

Ozarks Technical Community College

**Technology-Enabled Pathways to
Healthcare (TEPH)**

**Department of Labor
TAACCCCT Round III Grant
Final Evaluation Report**

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About this report

MN Associates, Inc., a woman-owned small business education research and evaluation consulting firm located in Fairfax, Virginia, wishes to thank and acknowledge the TEPH program staff and leadership at the Ozarks Technical College for their many hours of time and effort spent providing both qualitative and quantitative data. A special thank you goes to Daniel Vidt, Matthew Simpson, Abby Benz, Misty Tollette, and Ronda Long who demonstrated constant diligence in tracking outcomes and performance and deserve special recognition for assisting MNA in completing the final evaluation report.

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LIST OF ACRONYMS

AAS	Associate of Applied Science
ACEN	Accreditation Commission for Education in Nursing (ACEN)
ASN	Associate of Science in Nursing
BIO	Biology
BMET	Biomedical Equipment Technician
CBA	Competency-based approach
DOL/ETA	Department of Labor/Employment Training Assistance
EPA	Environment Protection Agency
EST	Environmental Science Technician/s
F2F	Face-to-face
IHE	Institutes of Higher Education
IRO	Institutional Research Office
LPN	Licensed Practical Nurse
LVN	Licensed Vocational Nurse
MNA	MN Associates, Inc.
MU	University of Missouri-Columbia
OT	Occupational Therapy
OTC	Ozarks Technical Community College
SPSS	Statistical Package for Social Sciences
TAA	Trade Adjustment Assistance
TAACCCT	Trade Adjustment Assistance Community College and Career Training
TEPH	Technology-Enabled Pathways to Healthcare
WIB	Workforce Investment Boards

Executive Summary

Ozarks Technical Community College (OTC) is a community college with its headquarters in Springfield, Missouri and satellite campuses located in bordering counties. With an enrollment of around 20,000, OTC serves the needs of its community by offering Associate's degrees in a range of areas.

In 2013, OTC received a \$2.2 million, four-year Trade Adjustment Assistance Community College Career Training (TAACCCT). The purpose of this grant is to help those impacted by global trade to find employment in high-demand industries while providing employers with workers with the skills needed to immediately fill open roles. OTC's program, known as Technology-Enabled Pathways to Healthcare (TEPH), has guided participants toward accessible and feasible career pathways in the health sciences, information systems, and environmental science.

This was done by transitioning the Associate of Science degree in Nursing (ASN) and Occupational Therapy Assistant (OTA), and Environmental Science Technician (EST) programs from a traditional face-to-face model of instruction to a hybrid model, with online instruction complementing in-person training. This change was complemented by a switch to competency-based evaluation, whereby participants receive credit for their knowledge gained (rather than time spent on a task). Additionally, the TEPH program employed Career Navigators, who practiced intrusive advising, anticipating the needs of participants and supporting them in a more holistic way than is the case with traditional advising.

The TEPH program was evaluated using a mixed-methods matched comparison research design approach. The evaluation was designed to examine two parts: 1) the program's implementation, and 2) outcomes of the program. The first part of the evaluation considers the ways in which the program was implemented, using interviews and reviews of administrative documents as the main data source. The second part focuses both on participants' assessment of the program as well as the employment and wage-related outcomes they experience as a result of their completion of the TEPH program.

The program implementation study found that:

1. **All TEPH programs (ASN, OTA, and EST) were successful in transitioning from a traditional, face-to-face model to a hybrid model.** The work required to make this transition was significant, but OTC faculty and staff were able to make this change, which ultimately benefitted participants, by allowing them an option to complete their program in a flexible manner that fit with their other work and life commitments.
2. **All programs were able to receive accreditation.** With this status now in place, the programs can continue to accept and train new participants using a hybrid model of education.

3. **Career Navigators were essential in ensuring the success of TEPH participants.** As non-traditional students, many TEPH participants needed the types of active supports that Career Navigators were able to offer. By actively seeking to offer support (rather than simply responding to requests for it), these Career Navigators ensured the success of many participants.
4. **All programs developed more and deeper connections with local employers.** These local employers served as sites for practical education as part of participants' training and many have hired TEPH program completers.

The outcomes study found that:

1. **Participants were largely satisfied with their educational experience.**
2. **Participants mentioned receiving intrusive advisement regarding their course-work, job search, and other academic matters that helped them to stay on course and complete the program.**
3. While there were substantial gains in enrollment and completion, several target numbers were not met. A total of three targets were achieved.
4. **During the course of the grant implementation period, a total number of participants completing credit hours was 233 out of the target 136.**
5. **Wage data of TEPH completers is mixed.** While those in the EST program had higher gains overall than the comparison group, those in the ASN and OTA programs saw somewhat lower gains than the comparison group.
6. **The EST participants showed higher completion rates compared to participants in the comparison group (73% versus 3%).** The majority of the comparison group members (97%) either are still enrolled in the program or have deferred their enrollment.
7. **The TEPH participants overall also on average completed higher number of credit hours (45 hours) and took shorter time (12 months) to complete their degrees than the comparison group.**
8. In ASN program, completion rate of the program participants was lower than the comparison group (58% versus 95%). It is important to note that this percentage represents only those

participants completing by 9/30/17; if including grant cohorts graduating in October, 2017, these numbers would significantly increase. The latter group also on average completed higher number of credit hours and took slightly shorter time to complete their degrees than the TEPH participants.

9. For OTA participants, completion rate is lower than the comparison group (55% versus 72%). Please note that this percentage represents only those participants completing by 9/30/17; if including grant cohorts graduating in December, 2017, these numbers would significantly increase. **However, the TEPH participants completed on average higher number of credit hours and had longer length of completion than the comparison group.**

Overall, the four years of the TEPH program have seen many lessons learned. One of the challenges OTC faced was in maintaining connections between its many campuses. Indeed, those at satellite campuses (i.e. those other than Springfield) at times felt isolated and less connected to the TEPH program. OTC staff also quickly learned that a complex program like TEPH needs significant staff capacity in order to be successful. OTC adapted midstream by adding a project manager for the Environmental Science Program. Without this role, many of the important administrative tasks were left undone, hindering the success of the program. Throughout the TEPH program, securing and retaining a qualified Career Navigator was a problem. Unfilled roles led to gaps in program implementation as well as data collection.

As the TEPH program comes to a conclusion, two of the three programs (ASN and OTA) are set to continue while the EST program is not. The transition to a hybrid model has been widely successful for ASN and OTA and the capacity is in place for two of out of the three programs to use this new model going forward. However, the lack of student demand prevented OTC from sustaining the EST program after the grant.. The importance of devoted and ongoing staffing capacity for a complex program such as TEPH cannot be overstated. The TEPH program has built a model that has improved the lives of many in the region it serves. With a structure in place that includes ongoing capacity, it can continue to serve many more.

Table A: TEPH Program Outcomes as of September 2017

Indicators	Total	Target from SOW	Target Achieved? (Sept., 30, 2017)*
1. Total Unique Participants Served	237	202	Y
2. Total Number of Participants Completing a TAACCCT-Funded Program of Study	98	112	N

Indicators	Total	Target from SOW	Target Achieved? (Sept., 30, 2017)*
3. Total Number of Still Retained in Their Program or Other TAACCCT-Funded Program	Yr. 1 – 20 Yr. 2 – 103 Yr. 3 – 136 Yr. 4 – 71	72	Y
4. Total number of Participants Completing Credit Hours	233	136	Y
5. Total Number of Participants Earning Credentials	98	112	N
6. Total Number of Participants Enrolled in Further Education After TAACCCT-Funded Program of Study Completion	27	44	N
7. Total Number of Participants Employed After TAACCCT-Funded Program of Study Completion	10 ¹ (26)	90	N
8. Total Number of Participants Retained in Employment After TAACCCT-Funded Program of Study Completion	4 ² (26)	74	N
9. Total Number of Those Employed at Enrollment Who Receive a Wage Increase Post-Enrolment	99 ³	112	N

¹ DOL targets of 90 and 74 for these employment outcome measures appear to have been estimated based on total number of participants instead of total number of non-incumbent completers, as specified. Total number of non-incumbent workers in this grant is only 61; of these 61, only 26 completed a program of study. Therefore, the maximum total possible for either outcome would be 26.

² The cumulative totals 10 first quarter employed and 4 second/third quarter employed reported above are based solely upon UI wage data gathered by the OTC IR department. This data is aggregate only through June 30, 2016. Due to this lag time in the UI reporting system, OTC is unable to include data on non-incumbent workers who completed between July 1, 2016 and September 30, 2017. The maximum total possible for each outcome would be 26.

³ OTC reported total of 99 incumbent worker participants receiving a wage increase based solely on data from the UI Wage Data system, and is effective only through December 31, 2016. Again, due to the lag time in the UI reporting system, OTC was unable to include information on incumbent workers receiving a wage increase from January 1, 2017 – September 30, 2017.

Introduction

In an increasingly global and competitive economy, many workers in the United States need to upgrade their skills if they are to successfully meet the new demands of the labor market. At the same time, businesses, especially those in high-growth industries, face challenges recruiting, hiring, and retaining a skilled workforce. As important training providers, community and technical colleges are uniquely positioned to develop a skilled local or regional labor force. As of 2013/14, close to 45% of all college undergraduates – a total of 7.7 million (3.1 million full-time and 4.6 part-time people) – are enrolled in the nation’s 1,132 community and technical colleges (American Association of Community Colleges and Community College Research Center facts, 2014)⁴. However, these same community and technical colleges often lack the capacity to respond to the needs of local industries and provide a clear career pathway for their graduates to enter the workforce.

In 2009, the American Recovery and Reinvestment Act amended the Trade Act of 1974 to authorize the Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program. On March 30, 2010, President Barack Obama signed the Health Care and Education Reconciliation Act, which included \$2 billion over four years to fund the TAACCCT program. The TAACCCT program provides community colleges and other eligible institutions of higher education with funds to expand and improve their ability to deliver education and career training programs that can be completed in two years or less, are suited for workers who are eligible for training under the Trade Adjustment Assistance for Workers program, and can prepare program participants for employment in high-wage, high-skill occupations. Through these multiyear grants, the Department of Labor wants to ensure that the institutions of higher education in the United States are helping adults succeed in acquiring the skills, degrees, and credentials needed for high-wage, high-skill employment while also meeting the needs of employers for skilled workers (DOL/ETA, 2011).

Technology-Enabled Pathways to Healthcare TAACCCT Grant

Ozarks Technical Community College (OTC) was founded on April 3, 1990 when the residents of Springfield school district and 13 surrounding public school districts voted to establish a “community technical college.” Since that time, OTC has continued to uphold a core-set of values that include quality, opportunity, accessibility, learning, diversity, innovation, community, respect, integrity and personal growth. OTC upholds a mission to promote student learning through accessible, high-quality, affordable workforce training, and technical and general education that is responsive to the educational needs of the community and its diverse constituencies. OTC has six campuses (Springfield being the main location, along with

⁴ Source: <http://ccrc.tc.columbia.edu/Community-College-FAQs.html>
http://www.aacc.nche.edu/AboutCC/Documents/Facts14_Data_R3.pdf

Richwood Valley, Table Rock, Lebanon, Waynesville, and OTC online) with an enrollment of about 20,000 students (2016 website information). OTC offers a number of Associate in Arts, Arts in Teaching, and Interdepartmental Studies, and Associate in Science degree programs, Associate in Applied Science degree programs, and Certificate of Mastery / Achievement programs. Most courses are structured in a semester format in face to face, online only, and blended modes of delivery.

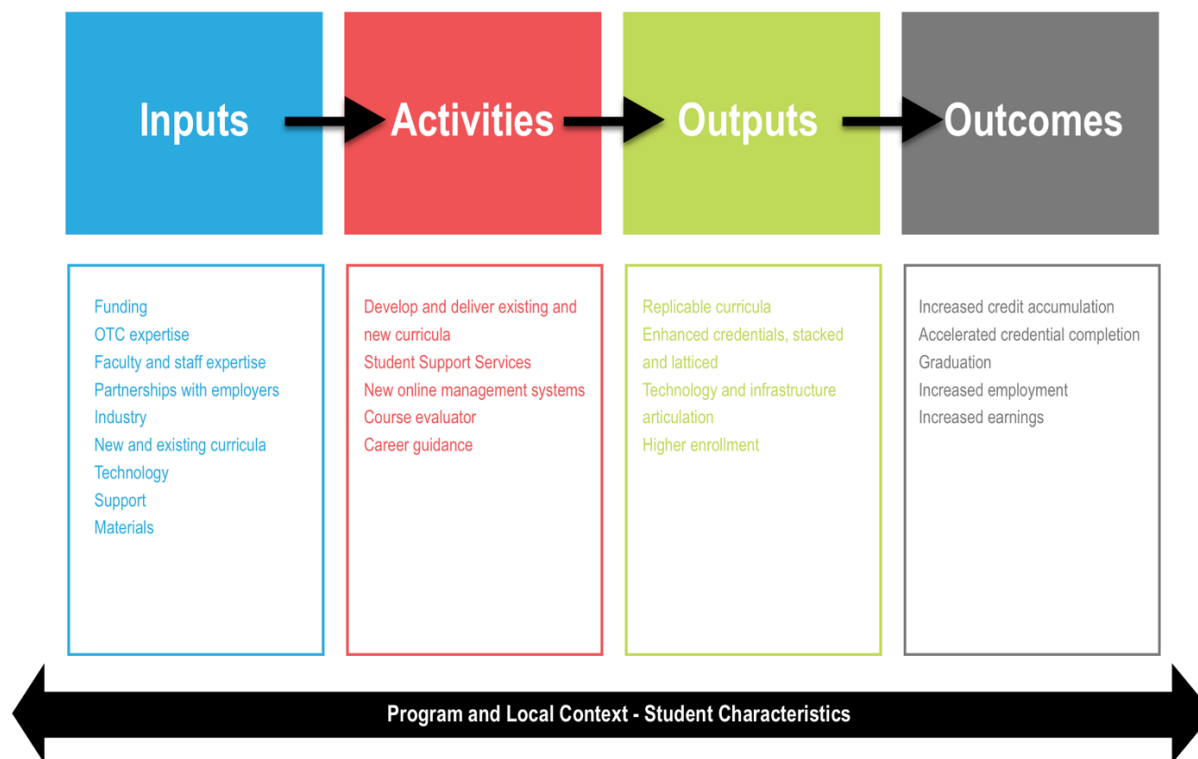
In September 2013, the Ozarks Technical Community College (OTC), in Missouri, was awarded a four-year grant of over \$2.2 million dollars by the U.S. Department of Labor (DOL) a Trade Adjustment Assistance Community College and Career Training (TAACCCT) to leverage today's healthcare and information technology and the college's resources to open up for TAA-eligible participants career pathways in the high-demand healthcare, information systems, and environmental science fields (U.S. Department of Labor press release, September 18, 2013; Grant No. TC-25016-13-60-A-29).

