property holds, matching will reduce bias in all linear combination of the covariates. However, a mis-specified propensity score model may increase the imbalance of some observed variables post-matching, especially if the covariates have non-normal distribution,³ or in other words, if EPBR property does not hold. In general, under such circumstances, matching will increase the bias of some linear functions of the covariates even if all univariate means are closer to the matched data than the unmatched. Unfortunately, EPBR property rarely holds with real data.

Furthermore, building a propensity score model is an iterative process, in which many candidate models are estimated and sequentially learned from one specification to the next. Hence the process of iteratively modifying the propensity score to maximize balance is often challenging. Our adopted method, Genetic Matching, eliminates the need to manually and iteratively check the propensity score. It uses a search algorithm to iteratively check and improve covariate balance automatically, and it is a generalization of propensity score and Mahalanobis Distance matching methods. It is a multivariate matching method that uses an evolutionary search algorithm developed by Mebane and Sekhon (1998⁴; Sekhon and Mebane, 1998⁵) to maximize the balance of observed covariates across matched treated and control units.

¹ Diamond, A., and J. S. Sekhon (2012). “Genetic Matching for Estimating Causal Effects: A General Multivariate Matching Method for Achieving Balance in Observational Studies.” *Review of Economics and Statistics*, 95(3): 932-945.

² Rosenbaum, P. R., and D. B. Rubin (1985). “Constructing a Control Group Using Multivariate Matched Sampling Methods that Incorporate the Propensity Score.” *The American Statistician*, 39(1): 33-38.

³ Diamond, A., and J. S. Sekhon (2012).

⁴ Mebane, W. R. Jr., and J. S. Sekhon (1998). “GENetic Optimization Using Derivatives (GENOUD).” Software Package. <http://sekhon.berkeley.edu/rgenoud/>

⁵ Sekhon, J. S. and W. R. Mebane, Jr. (1998). “Genetic Optimization Using Derivatives: Theory and Application to Nonlinear Models.” *Political Analysis*, 7: 189-203.

The genetic algorithm optimizes the balance as much as possible, given the data. The method is nonparametric and does not depend on knowing or estimating the propensity score.

The algorithm has shown better properties than the usual alternative matching methods both when the EPBR property holds and when it does not.⁶ In both cases, the method has demonstrated superior performance in terms of the reduction of bias and mean squared error (MSE) – in finite samples. The only limitation of this method is that it is computationally intensive and consumes significant computer running time. Nevertheless, in the expense of computer time, it dominates the other matching methods in terms of MSE when assumptions required for EPBR hold and when they do not.

2. Matching between Participant and Comparison Groups

This section presents the results of matching between the comparison and participant groups.

In consistent with best practice, we match with replacement, which means that one participant group observation matches with more than one comparison group observation. Therefore, the matched dataset includes multiple matched participant group observations and we weight the matched participant group data to reflect the multiple matches. The sum of the weighted participant observations is still equal to the original number of observations.

We have employed Genetic Matching technique in this analysis using “Matching” package⁷ in R statistical software.

2.1. Balance Statistics

Original number of controls	1562
Original number of participants	521
Matched number of observations	521
Matched number of observations (unweighted)	523

Table 2.1 provides a summary of balance statistics for both before and after matching to check if the results from matching have actually achieved balance on a set of covariates. We found that balance between comparison and participant groups was improved for most student characteristics after matching. Detailed program output is presented later.

Table 2.1 Summary of Balance Statistics

	Before Matching	After Matching
Variable – Age		

⁶ Diamond, A., and J. S. Sekhon (2012).