The purpose of the funding is twofold:

- 1) **to provide accessible and feasible career pathways into the health science, information systems, and environmental science fields for the underemployed, unemployed, and veterans in the state, particularly those residing in the nine counties (Christian, Dallas, Greene, Laclede, Polk, Pulaski, Stone, Taney, and Webster) near OTC; and**
- 2) **to address the higher-than-average unemployment rate in the region by providing a trained workforce in high-demand healthcare, social assistance, and targeted industries, classified by the North American Industry Classification System (NAICS) as code 62 and 81 (Ozarks Technical Community College website, 2013).**

Under the Technology-Enabled Pathways to Healthcare (TEPH) project initiative, OTC seeks to align inputs, activities, and processes for the creation of hybrid, tracked, and replicable curricula in three programs – Associate of Science degree in Nursing (ASN), Associate of Applied Science (AAS) in Occupational Therapy Assistant (OTA), and Environmental Science Technician (EST). **Figure 1** below outlines the theory of action for the TEPH Project.

Figure 1: Theory of Action for TEPH Project



OTC’s “high-tech, high touch” approach with these three programs has six distinctive characteristics.

The first is the hybridization of both face-to-face and online learning experiences for the participants enrolled in the programs. Participants would meet in-person once a week with their instructors for laboratory work and on-the-job training and at other times would receive instruction online through various media such as Blackboard and Skype.

The second characteristic is the revision of the programs’ course offerings to ensure stacked and latticed credentialing for the participants. For example, participants enrolled in the ASN program that already have LVN/LPN (licensed vocational nurse / licensed practical nurse) credentials would have the option of continuing their education to earn a bachelor of science degree in nursing by using their ASN degree from OTC as a bridge toward higher credentialing and licensure.

The third aspect is leveraging the OTC’s existing articulation agreements with other institutes of higher education (IHEs) in the surrounding area, such as Belmont University, Missouri State University, Missouri Science & Technology, and the University of Missouri-Columbia (MU), to provide OTC participants enrolled in the three programs a clear on-ramp for guaranteed admissions and transfer of credits to earn bachelor or even master of science degrees at the receiving IHEs. For example, eligible OTC participants who earned credits through the ASN program could transfer into an MU university system and take classes completely online from their current location and earn a bachelor of science degree in nursing.

With the bridging option at Belmont University, OTC students earning credits through the OTA program could use those credits toward an accelerated completion of a master's degree within 18 months.

Fourth, through established relationships with surrounding hospitals and healthcare providers, including the Cox Hospital system (Springfield, Monett, and Branson), the Mercy Hospital system (Lebanon and Springfield), Citizens Memorial Healthcare-Bolivar (CMH-Bolivar), and Mount Vernon State Hospital, OTC offers on-the-job training and experience that would allow participants to learn and demonstrate their learning as well as their employability with future employers.

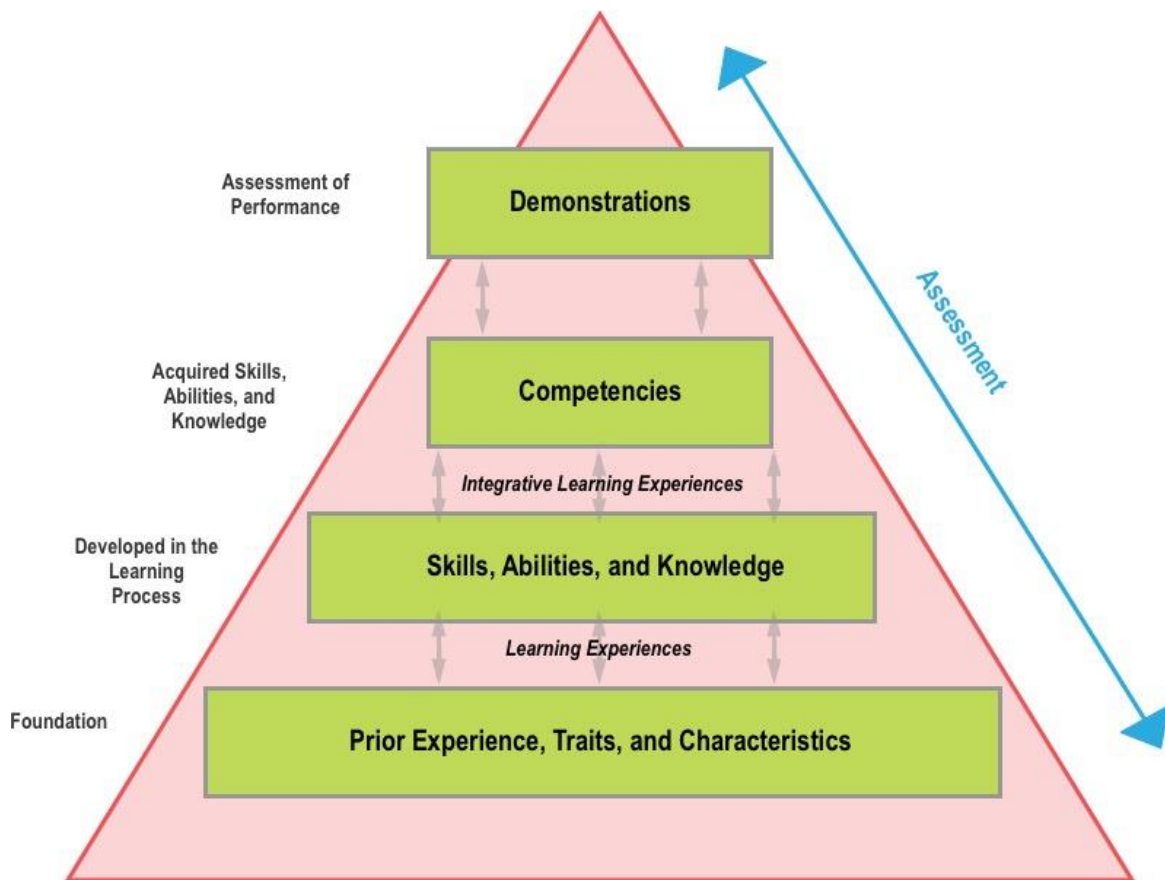
Fifth, OTC formally coordinates with employer and industry organizations through advisory committees and local Workforce Investment Boards (WIBs) to ensure that the three programs provide the knowledge and skills that the employer and industry organizations seek for their prospective employees.

Lastly, OTC provides the services and supports tailored to the particular situations of its participants.

The majority of the program's prospective participants are older adults with work and life experiences who need assistance in navigating the choppy waters of financial aid and college processes. Moreover, a number of the prospective participants come from nearby Fort Leonard Wood Army military base and surrounding military installations. They are participants who are transitioning out of their military careers as active military engagement of U.S. forces continues to decrease. **OTC assists these participants by taking a competency-based approach⁵ to determine how their prior skills and training could apply to any of the three TEPH programs, thus streamlining their courses, training, and resources and support at OTC and moving them through degree completion and certification and job placement more efficiently and effectively.** See **Figure 2** for a schema on a research-based competency-based model developed by Jones, Voorhees, and Paulson (2002).

⁵ See Johnstone & Soares (2014); Voorhees & Voorhees (2014)
http://www.wgu.edu/about_WGU/ed_pathways_707_article.pdf

Figure 2: Competency-Based Learning Model

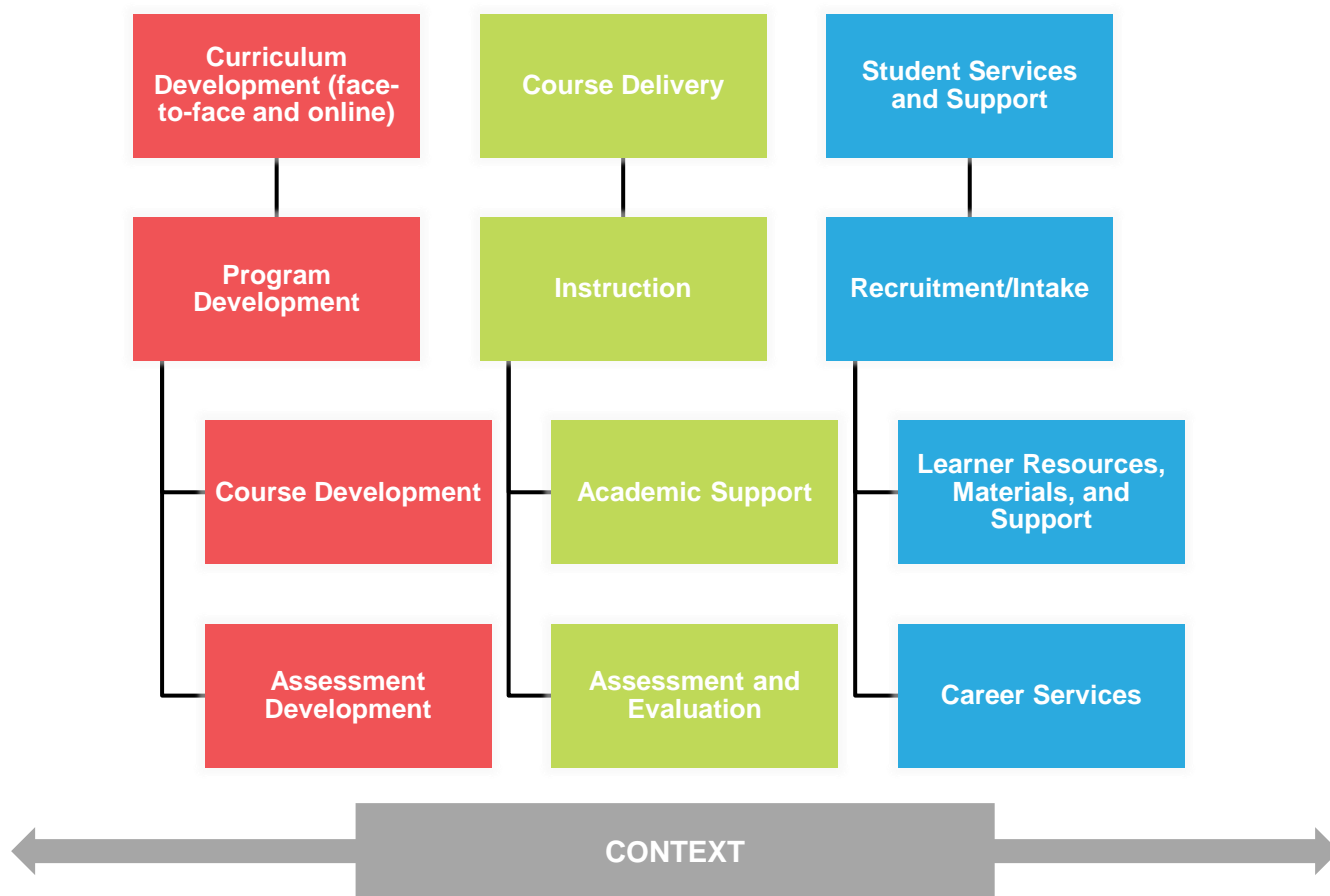


Therefore, the TEPH project, by offering hybrid courses, forming collaborative industry partnerships, and providing support staff and resources, will serve four priority areas:

- 1) **create hybrid classes for associate of science in nursing (ASN) (convert face-to-face courses to hybrid);**
- 2) **create hybrid classes for Occupational Therapy Assistant (OTA);**
- 3) **add a hybrid Environmental Science Technician (EST) to associate's degree in Environmental Science Technician; and**
- 4) **enhance student services through a Career Navigator/Retention Specialist and a Transcript Evaluator.**

Figure 3 presents the program design/model for TEPH at OTC, which consists of three components: course development (for three programs), course delivery, and student services and support.

Figure 3: Program and Conceptual Model for TEPH



This document provides a summary of the progress made during the grant period, from 2013 to 2017. It begins by laying out the evaluation design and approach before delving into an analysis of the implementation of program elements during the year 4 of the program. A section on outcomes questions follows, with some results that indicate the degree to which the TEPH program has met its goals.

Project Evaluation Design and Approach

OTC availed themselves of the research and evaluation services of MN Associates, Inc. (MNA) as the TEPH project’s third-party evaluator in June 2014. MNA is a woman-owned education research, technical assistance, and project evaluation consulting organization whose researchers have extensive knowledge and experience in designing, developing, and implementing rigorous, full-scale, multilevel technical assistance, research, and project evaluation studies for K-12 and higher education systems at the district, state, and national levels. MNA designed an evaluation plan and approach that would provide tools to ensure the lasting impact of the TEPH grant. A matched comparison group using a quasi-experimental design was used as the general research design. The evaluation is designed to benefit the following audiences: employers who

desire TEPH training for current and future employees; instructional technology providers; academic planners at the colleges and universities; industry and community partners; and other current and future TAACCCT grantees.

With these audiences in mind, the evaluation has three main goals:

- 1) Assess the extent to which the pathways funded by TAACCCT improve employment outcomes compared with traditional stand-alone certificate and certification programs**
- 2) Understand program implementation to inform future replication and scaling of successful programs and to help interpret program outcomes**
- 3) Develop and implement tools and procedures to improve the OTC's capacity to engage in continuous program improvement, in particular by using:**
 - a. Internal data (such as student records) and external data (such as labor market data and employer/industry data) to make evidence-based decisions to improve programs before and after the grant period.**
 - b. Staff and employer-industry/partner feedback on the extent to which TEPH grant processes are working and improving as a result of training and education delivered through the grant-funded program.**

The evaluation design tracks closely with the three-year TAACCCT project funding and implementation and DOL-mandated requirements. MNA has outlined a mixed-methods approach that examines both the process and the outcomes of the program. To analyze the outcomes, the evaluation has adopted a quasi-experimental research design using cohort-based comparison groups of students who are also attending OTC but in non-TEPH program (e.g, biology). In close collaboration with the research team at OTC, the evaluators decided to use the Biology group on campus as the most appropriate comparison group. Each semester, the research team pulled the comparison group data and shared with MNA for matching purposes.

MNA is utilizing a wide array of data sources for its investigation, including interviews with project teams, key stakeholders, and document reviews, the OTC database for administrative and student record data, surveys, and document reviews. **Table 1** provides a crosswalk of the formative and summative evaluation questions with the corresponding data source(s) and analysis strategy (or strategies).

**Table 1: Evaluation Questions and Data Collection Crosswalk
(TAACCCT R III SGA Evaluation Questions)**

Evaluation Questions	Method & Data Source/s		Analysis Strategy
IMPLEMENTATION and PROCESS QUESTIONS			
How were the particular curricula selected, used, and/or created?	Project team / Key stakeholders and Project Documents	Interviews, Data document review / program planning	Qualitative narrative analysis
How were the program designs improved or expanded using the grant funds?	Project team / Key stakeholders and Project Documents	Interviews, Data review, Program planning	Qualitative narrative analysis
What delivery methods were offered and how did participants experience them?	Project team / Key stakeholders and Project Documents	Interviews and documents	Qualitative narrative analysis
What was the program administrative structure?	Project team / Key stakeholders and Project Documents	Interviews and documents	Qualitative narrative analysis
What support services and other services were offered?	Project team / Key stakeholders and Project Documents	Interviews and documents	Qualitative narrative analysis
Was an in-depth assessment of participants’ abilities, skills, and interests conducted to select participants into the grant program?	OTC database	Interviews, Data review, Administrative data	Qualitative and Quantitative; Descriptive
What contribution did each of the partners make in terms of 1) program design, 2) curriculum development, 3) recruitment, 4) training, 5) placement, 6) program management, 7) leveraging of resources, and 8) commitment to program sustainability?	Project team / Key stakeholders and Project Documents	Interviews and Document Review	Qualitative – Themes and Codes of Narrative data
What were the challenges in the program courses and assessment development per program?	Officer / Project team–OTC	Interviews	Qualitative – summary of what changes were made

Evaluation Questions	Method & Data Source/s		Analysis Strategy
What outreach and recruitment strategies are in place?	Project team and Leadership, Partners	Interviews, Document review	Qualitative – Themes and Codes of Narrative data
To what extent were the competencies identified by industry represented in the curricula?	Partners and Staff	Interviews and Documents	Qualitative
How did the collaborative model work?	Partners and Staff	Interviews/Surveys	Qualitative and Descriptive
To what extent were programs at OTC aligned with university program(s)?	Planning meetings	Interviews/Surveys	Qualitative
OUTCOME QUESTIONS (Treatment and Comparison groups)			
To what extent have TEPH project strategies resulted in an increase in successful participants' completion rates per program per year?	Participants – Treatment and Comparison	Web-based Survey Follow up in 6, 12, and 18-month intervals	Likert-scale closed-ended survey with few open-ended questions Quantitative and Qualitative – Descriptives, ANOVA
To what extent are participants satisfied with courses/offerings, guidance/counseling, and supports provided to them during their programs of study and the extent to which they were relevant to the job market?	Participant surveys		Descriptive, Analysis of Variance (ANOVA)
To what extent have the project strategies resulted in an increase in course-taking and completion?	Administrative data	Data Request/MOU	Descriptive
To what extent has the project resulted in an increase in job recruitment and wages?	Administrative and TAA database	Data request/MOU	Descriptive
In what ways has the project resulted in greater than 6, 12, and 18-month employment rates?	Administrative and TAA database	Data request/MOU	Descriptive Multiple regression and HLM

This report has two main sections. Section I focuses on the implementation of TEPH at OTC across the three programs: ASN, EST, and OTA. Section II reports the matching procedures and design methodology used to select comparison groups and status of participant outcomes at the end of the grant.

Section I: Program Implementation Study

Implementation year 4 of the TEPH grant saw many milestones. Most notably, much time was spent on intrusive advising throughout the year, assisting participants in succeeding in their respective programs. In addition, data for both internal and external purposes was captured throughout year 4. As grant funded-instruction wrapped up in March 2017, the ASN hybrid program and the OTA program are both planned to continue (though the EST program is not).

Some of the major milestones from the beginning of the TEPH grant are listed in **Table 2** below. Throughout the four years of the TEPH grant, the ASN and OTA programs were transitioned to a hybrid model of instruction, thus allowing participants who might have struggled to complete the traditional in person model of instruction the opportunity to complete them. These two programs received formal accreditation and their accredited status is now ongoing. The EST program did not need to receive accreditation, as it had previously received provisional approval. In total, the programs served over 200 participants during the grant period. These participants also received practical instruction through partnerships with local employers as part of their programs. In addition, participants received intensive advising support from career navigators (see section below, which discusses this in full), who assisted them in overcoming barriers that often lead participants in workforce development programs like TEPH to drop out. Table 2 outlines the timeline of activities across the four years of the grant.

Table 2: Key Milestones in the Development of TEPH, Years 1-4

Milestone	ASN Blended Program	EST Blended Program	OTA Blended Program
Hiring new staff & faculty	Began November 2013; completed December 2013	Began May 2014; completed May 2015	Began February 2014; expect completion Spring 2016
Accreditation approval	Began March 2014; approval received August 2014; on 5-year cycle accreditation visits	Not applicable. Missouri Department of Higher Education conferred provisional approval for Environmental Science program certificate and A.A.S. degree	Began August 2014; formal accreditation approval received in spring 2015
Admission requirements & selection criteria	Began March 2014; completed May 2014	None; rolling enrollment per grading session	Began May 2014; ongoing

Milestone	ASN Blended Program	EST Blended Program	OTA Blended Program
Curriculum development; course content & modules	Began January 2014; Hybrid instructional design completed Spring 2015	Began August 2014; completed fall 2016	Began January 2014; Online instructional design completed in August 2016
Clinical/hands-on activities	Clinical dates for first 8-week block of courses began Spring 2015 semester	Began December 2014	Began Spring 2016
Industry outreach	Began May 2014; ongoing	Began Spring 2015; ongoing	Ongoing
Student recruitment	Began Fall 2014; ongoing	Began, May 2014; ongoing	Ongoing
Start of classes	Began Spring 2015 Semester	Began Fall 2014 Semester	Began Fall 2015 Semester

Table 3 shows the demographic characteristics of the TAACCT participants. The average age of the participants in all three programs was in 30s. ASN participants were on average slightly older than those in the other two programs. The majority of the participants in ASN and OTA were female (80% or above); whereas only 40% of the participants in EST were female. In ASN and OTA, the participants were predominantly white (92% or above), whereas, in EST, 75% are white. The share of transferred participants was also highest in EST (26%), compared to ASN (<1%) and OTA (11%). Almost all participants enrolled full-time in ASN and OTA. In EST, only 59% enrolled full-time. The majority of the participants (70% or above) in all three programs had incumbent worker status. About half of all EST participants had veteran status which was much higher than the other two programs (ASN: 19% and OTA: 8%). The proportion of participants with disability in EST was also four times the other two programs. About 60% in ASN, 45% in OTA, and 19% in EST participants were Pell-Grant eligible.

Table 3: Demographic Characteristics of TEPH Participants Across Grant Years

	EST	ASN	OTA
Sample Size (N)	113	62	62
Average Age	32	35	30
Female	40%	79%	84%
Non-White	24%	8%	6%
Transfer Student	26%	<1%	11%
Full-Time	59%	98%	98%
Incumbent Worker	70%	82%	74%

Eligible Veteran	47%	19%	8%
Disability	23%	5%	6%
Pell Grant Eligible	19%	61%	45%

During implementation year 4 of the TEPH grant, there were many milestones. The major milestones for each program are presented below. Please note that there may be some variation(s) in exact enrollment numbers due to reporting time lags.

OTC developed and maintained a website⁶ with various course-related and program information links for all its ongoing TAACCCT grants including TEPH. Specifically, the website had a live chat feature, information about program participation eligibility, course sequencing, participation benefits and registration account with Missouri Career Center, tuition/costs, and contact information including those of program staff. The ASN webpages were more detailed compared to the OTA and EST ones.

Associate’s Degree in Nursing (ASN) Program

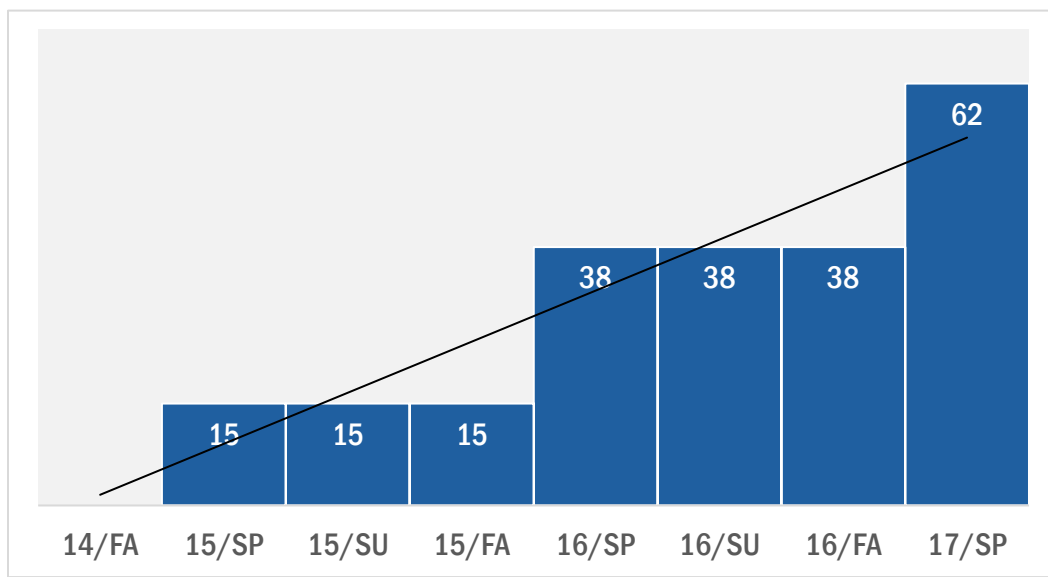
The first hybrid cohort graduated in October 2015. Of the 13 graduates, 12 passed the NCLEX-RN exam on their first attempt and the same number had job offers in hand by December 2015. By the end of year 4, a total of 62 participants were in the ASN program.

Meanwhile, new orientation methodologies were developed and a second hybrid cohort was welcomed to the program on December 28, 2015. The ASN program also obtained accreditation from ACEN in March 2016, and annual accreditation is ongoing. Scheduling of clinical activities is ongoing as well, and program staff report that they have developed deeper relationships with clinical sites not used prior to the grant, allowing them to place participants in a wider range of sites.

The ASN program now has a completely new hybrid cohort of participants, served by two separate full-time faculty hired using grant funds. In total, the program can now accept an additional 24 participants each year. The ASN program will continue beyond the end of grant funding. See Figure 4.

⁶ <https://academics.otc.edu/taaccct/current-programs/>
 ASN: <https://academics.otc.edu/taaccct/current-programs/a-s-in-nursing/>
 OTA: <https://academics.otc.edu/taaccct/current-programs/occupational-therapy-assistant/>
 EST: <https://academics.otc.edu/taaccct/current-programs/environmental-science/>

Figure 4: Cumulative Enrollment in ASN, Years 1-4

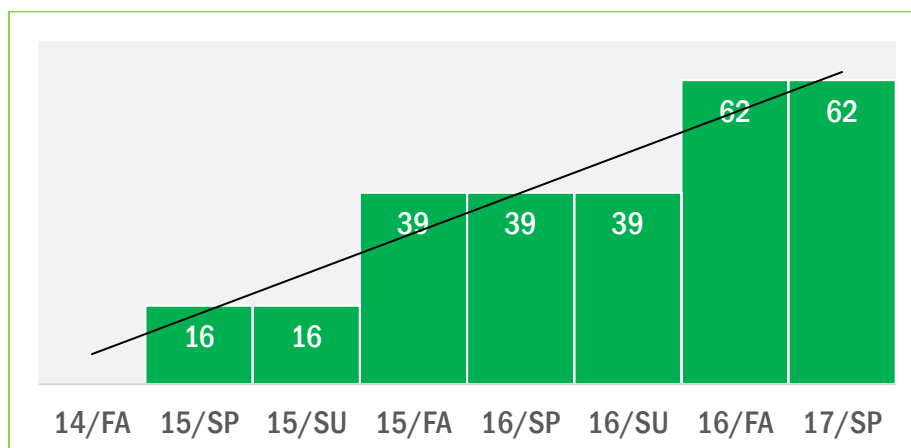


Occupational Therapy Assistant (OTA) Program

The OTA program received accreditation in October 2015. The development of the curriculum for hybrid classes was completed (the program is now entirely hybrid), with some adjustments made for the fall 2016 semester. Faculty gathered data to support this curriculum and continue to monitor the success of online communications in the education process. Faculty meetings and professional development occurred during the final year of the group. Faculty also conducted group advising sessions for OTA participants throughout the final year of the grant.