⁷ <https://cran.r-project.org/web/packages/Matching/index.html>

Mean Treatment	32.768	32.768
Mean Control	32.502	33.208
Variable – Race/Ethnicity (Black)		
Mean Treatment	0.28599	0.28599
Mean Control	0.29385	0.28599
Variable - Race/Ethnicity (White)		
Mean Treatment	0.66987	0.66987
Mean Control	0.65749	0.66987
Variable – Female		
Mean Treatment	0.88868	0.88868
Mean Control	0.87708	0.88868
Variable – Full-Time		
Mean Treatment	0.2975	0.2975
Mean Control	0.42125	0.30518
Variable – Incumbent Worker		
Mean Treatment	0.53167	0.53167
Mean Control	0.19974	0.52207
Variable – Pell Eligible		
Mean Treatment	0.70441	0.70441
Mean Control	0.69718	0.70633
Interaction Variable – White × Full-Time		
Mean Treatment	0.21113	0.21113
Mean Control	0.30410	0.21113
Interaction Variable – Female × Full-Time		
Mean Treatment	0.25912	0.25912
Mean Control	0.36172	0.26679
Interaction Variable – Incumbent Worker × White		
Mean Treatment	0.33589	0.33589
Mean Control	0.15429	0.33589
Interaction Variable – Incumbent Worker × Black		
Mean Treatment	0.1785	0.1785

Mean Control	0.039693	0.17274
Interaction Variable – Incumbent Worker × Female		
Mean Treatment	0.46833	0.46833
Mean Control	0.16837	0.46833
Interaction Variable – Incumbent Worker × Pell Eligible		
Mean Treatment	0.35317	0.35317
Mean Control	0.12420	0.35125
Interaction Variable – Black × Pell Eligible		
Mean Treatment	0.21497	0.21497
Mean Control	0.22855	0.22073
Interaction Variable – Full-Time × Pell Eligible		
Mean Treatment	0.20154	0.20154
Mean Control	0.30858	0.21689

The balance of each variable can be judged by several matching statistics – such as absolute mean difference, standardized mean difference, mean difference in the empirical-QQ plot between the treatment and control. After matching the magnitude of these statistics are significantly reduced. Whether the mean difference in the empirical-QQ plot is statistically significant is indicated by paired *t*- and KS-stats which test for significant difference across the entire distribution. Other KS test statistics also indicate similar results. Note that KS statistics are not relevant for indicator (dummy) variables, such as female, race/ethnicity etc.

***** OUTPUT *****

***** (V5) age *****

	Before Matching	After Matching
mean treatment.....	32. 768	32. 768
mean control.....	32. 502	33. 208
std mean diff.....	2. 6642	-4. 3958
mean raw eQQ diff.....	0. 38123	1. 0429
med raw eQQ diff.....	0. 28889	1. 1111
max raw eQQ diff.....	2. 1528	3. 0389
mean eCDF diff.....	0. 011706	0. 038854
med eCDF diff.....	0. 0068426	0. 034417
max eCDF diff.....	0. 042348	0. 1109
var ratio (Tr/Co).....	0. 98719	1. 1203
T-test p-value.....	0. 59919	0. 010047
KS Bootstrap p-value..	0. 46069	0. 002817
KS Naive p-value.....	0. 48521	0. 0032181
KS Statistic.....	0. 042348	0. 1109

***** (V6) Black *****

	Before Matching	After Matching
mean treatment.....	0. 28599	0. 28599
mean control.....	0. 29385	0. 28599
std mean diff.....	-1. 7389	0
mean raw eQQ diff.....	0. 0076775	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0. 0039328	0
med eCDF diff.....	0. 0039328	0
max eCDF diff.....	0. 0078655	0
var ratio (Tr/Co).....	0. 98533	1
T-test p-value.....	0. 73162	1

***** (V7) Multi.Race *****

	Before Matching	After Matching
mean treatment.....	0. 034549	0. 034549
mean control.....	0. 034571	0. 034549
std mean diff.....	-0. 012099	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0

mean eCDF diff.....	1. 1059e-05	0
med eCDF diff.....	1. 1059e-05	0
max eCDF diff.....	2. 2118e-05	0
var ratio (Tr/Co).....	1. 0007	1
T-test p-value.....	0. 99809	1

***** (V8) White *****

	Before Matching	After Matching
mean treatment.....	0. 66987	0. 66987
mean control.....	0. 65749	0. 66987
std mean diff.....	2. 629	0
mean raw eQQ diff.....	0. 013436	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0. 0061876	0
med eCDF diff.....	0. 0061876	0
max eCDF diff.....	0. 012375	0
var ratio (Tr/Co).....	0. 98327	1
T-test p-value.....	0. 6042	1

***** (V9) female *****

	Before Matching	After Matching
mean treatment.....	0. 88868	0. 88868
mean control.....	0. 87708	0. 88868
std mean diff.....	3. 6829	0
mean raw eQQ diff.....	0. 011516	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0. 0057975	0
med eCDF diff.....	0. 0057975	0
max eCDF diff.....	0. 011595	0
var ratio (Tr/Co).....	0. 91882	1
T-test p-value.....	0. 47169	1

***** (V10) latino *****

	Before Matching	After Matching
mean treatment.....	0. 96161	0. 96161
mean control.....	0. 044814	0. 25528
std mean diff.....	476. 72	367. 28

mean raw eQQ diff.....	0. 91747	0. 70746
med raw eQQ diff.....	1	1
max raw eQQ diff.....	1	1
mean eCDF diff.....	0. 4584	0. 35373
med eCDF diff.....	0. 4584	0. 35373
max eCDF diff.....	0. 9168	0. 70746
var ratio (Tr/Co).....	0. 86346	0. 19417
T-test p-value.....	< 2. 22e- 16	< 2. 22e- 16

***** (V11) ft *****

	Before Matching	After Matching
mean treatment.....	0. 2975	0. 2975
mean control.....	0. 42125	0. 30518
std mean diff.....	-27. 043	-1. 6778
mean raw eQQ diff.....	0. 12284	0. 0076482
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0. 061875	0. 0038241
med eCDF diff.....	0. 061875	0. 0038241
max eCDF diff.....	0. 12375	0. 0076482
var ratio (Tr/Co).....	0. 85834	0. 98561
T-test p-value.....	1. 9942e- 07	0. 1022

***** (V12) incumbent *****

	Before Matching	After Matching
mean treatment.....	0. 53167	0. 53167
mean control.....	0. 19974	0. 52207
std mean diff.....	66. 455	1. 9214
mean raw eQQ diff.....	0. 33205	0. 0095602
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0. 16596	0. 0047801
med eCDF diff.....	0. 16596	0. 0047801
max eCDF diff.....	0. 33193	0. 0095602
var ratio (Tr/Co).....	1. 5597	0. 99793
T-test p-value.....	< 2. 22e- 16	0. 025067

***** (V13) disable *****

	Before Matching	After Matching
mean treatment.....	0.023033	0.023033
mean control.....	0.018566	0.017274
std mean diff.....	2.9748	3.8349
mean raw eQQ diff.....	0.0038388	0.0057361
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0022333	0.0028681
med eCDF diff.....	0.0022333	0.0028681
max eCDF diff.....	0.0044667	0.0057361
var ratio (Tr/Co).....	1.2365	1.3255
T-test p-value.....	0.54695	0.082969

***** (V14) pelleligible *****

	Before Matching	After Matching
mean treatment.....	0.70441	0.70441
mean control.....	0.69718	0.70633
std mean diff.....	1.5833	-0.42023
mean raw eQQ diff.....	0.0076775	0.001912
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0036157	0.00095602
med eCDF diff.....	0.0036157	0.00095602
max eCDF diff.....	0.0072315	0.001912
var ratio (Tr/Co).....	0.98751	1.0038
T-test p-value.....	0.75477	0.70557

***** (V15) I(White * ft) *****

	Before Matching	After Matching
mean treatment.....	0.21113	0.21113
mean control.....	0.3041	0.21113
std mean diff.....	-22.757	0
mean raw eQQ diff.....	0.092131	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.046482	0
med eCDF diff.....	0.046482	0
max eCDF diff.....	0.092965	0
var ratio (Tr/Co).....	0.78805	1