The class of 2017 had 62 participants as of Spring 2017, and some participants previously unable to apply to the program did so this year, due to the hybrid format. Scheduling of clinical activities for these participants is ongoing. These participants are participating in a variety of community outreach/educational activities with several local organizations. Grant money allowed the hiring of a fourth faculty member, which also increased class capacity by 10 participants. The number of clinical sites where these participants receive practical training increased, and is now over 100. The OTA program will continue beyond the end of grant funding. See Figure 5.

Figure 5: Cumulative Enrollments in OTA program, Years 1-4

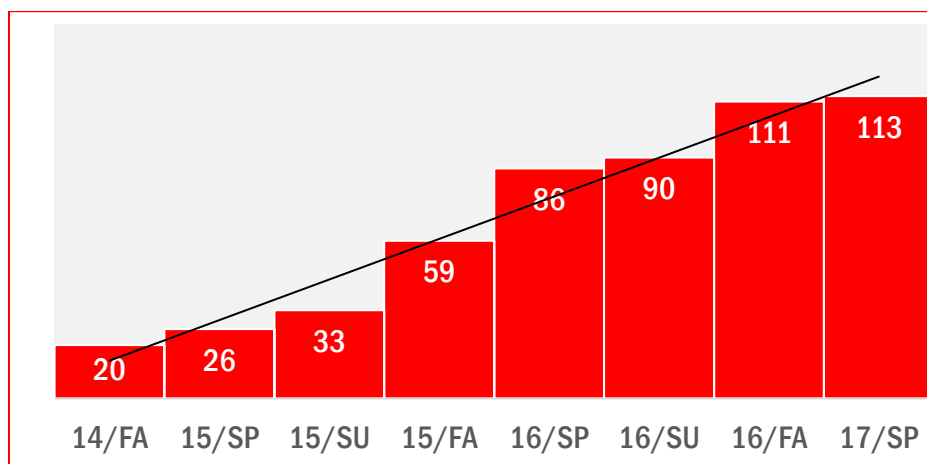


Environmental Science Technician (EST) Program

The EST program saw an expansion. The program expanded to three locations in year 3. In part as a result, the program has exceeded expectations for enrollment. Lebanon Municipal was also added as an employer partner. The recruiter for the EST program resigned in December 2015, forcing the program director and OTC student services to assume recruitment and retention responsibilities until the new recruiter was hired in May 2016.

New data management tools and protocols were developed by the recruiter to improve accuracy of data collection that were used in the years 3 and 4 of the program. During the final year of the grant, file closure protocols and procedures were put in place. Collection of post-program completion data from EST completers also took place. Several of these completers were able to begin internships with area employers. See Figure 6.

Figure 6: Cumulative enrollments in EST program, years 1-4

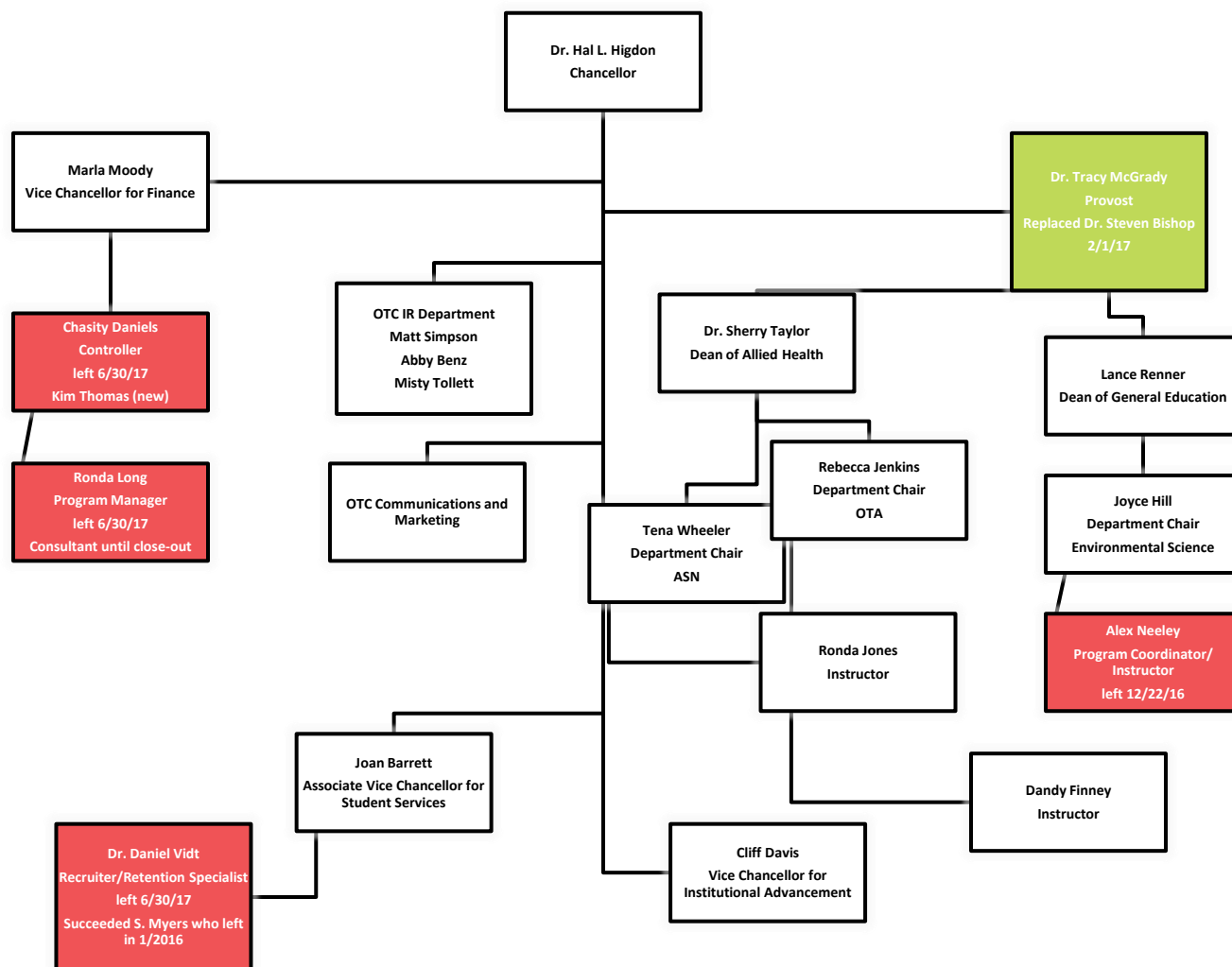


Program Design, Delivery, and Administration

As of September 2017, the organization chart for the TEPH program was as follows (the recruiter/retention specialist position was filled by Dr. Daniel Vidt shortly after this organization chart was put together). Also notable is that Ronda Long, grant compliance officer, began to take on reporting and administrative tasks related to the TEPH grant during the 2015-2016 academic year, after it was realized that there was a need for greater capacity in this area.

Figure 7: TEPH Organization Chart

Red boxes indicate people who have left their positions. Green boxes indicate personnel changes during the grant term.



Curriculum Review, Use, and Selection

The ASN program did not see any modifications to its curriculum, as it was completed in 2015 and has remained steady since then. For the OTA program, the quarterly report submitted September 30, 2016 reported that “master shell and basic content development is complete. Final/additional components are being added by instructor of each course as needed.” No major changes have been reported since that time.

Staff working on the EST program say that while the curriculum is being constantly adapted, the overall structure of the hybrid curriculum is set. To the degree that ongoing adaptations exist, they are largely to do with ensuring participants develop skills in the classroom that enable them to succeed in the workplace. One EST staff stated:

[Our] curriculum is constantly being modified to fit the needs of the participants within the program. The curriculum has mainly focused on addressing certain needs the EST field requires for candidates to be successful in the workplace. That can range from adding new techniques to practicals to addressing new changes in laws and regulations.

Assessment Tools and Processes

In all three programs, ongoing assessments are used in courses to measure and ultimately improve participant competencies. An ASN staff member said that “skill and competency are documented as all clinical and course objectives are monitored throughout the program and all are mapped to the graduation competencies.” Similar practices are in place for the OTA and EST programs. In 2015, OTC, along with numerous other institutions of higher learning across the county, removed the COMPASS testing for admission and are presently reviewing admission process. OTC now uses the Kaplan admission and math exams.

Career Guidance and Program Retention

All three programs assist participants with career placement after graduation. The ASN program offers formal career counseling. This program also makes participants aware of hiring fairs for health care facilities in the area, where many have been successful in obtaining employment. The ASN director informed us that she continues to communicate the dates that participants officially graduate and transcripts are available to local facilities for hiring purposes. In the EST program, staff provide job listings to participants. In all three programs, internships often help participants to develop relationships that then lead to employment opportunities after graduation.

The research literature around student persistence and retention, especially for non-traditional students, points to the exceptional need for academic counseling and career advising. Like TEPH participants, non-traditional students often balance work, family, and school responsibilities, and many come poorly prepared for college-level work. Advising facilitates the engagement of these participants in the college

experience and provides them with a sense that the college community cares about their academic progress and success.

Research has also indicated that there are at least two different forms of advising. The first type is ad hoc or prescriptive advising, where neither the advisor nor the student gets to know each other well, since the primary focus of the advising session(s) is on student's enrollment and class scheduling, the student's course work, and the general mapping out of a program of study. This type of advising has been described as somewhat of a "bookkeeping" exercise: the student is a passive recipient of information, and the advisors tell the participants what to do, when, and how in a checklist format. In contrast, the second type of advising "intrusive" or "intentional" advising is proactive, action-oriented, and outcome focused. Intrusive advising involves intentionally connecting with participants long before a situation occurs that cannot be fixed. It is not "hand-holding" or parenting, but rather active concern for participants' academic preparation and willingness, on part of the counselor/adviser to assist participants in exploring services and programs to improve skills and increase academic motivation. Authors Allen, Smith, and Muehleck and Bourdon and Carducci have shown evidence that this form of advising increases student retention and in turn academic achievement in community colleges. In particular, at-risk participants may benefit greatly from intrusive advising since they may not be aware of what options are available to them when unexpected situations arise. As a result, participants' persistence may depend on the quality of their relationship with the advisor.

In the TEPH program, intrusive advising was used extensively, with career advisors not simply responding to participants' requests for help, but actively seeking them out and anticipating their needs. This was helpful for many participants as they moved through a challenging course or the overall program. However, struggles with retaining staff members in these career navigator positions led to issues in this area. The EST program, for instance, experienced a six-month gap between the departure of one recruiter/career navigator and the hiring of his replacement. The career navigator was an important on-the-ground source of data collection and information sharing including contact notes/logs with the evaluator, doing aggressive outreach for TEPH, arranging internships and field trips for participants, being the "face" and providing both academic and non-academic counseling to the participants. OTC retained the OTA and ASN staff hired by the grant. The only grant position not absorbed has been that of the career navigator. This position is pivotal to the success of TAACCCT and other workforce development programs, and this raises concern about these programs' long-term viability.

Partner Contributions

All three programs worked closely with local community partners, including employers and other educational institutions. In the ASN program, partners provided feedback to participants on their performance during practicals. The EST program had connection with several partners, including businesses and state-funded governmental institutions for curriculum alignments and job interviews. The Missouri state career centers were a key partner in helping participants connect with potential employers. For instance,

several part-time instructors in the program are also local employers and/or consultants for government-funded organizations. These partners assisted in marketing the program to the community. The EST program has secured an MOU with Drury University in Springfield to enable OTC graduates to transfer and continue on to complete a four-year degree there. EST staff mentioned:

As the community partners, we have worked directly with have assisted in marketing the program to prospective participants, and letting their colleagues know about the program and the opportunities it provides to participants who are interested in pursuing a career in environmental science.

We have established an open line of communication with several businesses and local and state funded governmental institutions throughout the development of the EST grant.

[NAME OF STAFF] the program director for the ENV/EST portion of the grant has modified and improved the curriculum throughout the implementation of the program, to improve participant learning and outcomes. The industry partners have provided input as well.

EST and ASN staff stated that all programs reported increased connections with partner organizations and companies throughout the grant term.

Summary

Perhaps the main impact of the grant funding on the TEPH program is in the increased capacity of the ASN and OTA programs (however, OTC has decided to end the EST program due to lower enrollments (see note previous page) and ongoing market supply and demand). The former added two faculty members and the latter added one additional faculty member. With this increase in teaching capacity has also come an increase in enrollment.

With the increased enrollment has come a need for increased clinical placements. The TEPH program has also been quite successful in establishing relationships with local organizations that can offer practical training opportunities for its participants.

OTC has implemented a high-quality and rigorous curriculum that meets the accreditation standards. This is an important best practice which OTC can share with the community college network.

OTC also implemented a process for employer review of the curriculum.

The grant team designed and implemented an effective administrative structure for the first 3 years of the grant that allowed staff and faculty to maximize the time needed to implement grant strategies and complete the deliverables.