T-test p-value..... 1.4744e-05 1

***** (V16) I(Black * ft) *****

	Before Matchin g	After Matchin g
mean treatment.....	0.074856	0.074856
mean control.....	0.09219	0.072937
std mean diff.....	-6.5804	0.72866
mean raw eQQ diff.....	0.017274	0.001912
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0086667	0.00095602
med eCDF diff.....	0.0086667	0.00095602
max eCDF diff.....	0.017333	0.001912
var ratio (Tr/Co).....	0.82854	1.0242
T-test p-value.....	0.20501	0.31731

***** (V17) I(female * ft) *****

	Before Matchin g	After Matchin g
mean treatment.....	0.25912	0.25912
mean control.....	0.36172	0.26679
std mean diff.....	-23.394	-1.7506
mean raw eQQ diff.....	0.10173	0.0076482
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.051299	0.0038241
med eCDF diff.....	0.051299	0.0038241
max eCDF diff.....	0.1026	0.0076482
var ratio (Tr/Co).....	0.83257	0.98139
T-test p-value.....	7.2131e-06	0.1022

***** (V18) I(age * ft) *****

	Before Matchin g	After Matchin g
mean treatment.....	9.3849	9.3849
mean control.....	13.4	9.6835
std mean diff.....	-26.257	-1.9528
mean raw eQQ diff.....	3.9972	0.45786
med raw eQQ diff.....	0	0
max raw eQQ diff.....	25.019	19.442
mean eCDF diff.....	0.061503	0.010166

med eCDF diff.....	0. 071143	0. 0076482
max eCDF diff.....	0. 12375	0. 034417
var ratio (Tr/Co).....	0. 81053	0. 97894
T-test p-value.....	5. 4145e-07	0. 094367
KS Bootstrap p-value..	1e-06	0. 53303
KS Naive p-value.....	1. 2713e-05	0. 91608
KS Statistic.....	0. 12375	0. 034417

***** (V19) I(disable * ft) *****

	Before Matching	After Matching
mean treatment.....	0. 0038388	0. 0038388
mean control.....	0. 0044814	0. 0019194
std mean diff.....	-1. 0383	3. 1009
mean raw eQQ diff.....	0	0. 001912
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	1
mean eCDF diff.....	0. 00032133	0. 00095602
med eCDF diff.....	0. 00032133	0. 00095602
max eCDF diff.....	0. 00064266	0. 001912
var ratio (Tr/Co).....	0. 85825	1. 9962
T-test p-value.....	0. 84066	0. 31731

***** (V20) I(age * White) *****

	Before Matching	After Matching
mean treatment.....	21. 051	21. 051
mean control.....	20. 967	21. 436
std mean diff.....	0. 50216	-2. 2947
mean raw eQQ diff.....	0. 76249	0. 91796
med raw eQQ diff.....	0. 43333	0. 58333
max raw eQQ diff.....	19. 917	4. 3222
mean eCDF diff.....	0. 017428	0. 037842
med eCDF diff.....	0. 015499	0. 032505
max eCDF diff.....	0. 042513	0. 10134
var ratio (Tr/Co).....	0. 94658	0. 99792
T-test p-value.....	0. 92151	0. 012798
KS Bootstrap p-value..	0. 40025	0. 007689
KS Naive p-value.....	0. 48017	0. 0092995
KS Statistic.....	0. 042513	0. 10134

***** (V21) I(age * Black) *****

	Before Matching	After Matching
mean treatment.....	10.495	10.495
mean control.....	10.155	10.535
std mean diff.....	1.95	-0.22971
mean raw eQQ diff.....	0.64579	0.23109
med raw eQQ diff.....	0	0
max raw eQQ diff.....	19.764	3.3556
mean eCDF diff.....	0.013924	0.0068704
med eCDF diff.....	0.014059	0.0057361
max eCDF diff.....	0.024199	0.017208
var ratio (Tr/Co).....	1.1034	1.0009
T-test p-value.....	0.69661	0.54435
KS Bootstrap p-value..	0.66331	0.97667
KS Naive p-value.....	0.97615	1
KS Statistic.....	0.024199	0.017208

***** (V22) I(age * pelligible) *****

	Before Matching	After Matching
mean treatment.....	22.702	22.702
mean control.....	22.371	22.965
std mean diff.....	1.9761	-1.5724
mean raw eQQ diff.....	0.39267	0.77241
med raw eQQ diff.....	0.11944	0.42222
max raw eQQ diff.....	19.394	19.442
mean eCDF diff.....	0.0084222	0.027566
med eCDF diff.....	0.0049914	0.021033
max eCDF diff.....	0.029696	0.08413
var ratio (Tr/Co).....	0.99858	1.0259
T-test p-value.....	0.69624	0.3129
KS Bootstrap p-value..	0.80455	0.042382
KS Naive p-value.....	0.88105	0.049361
KS Statistic.....	0.029696	0.08413

***** (V23) I(age * disable) *****

	Before Matching	After Matching
mean treatment.....	0.83218	0.83218
mean control.....	0.62049	0.63503
std mean diff.....	3.7247	3.4687
mean raw eQQ diff.....	0.20468	0.21636
med raw eQQ diff.....	0	0
max raw eQQ diff.....	24.708	26.592

mean eCDF diff.....	0.0034331	0.0030593
med eCDF diff.....	0.0038289	0.0038241
max eCDF diff.....	0.0057483	0.0057361
var ratio (Tr/Co).....	1.4457	1.2656
T-test p-value.....	0.4437	0.068026
KS Bootstrap p-value..	0.72882	0.87505
KS Naive p-value.....	1	1
KS Statistic.....	0.0057483	0.0057361

***** (V24) I(incumbent * White) *****

	Before Matching	After Matching
mean treatment.....	0.33589	0.33589
mean control.....	0.15429	0.33589
std mean diff.....	38.414	0
mean raw eQQ diff.....	0.18234	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.090802	0
med eCDF diff.....	0.090802	0
max eCDF diff.....	0.1816	0
var ratio (Tr/Co).....	1.7117	1
T-test p-value.....	3.9968e-15	1

***** (V25) I(incumbent * Black) *****

	Before Matching	After Matching
mean treatment.....	0.1785	0.1785
mean control.....	0.039693	0.17274
std mean diff.....	36.214	1.5022
mean raw eQQ diff.....	0.1382	0.0057361
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.069405	0.0028681
med eCDF diff.....	0.069405	0.0028681
max eCDF diff.....	0.13881	0.0057361
var ratio (Tr/Co).....	3.852	1.0261
T-test p-value.....	1.0436e-14	0.082969

***** (V26) I(incumbent * female) *****

	Before Matching	After Matching
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mean treatment.....	0. 46833	0. 46833
mean control.....	0. 16837	0. 46833
std mean diff.....	60. 054	0
mean raw eQQ diff.....	0. 29942	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF di ff.....	0. 14998	0
med eCDF di ff.....	0. 14998	0
max eCDF di ff.....	0. 29996	0
var ratio (Tr/Co).....	1. 7805	1
T-test p-value.....	< 2. 22e- 16	1

***** (V27) I(incumbent * p e l l e l i g i b l e) *****

	Before Matching	After Matching
mean treatment.....	0. 35317	0. 35317
mean control.....	0. 1242	0. 35125
std mean diff.....	47. 86	0. 4012
mean raw eQQ diff.....	0. 22841	0. 001912
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF di ff.....	0. 11448	0. 00095602
med eCDF di ff.....	0. 11448	0. 00095602
max eCDF di ff.....	0. 22897	0. 001912
var ratio (Tr/Co).....	2. 1028	1. 0025
T-test p-value.....	< 2. 22e- 16	0. 73899

***** (V28) I(incumbent * d i s a b l e) *****

	Before Matching	After Matching
mean treatment.....	0. 0095969	0. 0095969
mean control.....	0. 0012804	0. 0076775
std mean diff.....	8. 5222	1. 9669
mean raw eQQ diff.....	0. 0076775	0. 001912
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF di ff.....	0. 0041583	0. 00095602
med eCDF di ff.....	0. 0041583	0. 00095602
max eCDF di ff.....	0. 0083165	0. 001912
var ratio (Tr/Co).....	7. 4423	1. 2476
T-test p-value.....	0. 05754	0. 31731