Qualitative data shows that TEPH staff successfully used an intrusive advisement model that helped them navigate program entry and persistence and provides OTC with an opportunity to bolster its academic

advising function.

Assistance from OTC's office of institutional research team made data collection easier for MNA. The team was very responsive to all evaluation-related queries including drawing comparison group(s) per semester and providing pertinent wages data.

The career navigators (as long as they were in the program) were helpful in on-site survey administration and data collection processes. They also shared the contact logs that enabled MNA to complete phone interviews and content analyses of the narratives. However, these logs were discontinued and became more challenging as the staff left their positions prematurely.

Finally, the switch to a hybrid and online instruction has been largely successful. Although this change in the curriculum was a significant amount of work for OTC staff, it has proven successful overall. Indeed, this change has enabled many participants who might otherwise not have been able to complete a program at OTC do so.

At the same time, the TEPH program has faced some challenges. Two of the main challenges are highlighted below.

First, the need for a full-time program manager to handle the many aspects involved in such a large grant program was recognized partway through the grant. Lack of a designated program manager made grant administration a challenge. Indeed, OTC finished the grant with significant unspent grant funds, indicative of struggles within its administration.

Secondly, the location of the EST program at a satellite campus has the potential to isolate it. One staff person talked about the need to market the program to participants at all OTC campuses. Another wrote, "There needs to be improved communication within our institution concerning the specific goals and deliverables associated with this particular grant, and all grant funded programs OTC is awarded."

In spite of these challenges, staff feel positively about the successes they have seen. As one staff person put it, "The grant funding has provided an opportunity to provide a program many colleges in the area do not have, and provide its participants with skills they can use to become successful in the desired fields."

Section II. Program Outcomes Study

The Outcomes/Impact Study focuses on three preliminary research questions that fall within multiple domains addressed by the nine USDOL-required outcome measures. These include: program completion, credential attainment (persistence), placement into employment, employment retention, and average earnings for those who retain employment.

Impact Evaluation Research Question 1: Do treatment group members who receive the intervention demonstrate increased probability of *completion* than do equivalent comparison group members in similar programs who do not receive the intervention?

- Does the program result in increased completion and certification rates?
- Does the program result in increases in numbers and percentages of participants who pursue additional educational opportunities post-program completion?

Impact Evaluation Research Question 2: Do treatment group members who receive the intervention demonstrate increased probability of *persistence outcomes* than do equivalent comparison group members in similar programs who do not receive the intervention?

- Does the program result in decreased time to achieve completion and certification rates?
- Does the program result in increased retention in TEPH programs?
- Does the program result in increased course completion rates?

Impact Evaluation Research Question 3: Do treatment group members who receive the intervention demonstrate more improved *employment outcomes* than do equivalent comparison group members in similar programs who do not receive the intervention?

- Does the program result in increased rates of employment? This includes increases in numbers and percentages employed in terms of:
 - Program Completion (30, 60, and 90 Days post program completion)
 - Increased employment retention
- Does the program result in increased earnings?
- Does the program result in a decrease time lapse between completion and job placement relative to the comparison group?
- Does the program result in a decrease time lapse between completion and job placement?
- Does the program result in a higher quality jobs (benefits, wages, etc.)?

As of September 2017, the three out of the nine TEPH outcomes were achieved. See **Table 3**.

Table 4: TEPH Program Outcomes as of September 2017

Indicators	Total	Target from SOW	Target Achieved? (Sept., 30, 2017)*
1. Total Unique Participants Served	237	202	Y
2. Total Number of Participants Completing a TAACCCT-Funded Program of Study	98	112	N
3. Total Number of Still Retained in Their Program or Other TAACCCT-Funded Program	Yr. 1 – 20 Yr. 2 – 103 Yr. 3 – 136 Yr. 4 – 71	72	Y
4. Total number of Participants Completing Credit Hours	233	136	Y
5. Total Number of Participants Earning Credentials	98	112	N
6. Total Number of Participants Enrolled in Further Education After TAACCCT-Funded Program of Study Completion	27	44	N
7. Total Number of Participants Employed After TAACCCT-Funded Program of Study Completion	10 ⁷ (26)	90	N
8. Total Number of Participants Retained in Employment After TAACCCT-Funded Program of Study Completion	4 ⁸ (26)	74	N
9. Total Number of Those Employed at Enrollment Who Receive a Wage Increase Post-Enrolment	99 ⁹	112	N

Note: There may be slight differences in data and completion rates reported after Sept., 30, 2017.

The remainder of the report focuses on the participant outcomes per evaluation question as measured by their course-taking experiences, levels of satisfaction, and data gathered on TEPH and comparison groups as related to employment and wages.

⁷ DOL targets of 90 and 74 for these employment outcome measures appear to have been estimated based on total number of participants instead of total number of non-incumbent completers, as specified. Total number of non-incumbent workers in this grant is only 61; of these 61, only 26 completed a program of study. Therefore, the maximum total possible for either outcome would be 26.

⁸ The cumulative totals 10 first quarter employed and 4 second/third quarter employed reported above are based solely upon UI wage data gathered by the OTC IR department. This data is aggregate only through June 30, 2016. Due to this lag time in the UI reporting system, OTC is unable to include data on non-incumbent workers who completed between July 1, 2016 and September 30, 2017. Again, maximum total possible for each outcome would be 26.

⁹ OTC reported total of 99 incumbent worker participants receiving a wage increase based solely on data from the UI Wage Data system, and is effective only through December 31, 2016. Again, due to the lag time in the UI reporting system, OTC was unable to include information on incumbent workers receiving a wage increase from January 1, 2017 – September 30, 2017.

To what extent have TEPH project strategies resulted in an increase in successful participants' completion rates per program per year?

In general, TEPH participants have been successful in completing their course of study in the time allotted. As mentioned earlier, in order to meet industry standards, the EST program was modified. ASN hybrid cohort was well designed and implemented.

During implementation years 2 and 3, all 13 ASN participants who responded to the survey did so, as did all 11 EST participants, and three out of four OTA participants.

A big part of the reason that completion rates among TEPH participants are so high may be due, in part, to the work of the Career Navigators or retention specialist. Each program has a staff person responsible for ensuring that participants are able to overcome obstacles that might otherwise hinder their progress.

As seen in the image (Figure 8) below, these Career Navigators help in a wide range of tasks. Their role is to conduct so-called “intrusive advising,” which proactively anticipates problems participants may experience (in contrast to more traditional so-called “prescriptive” advising).

Figure 8: Role of the Career Navigator



Indeed, for TEPH participants, this intrusive advising appears to be quite significant in supporting participant success. Career advising records shared with MNA staff highlight some of the many ways that these Career Navigators helped participants during implementation year 3. In the OTA program, for example, a series of questions asked participants to identify their strengths, areas of weakness, interests, and more in order to help the Career Navigator work with them effectively to ensure their success.

During the academic year, Career Navigators in all 3 programs were proactive in asking participants what types of support they needed. The same OTA Career Navigator wrote a participant, saying:

I was just wanting to touch base with the groups that will be presenting next Monday in Media Lab. I would like you guys to have a "conference" with me sometime this week prior to your presentation, just to answer any last-minute questions you may have and to assure that you have everything that you need for Monday.

This Career Navigator also helped participants who were falling behind and needed academic and other supports. A representative message is as follows:

Looking at gradcenter today, I noticed that you did not submit the Individual Assignment for OTA 250 to Lesson 8. You have 24 hours from the original date to submit the assignment to receive half credit. If the assignment is not submitted within the 24 hour window, the score will be a zero. However, per program policy, you still must submit the completed assignment, even if the 24 hour window has passed. If you have any questions, please let me know.

The solutions offered by Career Navigators often went beyond reminders to complete missing assignments or retaking an exam. This note sent to a participant about the rules for retaking an exam are clearly laid out:

Hello,
 Congratulations! I hope you have rested a little after all the hard work you put forth completing the RN program. Some of you have already contacted me regarding setting up a time to retake the Readiness Exam. You will be able to retake this exam at home as early as this Friday, 10/19/2016. The exam must be completed by Friday 10/28/2016 For those who are required to retake it.

You must schedule a specific time to retake so that I can allow you to take it in the Kaplan system from home. Prior to scheduling your time, you must complete Remediation as follows:

1. Remediate the Test using methods we discussed during your Kaplan review.
 Use the attached Test Reflection Worksheet.
 Reflect on the environment you had on the first Readiness Test (What are you planning to do differently?) Did you have sets of incorrect answers (4 in a row), When? How do you feel about what happened?
 Look at how many times you changed answers List any categories that you scored below 60
2. Remediate the Test Questions using methods we discussed during your review.
 Use the attached Question Reflection Worksheet (page 2) to answer the Yes/No questions to find and diagnose your problem areas.
 Find out where you struggled with each question You must reflect on all questions regardless of whether you got them correct or not.
3. Make a Remediation Plan. After completing steps 1 & 2 you will be in a position to know what you need to do to do better on the next Readiness Test attempt.
 What topics do you need to review out of the Content Review Guide prior to your retake?
 What Content Videos can you watch OR What chapters out of your textbook do you need to review? Be specific.
 You can use the Qbanks. How many Qbanks did you need to complete? (You can do as many as you want based on your lowest scoring categories on the Readiness Test) What step of the decision tree did you skip on questions? How can I help you understand this step better? Reach out to me.

An incomplete assignment and grade requirement notes:

According to Blackboard you did not complete the Week 3 Post Quiz last week.
 I also noted that you have not yet attempted to complete the Week1 Post-Quiz as you stated that you would in the email below from March 21.
 Can you update us and let us know what is going on?
 I am concerned about your progress in ASN 220. |
 What can I do to help?

Subject: 16SP-ASN-215-GH1A1-ADVPSYCH/MENTHLT NURSING: Grades

Students,

Assignments have been graded and your course grade is up to date. If anyone scored less than 75% on ASN 215 Exam 1 and/or presently has less than 75% for the course, you will need to contact me to make an appointment to discuss the exam and/or study habits/issues/concerns.

This interaction between the OTA Career Navigator and a participant exemplifies the creative ways that the former encourages the latter to be successful, in this case by using a planner or planner alternative:

Mrs. Finney,

That's what I did last semester and it worked great. Not sure why I decided to go back to old habits of relying on memory with a heavier load. I plan on using your advice and hopefully this is the last email about missed quizzes.

Thank you, [REDACTED]

From: FINNEY, DANDY L.
Sent: Monday, April 04, 2016 9:18 AM
To: [REDACTED]
Subject: RE: Dysphagia/Adaptive Quiz

[REDACTED]

Yes, you will need to take it, with a score of zero. I understand that with all of the classes, it is a lot to keep up with. I don't know if you are a calendar or day planner person but if you aren't, I would highly suggest one. At the start of every new "week" (Wednesday at 11:59 pm), I suggest going to each class on Blackboard and writing down each assignment and due date.

My husband is very antl day planner so what he does is at the start of every week, he sits down and makes a master list of everything he has due for that week and just checks it off as he goes.

Thought this might help. If you have any questions, please reach out to me.

Mrs. Finney

Career Navigators went beyond assisting participants on academic matters. The EST Career Navigator wrote in his notes¹⁰, for example, about helping a participant with his financial aid process:

Received an email from [STUDENT NAME] in regards to his Financial Aid Appeal process and his inability to complete the E-Advisor portion online. He explained that he tried to complete

¹⁰ The case notes received by MNA were primarily for the 2014-2015 academic year (that is, implementation year 1), whereas notes for the other two programs were for the 2015-2016 academic year (implementation year 2).

the E-Advisor but it would not let him put in his ENV specific courses. I emailed back letting him know I would check on the status of the appeal and speak to Financial Aid to see what might be the problem.

The type of support that intrusive advising offers played an important role in helping many participants to complete programs. One such completer said that he had been working as a restaurant manager prior to deciding to become a nurse. He began by becoming an LPN before entering the ASN program at OTC. The program was challenging. “You feel like you’re failing when you’re learning,” he said. But with support from faculty and advisors, he learned that “just because I missed a question on a test, it’s not that bad.” In fact, this support allowed him to demonstrate the type of perseverance that enabled him to complete ASN the program. After completing the program, he would go on to complete his studies to become an RN. He is now happily working at a local hospital, and he said that what he learned at OTC has stuck with him. He now recognizes that questions missed on tests as part of the ASN program have helped him to learn. Without the support he experienced at OTC, he might not have made it through the program. But, he said, having done so, he is a better nurse today than he otherwise would be.

To what extent are participants satisfied with courses/offerings, guidance/counseling, and supports provided to them during their programs of study and the extent to which they were relevant to the job market?

Surveys were collected in years 1-3 of the grant (they were not done in year 4 due to a lack of administrative capacity at OTC). The surveys gauged participants’ satisfaction with their courses, support they received, and their views on their job prospects upon completing their programs.

Participants in programs expressed a high degree of overall satisfaction. In all three programs, over 75% of participants are satisfied or very satisfied (note that the darker sections in the graphs indicate higher levels of satisfaction).

Figure 9: Overall Satisfaction of ASN Participants (n=13)

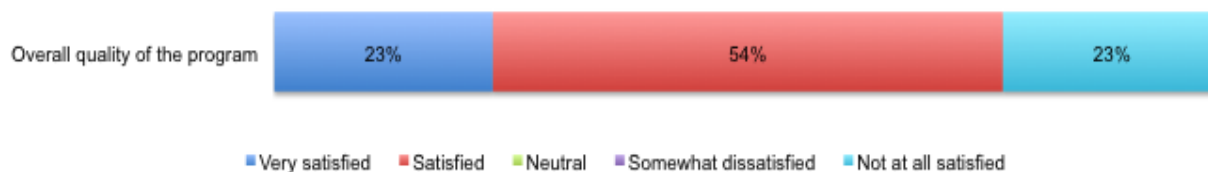


Figure 10: Select ASN Student Responses On OTC Experiences and Impressions

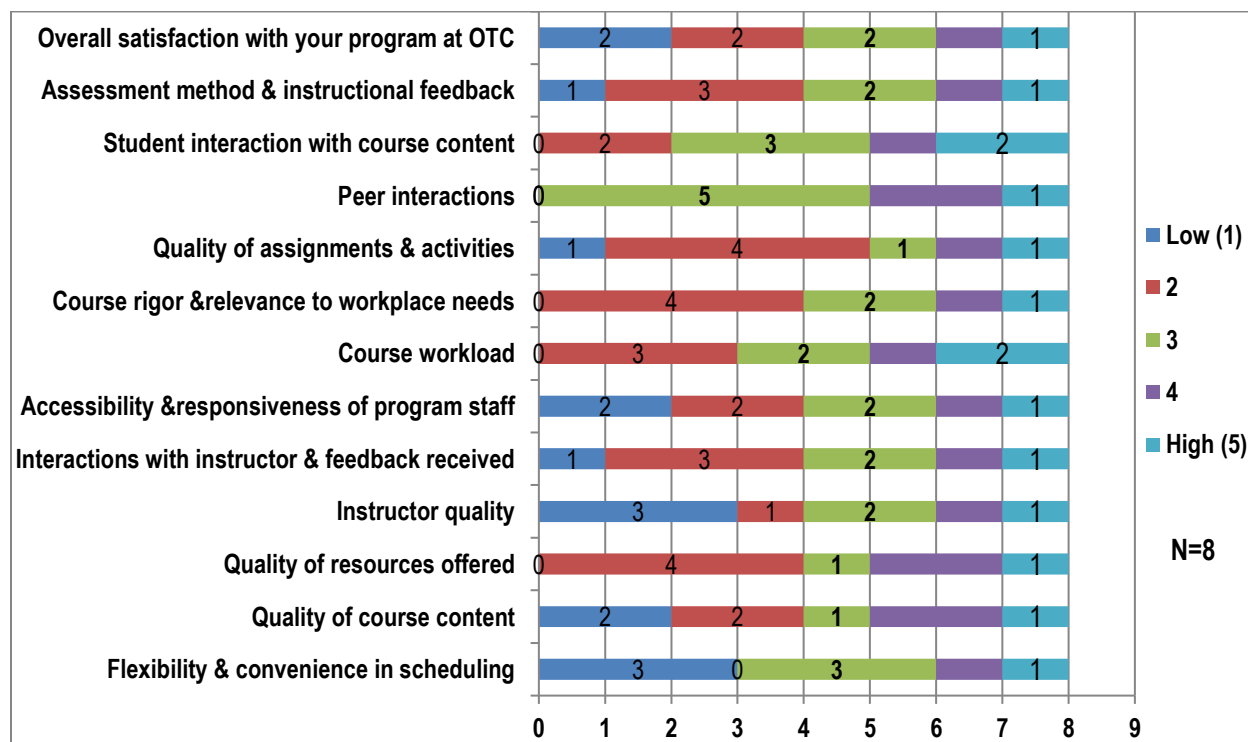


Figure 11: Overall Satisfaction of OTA participants (n=11)

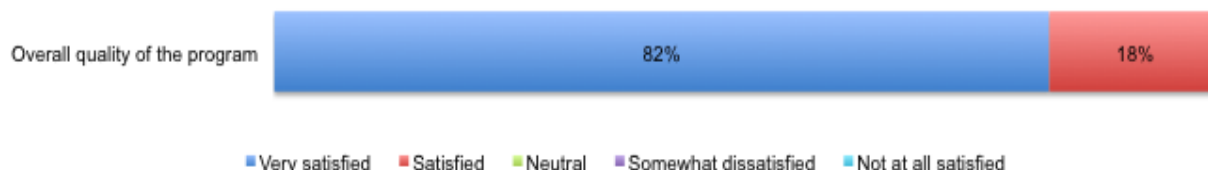
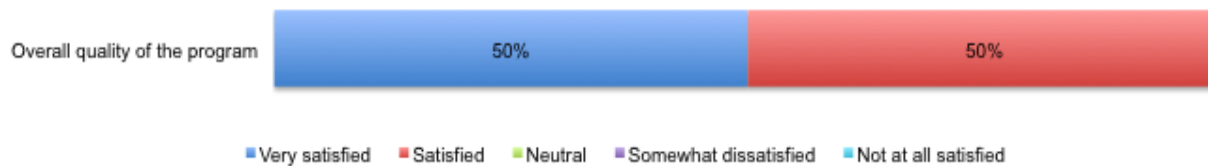


Figure 12: Overall Satisfaction of EST Participants (n=4)



Among the participants who expressed satisfaction, many talked about the funding offered to them as making their involvement possible.

“The TAACCCT grant has helped me achieve my dream of being a nurse by helping me pay for my education.” – ASN participant

“The program allows for flexibility while working and going to school.” – ASN participant

“Being a part of this program has helped me afford to return to school in order to pursue a promising career while still being able to provide for the need of my four children, two of whom will be attending college this fall.” – OTA participant

Several participants talked about the hybrid nature of the programs making it possible for them to enroll, succeed, and ultimately complete their studies sooner than they might otherwise have been able to do.

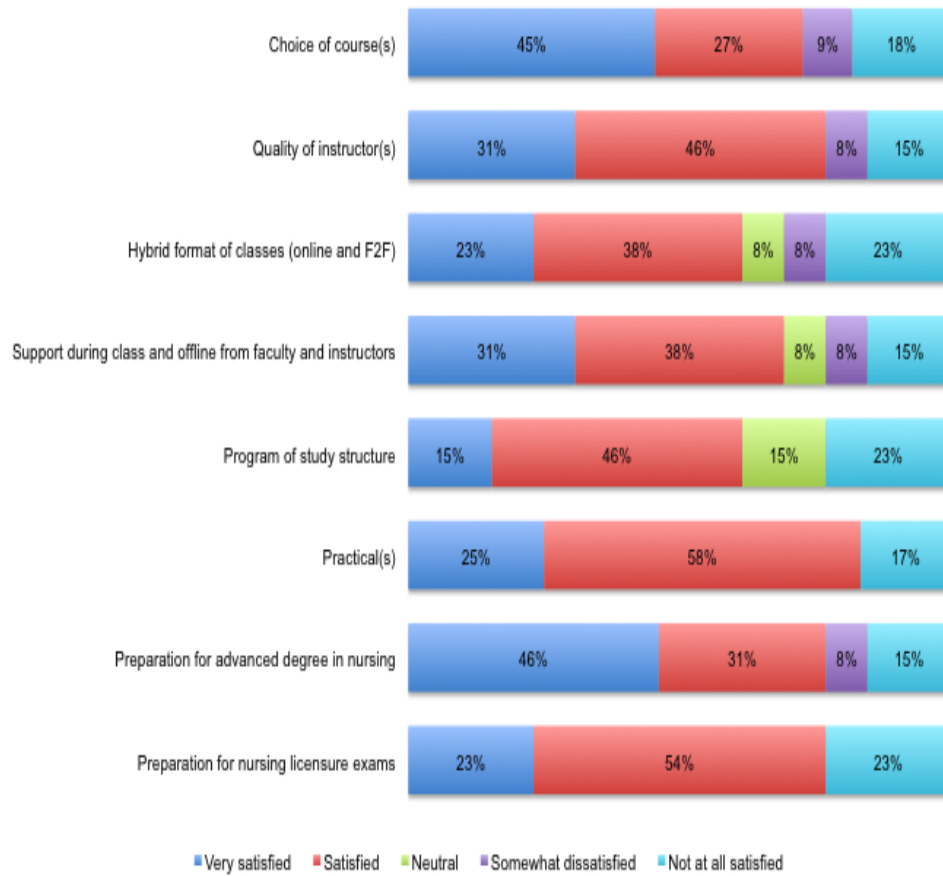
“LOVE the instructors and the process going hybrid was so easy.” – OTA participant

“I have finished my program much sooner than if I had gone through the seated program. I probably would not have done the hybrid route without the grant funding; it was new and did not have a track record for me to evaluate. But with the grant funding, that persuaded me to give it a try.” – ASN participant

“The grant allowed for the hybrid program, which allowed me to learn in a way that suited my learning style.” – OTA participant

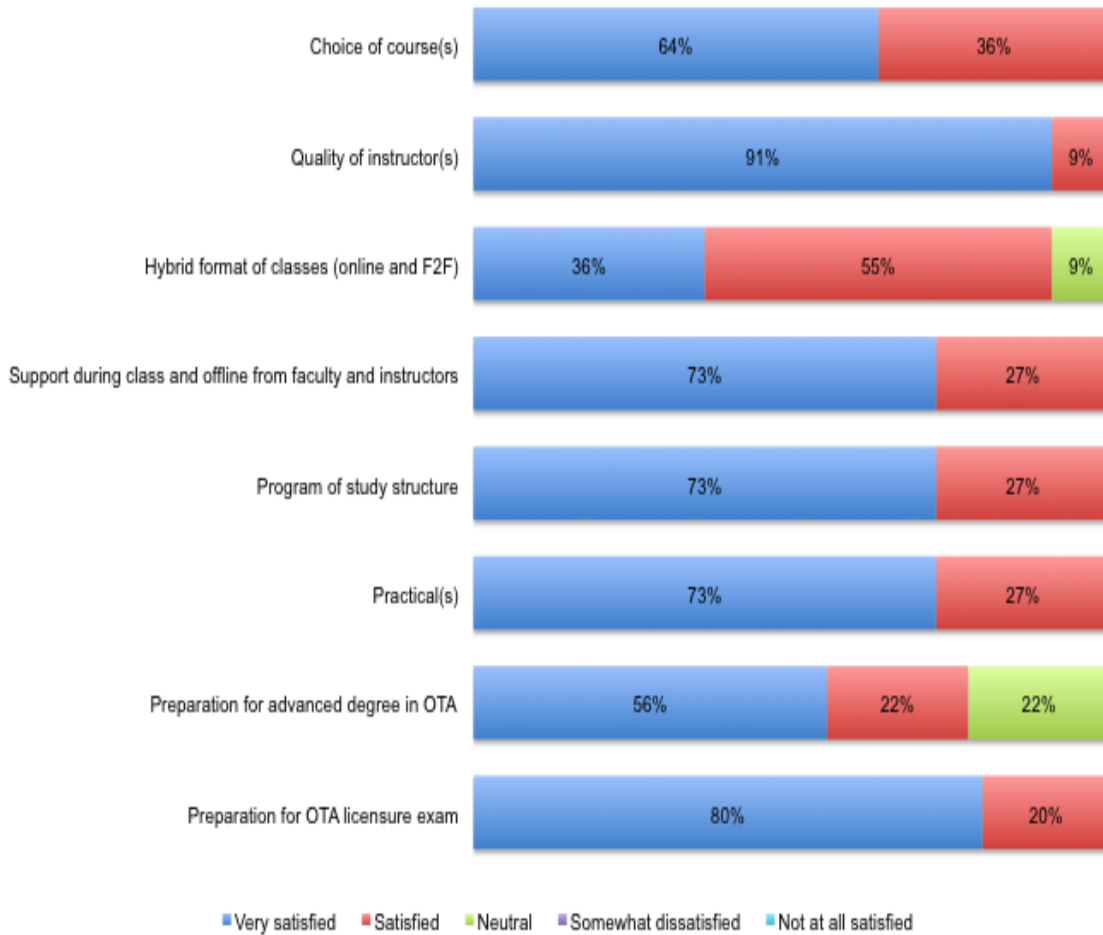
A series of questions asked participants about their levels of satisfaction with coursework. For ASN participants, levels of satisfaction are quite high, over 75% on nearly every question. Participants did express slightly lower satisfaction on the hybrid format, support from faculty and instructors, and the structure of the program of study.