***** (V29) I(White * pelleligible) *****

	Before Matching	After Matching
mean treatment.....	0. 45106	0. 45106
mean control.....	0. 43598	0. 44914
std mean diff.....	3. 0269	0. 38536
mean raw eQQ diff.....	0. 015355	0. 001912
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0. 0075381	0. 00095602
med eCDF diff.....	0. 0075381	0. 00095602
max eCDF diff.....	0. 015076	0. 001912
var ratio (Tr/Co).....	1. 0082	1. 0008
T-test p-value.....	0. 54939	0. 31731

***** (V30) I(Black * pelleligible) *****

	Before Matching	After Matching
mean treatment.....	0. 21497	0. 21497
mean control.....	0. 22855	0. 22073
std mean diff.....	- 3. 303	- 1. 4003
mean raw eQQ diff.....	0. 013436	0. 0057361
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0. 006791	0. 0028681
med eCDF diff.....	0. 006791	0. 0028681
max eCDF diff.....	0. 013582	0. 0057361
var ratio (Tr/Co).....	0. 95836	0. 98111
T-test p-value.....	0. 51628	0. 17955

***** (V31) I(female * pelleligible) *****

	Before Matching	After Matching
mean treatment.....	0. 62764	0. 62764
mean control.....	0. 62292	0. 63148
std mean diff.....	0. 97537	- 0. 7933
mean raw eQQ diff.....	0. 0057582	0. 0038241
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0. 0023599	0. 001912
med eCDF diff.....	0. 0023599	0. 001912

max eCDF diff.....	0.0047198	0.0038241
var ratio (Tr/Co).....	0.99624	1.0043
T-test p-value.....	0.84724	0.41429

***** (V32) I(pelleligible * ft) *****

	Before Matching	After Matching
mean treatment.....	0.20154	0.20154
mean control.....	0.30858	0.21689
std mean diff.....	-26.659	-3.8241
mean raw eQQ diff.....	0.10749	0.015296
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.053522	0.0076482
med eCDF diff.....	0.053522	0.0076482
max eCDF diff.....	0.10704	0.015296
var ratio (Tr/Co).....	0.75519	0.94742
T-test p-value.....	4.779e-07	0.0112

***** (V33) I(pelleligible * incumbent) *****

	Before Matching	After Matching
mean treatment.....	0.35317	0.35317
mean control.....	0.1242	0.35125
std mean diff.....	47.86	0.4012
mean raw eQQ diff.....	0.22841	0.001912
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.11448	0.00095602
med eCDF diff.....	0.11448	0.00095602
max eCDF diff.....	0.22897	0.001912
var ratio (Tr/Co).....	2.1028	1.0025
T-test p-value.....	< 2.22e-16	0.73899

***** (V34) I(pelleligible * disable) *****

	Before Matching	After Matching
mean treatment.....	0.015355	0.015355
mean control.....	0.012804	0.0095969
std mean diff.....	2.0726	4.6784
mean raw eQQ diff.....	0.0019194	0.0057361
med raw eQQ diff.....	0	0

max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0012755	0.0028681
med eCDF diff.....	0.0012755	0.0028681
max eCDF diff.....	0.002551	0.0057361
var ratio (Tr/Co).....	1.1977	1.5907
T-test p-value.....	0.67576	0.082969

***** (V35) age:female *****

	Before Matching	After Matching
mean treatment.....	29.29	29.29
mean control.....	28.569	29.543
std mean diff.....	5.129	-1.8002
mean raw eQQ diff.....	0.76005	0.88334
med raw eQQ diff.....	0.4	0.76389
max raw eQQ diff.....	19.431	3.2056
mean eCDF diff.....	0.015774	0.03123
med eCDF diff.....	0.010736	0.026769
max eCDF diff.....	0.048808	0.091778
var ratio (Tr/Co).....	0.98062	1.036
T-test p-value.....	0.31215	0.094359
KS Bootstrap p-value..	0.29058	0.021837
KS Naive p-value.....	0.30976	0.024424
KS Statistic.....	0.048808	0.091778