Figure 13: Satisfaction with Coursework (ASN)



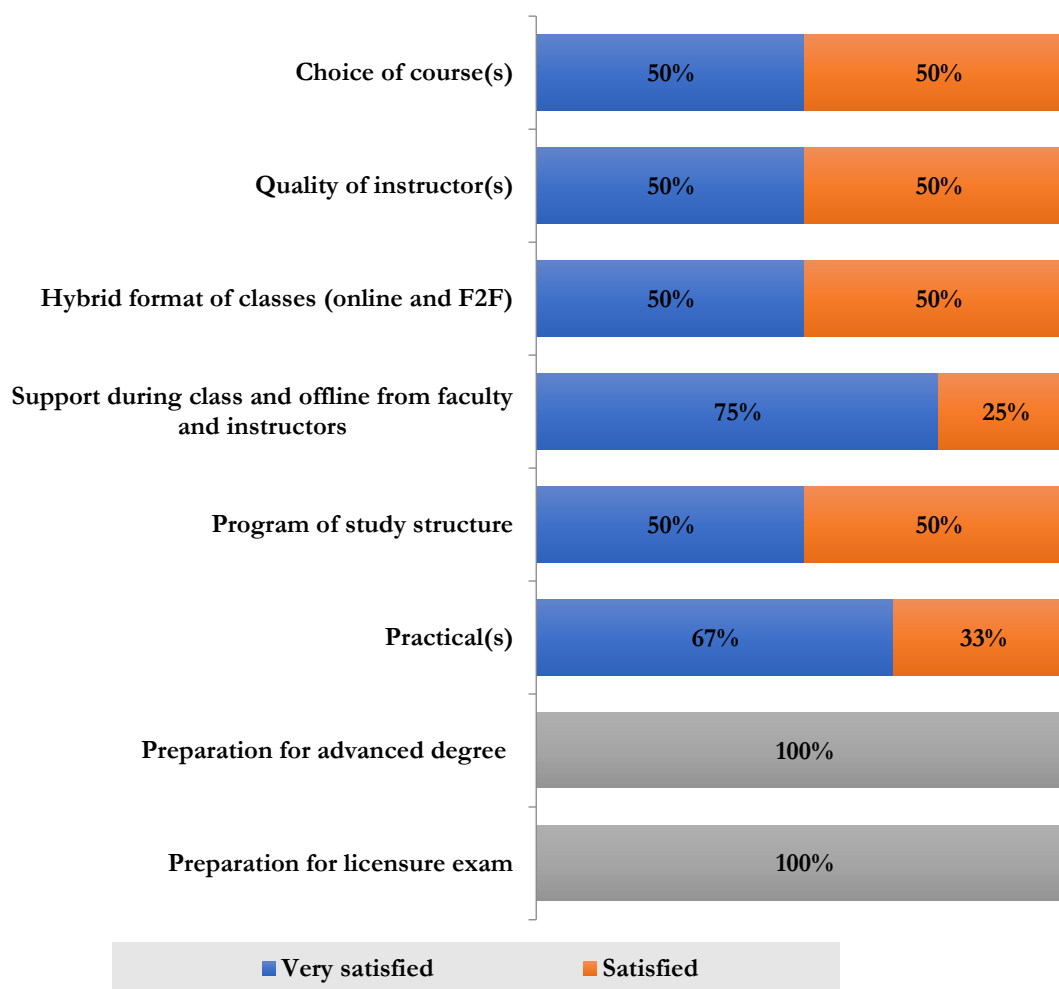
OTA participants were even more satisfied with the coursework as part of their program. Indeed, the lowest response on any of the questions was “neutral,” with the vast majority of responses being satisfied or very satisfied.

Figure 14: Satisfaction with Coursework (OTA)



EST participants were also quite satisfied with their coursework. The only areas that they expressed lower satisfaction in were around the preparation they felt they were receiving for an advanced degree as well as for licensure exams.

Figure 15: Satisfaction with Coursework (EST)



To what extent have the project strategies resulted in an increase in course-taking and completion?

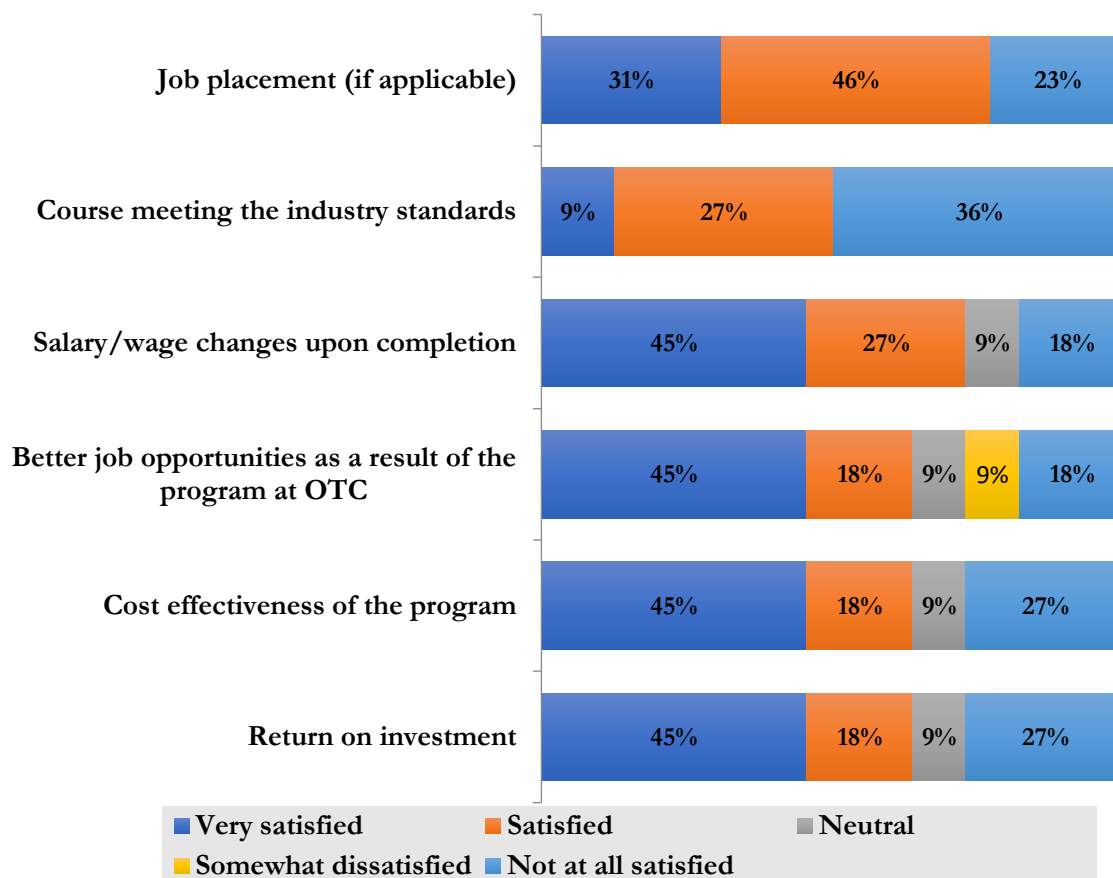
Based on data gathered from survey responses and case notes review, there is some evidence that the work of the navigators / retention specialists has had an effect on the grant participants’ course taking, persistence, and completion rates. However, a direct attribution to completion rates cannot be made.

To what extent has the project resulted in an increase in job recruitment and wages?

A series of question on the end-of-year survey asked participants about their satisfaction with their job prospects upon completing their programs of study. For ASN participants, the highest levels of satisfaction came around their job placements (77% said they were satisfied or very satisfied). The area in which they were least satisfied was about the course of study meeting industry standards, with 36% saying

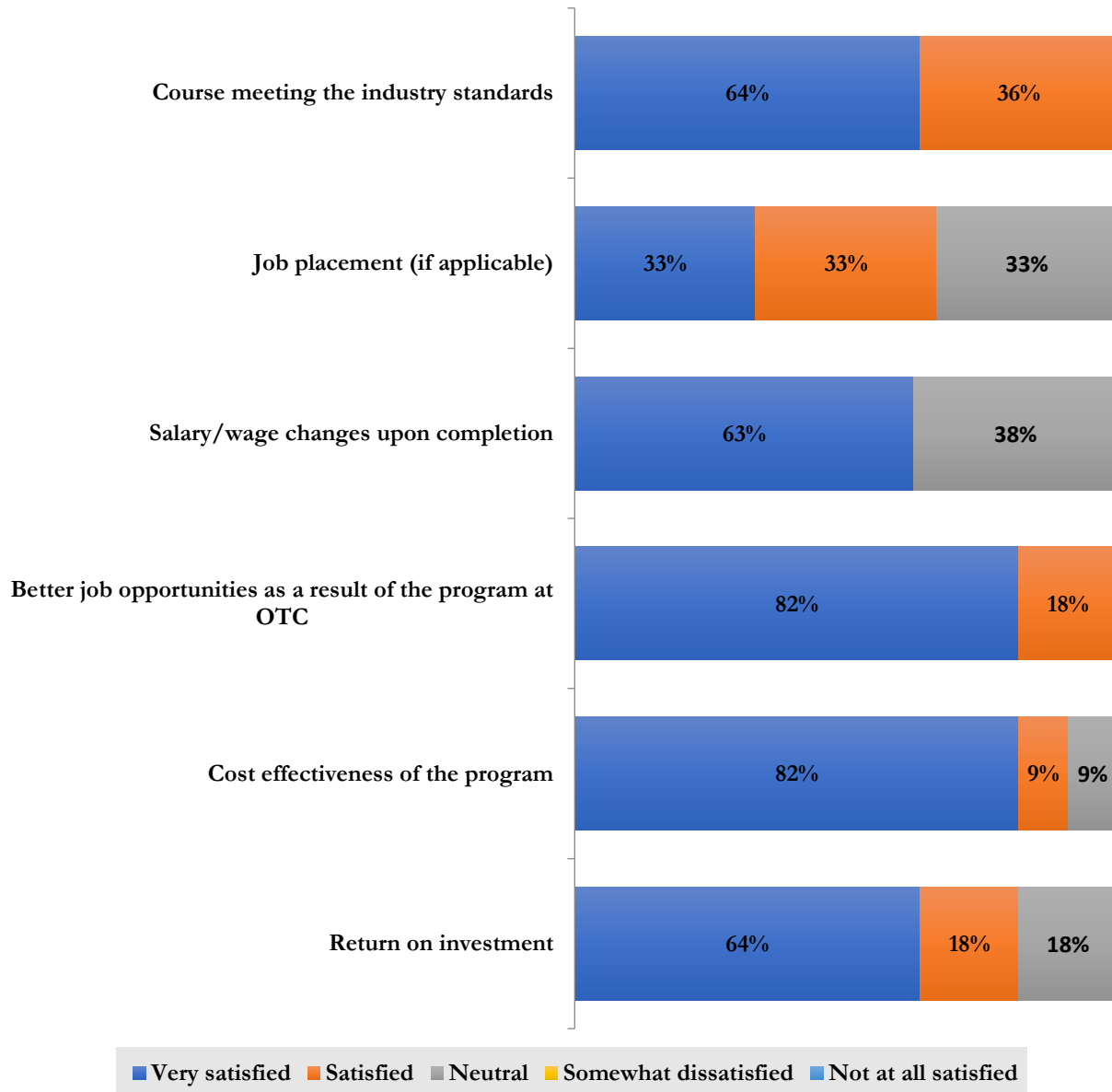
they were somewhat dissatisfied. There was also less satisfaction with the cost effectiveness of the program as well as the potential return on investment that it offers.

Figure 16: Satisfaction with Job Prospects (ASN)



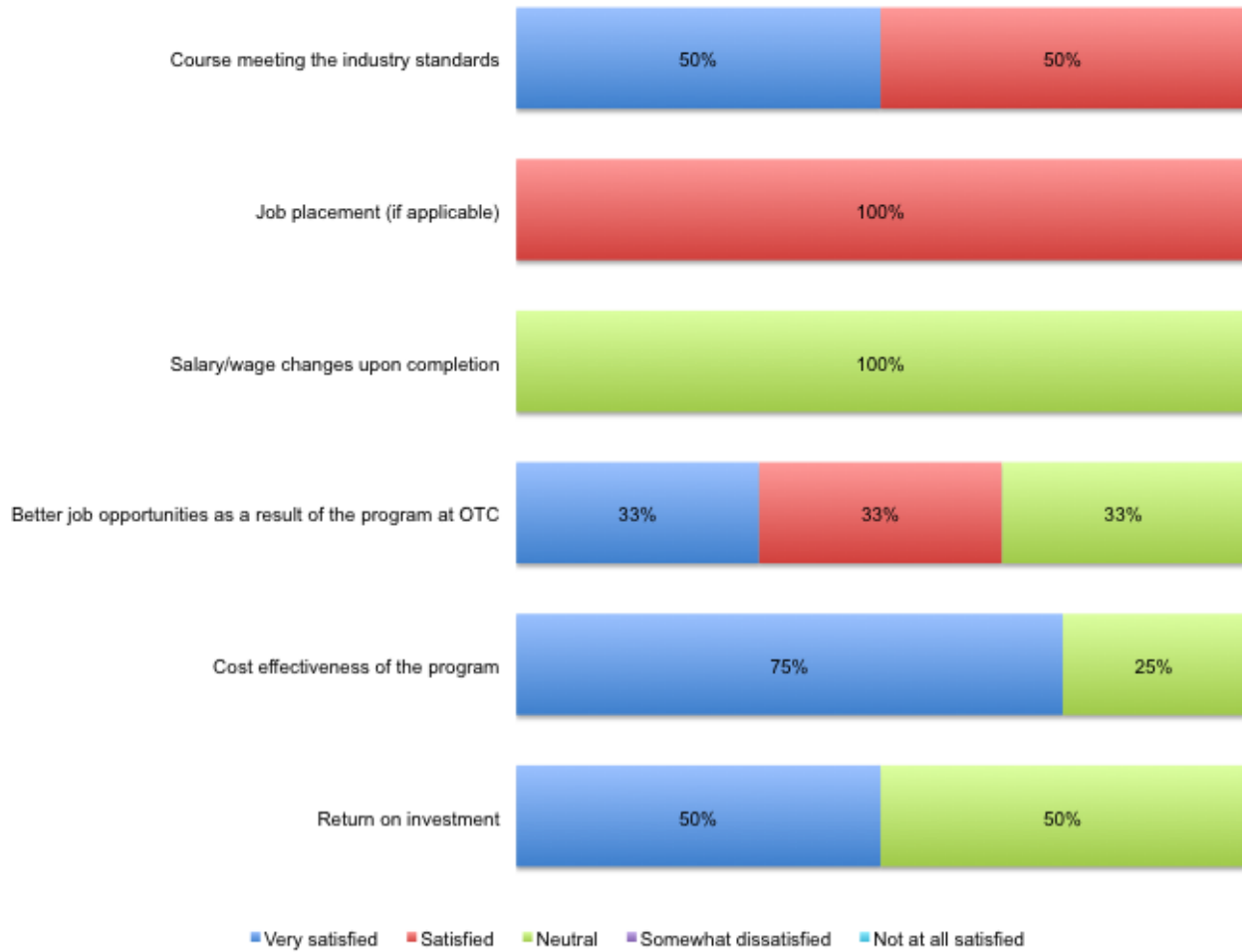
OTA participants expressed higher degrees of satisfaction with their job prospects. As with their opinions of their coursework, the lowest response was neutral (no one expressed dissatisfaction). The question with the highest positive response was to do with better job opportunities as a result of completing the program. Eighty-two percent of participants said they were “very satisfied” in this area.

Figure 17: Satisfaction with Job Prospects (OTA)



Similar to the OTA program, participants in the EST program were overall quite satisfied with their job prospects. The one area of concern was on salary/wage changes upon completion of the program, where all participants were neutral as to their satisfaction. This may be simply that participants are not yet sure whether they will obtain higher wages upon completing the program, but it is worth following.

Figure 18: Satisfaction with Job Prospects (EST)



Several of these positive perceptions about the program were echoed by program staff. Some comments are:

This grant allowed us to develop curriculum which enhanced the courses being offered in our department, and provided the opportunity for participants from a wide variety of backgrounds to pursue a career in a viable and growing field of study.

We have learned that ASN content can be successfully completed in the online environment. The program has been well received and continues to grow.

In what ways has the project resulted in greater than 6, 12, and 18-month employment rates?

The cumulative totals 10 first quarter employed and 4 second/third quarter employed reported are based solely upon UI wage data gathered by the OTC institutional research department. This data is aggregate only through June 30, 2016. Due to this lag time in the UI reporting system, OTC was unable to include data on non-incumbent workers who completed between July 1, 2016 and September 30, 2017.

Comparative Impact Analysis

This section presents the analysis of program impact for the treatment (TEPH) and comparison group (BIO). We have drawn the comparison group sample using a rigorous matching technique, as described below.

Multivariate Matching with Automated Balance Optimization Using Genetic Search Algorithm

We have applied Genetic Matching,¹¹ a method of multivariate matching, which uses an evolutionary search algorithm to improve covariate balance. Matching is being widely applied as a method of causal inference in many fields, including education and labor. However, when we use matching methods to estimate causal 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.¹² 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,¹³ 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,

¹¹ 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.

¹² 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.

¹³ Diamond, A., and J. S. Sekhon (2012). *Ibid.*

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 (1998¹⁴; Sekhon and Mebane, 1998¹⁵) to maximize the balance of observed covariates across matched treated and control units.

The algorithm has shown better properties than the usual alternative matching methods both when the EPBR property holds and when it does not.¹⁶ 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 hours and sometimes even days of 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.

We have matched comparison groups with the TEPH participants for the three OTC programs separately. We have included the detailed balance statistics obtained from matching in the Appendix.

- **EST**
- **ASN**
- **OTA**

Consistent with best practice, we have matched with replacement, which means that each participant may have matched with more than one comparison group member. Therefore, the matched dataset includes multiple matched comparison group members and we weight the matched data to reflect the multiple matches. The sum of the weighted treated observations is still equal the original number of participants. We have employed Genetic Matching technique in this analysis using the “Matching” package¹⁷ in R statistical software. Table 4 shows comparison of program outcomes between the TEPH participants and the comparison group.

In EST program, we have found higher completion rate among TEPH participants than comparison group (73% versus 3%). The majority of the comparison group members (97%) either are still enrolled in the program or deferred their enrollment. The TEPH participants also on average completed higher number of credit hours (45 hours) and took shorter time (12 months) to complete their degrees than the comparison group.

¹⁴ Mebane, W. R. Jr., and J. S. Sekhon (1998). “GENetic Optimization Using Derivatives (GENOUD).” Software Package. <http://sekhon.berkeley.edu/rgenoud/>

¹⁵ Sekhon, J. S. and W. R. Mebane, Jr. (1998). “Genetic Optimization Using Derivatives: Theory and Application to Nonlinear Models.” *Political Analysis*, 7: 189-203.

¹⁶ Diamond, A., and J. S. Sekhon (2012).

¹⁷ <https://cran.r-project.org/web/packages/Matching/index.html>

In ASN program, completion rate of the program participants was lower (58% versus 95%) than the comparison group. The latter group also on average completed higher number of credit hours and took slightly shorter time to complete their degrees than the TEPH participants.

Also in OTA, completion rate of the program participants is lower than the comparison group (55% versus 72%). **However, the TEPH participants completed on average higher number of credit hours and had higher length of completion than the comparison group.**

Table 5: Comparison of program outcomes between Participants and Comparison Group'

Program		Participants	Comparison Group
EST	Sample Size (N)	113	113
	Deferred enrollment until fall 2017	9%	67%
	Already enrolled in fall 2017	18%	30%
	Completion rate	73%	3%
	Avg. length of completion (mo.)	12	17
	Avg. number of credit hours completed	45	25
ASN	Sample Size (N)	62	62
	Deferred enrollment until fall 2017	10%	5%
	Already enrolled in fall 2017	32%	0%
	Completion rate	58%	95%
	Avg. length of completion (mo.)	11	10
	Avg. number of credit hours completed	92	102
OTA	Sample Size (N)	62	62
	Deferred enrollment until fall 2017	11%	28%
	Already enrolled in fall 2017	34%	0%
	Completion rate	55%	72%
	Avg. length of completion (mo.)	18	10
	Avg. number of credit hours completed	72	60

Effect on Wages

As shown in Table 6, most cohorts experienced wage gain after completion (pre-post TEPH participation). Though we do not have sufficient information to deduce exact wage gains based on full-time or part-time working status or across 6, 12, or 18 months post program participation, for the purposes of comparison, we have included median annual wage for the full-time workers in the state of Missouri and the

nation in each occupation category. The highest academic credential held by these workers is Associate’s degree.

Table 6: Post-Completion Median Annual Wage Gains for TEPH Participants and Comparison Group

Program	Term	TEPH Participants			Comparison Group		
		Pre	Post	Gain	Pre	Post	Gain
ASN	15SP	\$11,676	\$16,086	\$4,409	\$5,660	\$20,220	\$14,560
	16SP	\$11,188	\$18,834	\$7,646			
Nurses	Missouri	\$32,767					
	US	\$36,487					
OTA	15SP	\$2,466	\$4,295	\$1,830	\$5,989	\$9,703	\$3,715
Occupational Therapists	Missouri	\$45,327					
		US	\$47,845				
ENV	14FA	\$8,546	\$11,007	\$2,462	\$4,520	\$2,765	(\$1,755)
	15FA	\$3,226	\$8,197	\$4,971			
	15SU	\$3,946	\$3,337	(\$609)			
	16FA	\$4,640	\$5,530	\$890			
	16SP	\$10,588	\$10,530	(\$57)			
Hazardous Materials Handlers	Missouri	\$15,477+					
	US	\$31,687					

* Source: American Community Survey PUMS five-year 2015 Data (All figures are expressed in August 2017 \$)

* unweighted sample size is < 20

Appendix

Balance Statistics from Genetic Matching

Program: 'ENV'

***** (V1) Age *****

	Before Matching	After Matching
mean treatment.....	32.389	32.389
mean control.....	22.833	28.248
std mean diff.....	88.956	38.553
mean raw eQQ diff.....	9.531	3.7941
med raw eQQ diff.....	9	2
max raw eQQ diff.....	20	12
mean eCDF diff.....	0.2372	0.095201
med eCDF diff.....	0.25679	0.088235
max eCDF diff.....	0.48052	0.22059
var ratio (Tr/Co).....	4.3075	1.599
T-test p-value.....	1.3323e-15	0.0003808
KS Bootstrap p-value..	< 2.22e-16	0.0012667
KS Naive p-value.....	< 2.22e-16	0.0026731
KS Statistic.....	0.48052	0.22059

***** (V2) Transfer_Student *****

	Before Matching	After Matching
mean treatment.....	0.25664	0.25664
mean control.....	0.35088	0.31858
std mean diff.....	-21.481	-14.12
mean raw eQQ diff.....	0.097345	0.051471
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.04712	0.025735
med eCDF diff.....	0.04712	0.025735
max eCDF diff.....	0.09424	0.051471
var ratio (Tr/Co).....	0.84261	0.87879
T-test p-value.....	0.05432	0.033428

***** (V3) Female *****

	Before Matching	After Matching
mean treatment.....	0.39823	0.39823
mean control.....	0.61404	0.45133
std mean diff.....	-43.888	-10.798
mean raw eQQ diff.....	0.21239	0.044118
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.1079	0.022059
med eCDF diff.....	0.1079	0.022059
max eCDF diff.....	0.2158	0.044118
var ratio (Tr/Co).....	1.0172	0.96774
T-test p-value.....	7.3586e-05	0.013243

***** (V4) Hispanic *****

	Before Matching	After Matching
mean treatment.....	0.026549	0.026549
mean control.....	0.05848	0.035398
std mean diff.....	-19.774	-5.4804
mean raw eQQ diff.....	0.035398	0.0073529
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.015965	0.0036765
med eCDF diff.....	0.015965	0.0036765
max eCDF diff.....	0.031931	0.0073529
var ratio (Tr/Co).....	0.47218	0.75688
T-test p-value.....	0.10803	0.31732

***** (V5) Full_time *****

	Before Matching	After Matching
mean treatment.....	0.59292	0.59292
mean control.....	0.71345	0.76106
std mean diff.....	-24.425	-34.073
mean raw eQQ diff.....	0.11504	0.16912
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.060265	0.084559
med eCDF diff.....	0.060265	0.084559
max eCDF diff.....	0.12053	0.16912
var ratio (Tr/Co).....	1.1877	1.3273
T-test p-value.....	0.022809	0.004898

***** (V6) Veteran *****

	Before Matching	After Matching
mean treatment.....	0.46903	0.46903
mean control.....	0.02924	0.37168
std mean diff.....	87.736	19.42
mean raw eQQ diff.....	0.44248	0.080882
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.21989	0.040441
med eCDF diff.....	0.21989	0.040441
max eCDF diff.....	0.43979	0.080882
var ratio (Tr/Co).....	8.8262	1.0664
T-test p-value.....	1.7764e-15	0.00068974

***** (V7) Disable *****

	Before Matching	After Matching
mean treatment.....	0.23009	0.23009
mean control.....	0.023392	0.13274
std mean diff.....	48.892	23.026
mean raw eQQ diff.....	0.20354	0.080882
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1

mean eCDF diff.....	0.10335	0.040441
med eCDF diff.....	0.10335	0.040441
max eCDF diff.....	0.2067	0.080882
var ratio (Tr/Co).....	7.8008	1.5388
T-test p-value.....	1.3179e-06	0.00068974

***** (v8) Pell_Eligible *****

	Before Matching	After Matching
mean treatment.....	0.18584	0.18584
mean control.....	0.44737	0.17699
std mean diff.....	-66.936	2.265
mean raw eQQ diff.....	0.25664	0.0073529
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.13076	0.0036765
med eCDF diff.....	0.13076	0.0036765
max eCDF diff.....	0.26153	0.0073529
var ratio (Tr/Co).....	0.61566	1.0387
T-test p-value.....	2.8265e-08	0.6553

***** (v9) AN *****

	Before Matching	After Matching
mean treatment.....	0.026549	0.026549
mean control.....	0.017544	0.0088496
std mean diff.....	5.5766	10.961
mean raw eQQ diff.....	0.0088496	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0045024	0.0073529
med eCDF diff.....	0.0045024	0.0073529
max eCDF diff.....	0.0090048	0.014706
var ratio (Tr/Co).....	1.5084	2.9464
T-test p-value.....	0.59206	0.15639

***** (v10) AS *****

	Before Matching	After Matching
mean treatment.....	0.017699	0.017699
mean control.....	0.002924	0.0088496
std mean diff.....	11.156	6.6818
mean raw eQQ diff.....	0.0088496	0.0073529
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0073876	0.0036765
med eCDF diff.....	0.0073876	0.0036765
max eCDF diff.....	0.014775	0.0073529
var ratio (Tr/Co).....	5.9991	1.9821
T-test p-value.....	0.2505	0.31732

***** (v11) BL *****

	Before Matching	After Matching
--	-----------------	----------------

mean treatment.....	0.088496	0.088496
mean control.....	0.032164	0.017699
std mean diff.....	19.746	24.817
mean raw eQQ diff.....	0.053097	0.058824
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.028166	0.029412
med eCDF diff.....	0.028166	0.029412
max eCDF diff.....	0.056332	0.058824
var ratio (Tr/Co).....	2.6068	4.6396
T-test p-value.....	0.049933	0.019704

***** (V12) HIS *****

	Before Matching	After Matching
mean treatment.....	0.035398	0.035398
mean control.....	0.05848	0.035398
std mean diff.....	-12.436	0
mean raw eQQ diff.....	0.026549	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.011541	0
med eCDF diff.....	0.011541	0
max eCDF diff.....	0.023081	0
var ratio (Tr/Co).....	0.62386	1
T-test p-value.....	0.28622	1

***** (V13) MULT *****

	Before Matching	After Matching
mean treatment.....	0.044248	0.044248
mean control.....	0.04386	0.026549
std mean diff.....	0.1879	8.5685
mean raw eQQ diff.....	0	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	1
mean eCDF diff.....	0.00019407	0.0073529
med eCDF diff.....	0.00019407	0.0073529
max eCDF diff.....	0.00038814	0.014706
var ratio (Tr/Co).....	1.0145	1.6364
T-test p-value.....	0.98618	0.15639

***** (V14) UK *****

	Before Matching	After Matching
mean treatment.....	0.026549	0.026549
mean control.....	0.011696	0.0088496
std mean diff.....	9.1981	10.961
mean raw eQQ diff.....	0.017699	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0074264	0.0073529
med eCDF diff.....	0.0074264	0.0073529
max eCDF diff.....	0.014853	0.014706

var ratio (Tr/Co).....	2.2492	2.9464
T-test p-value.....	0.36274	0.15639
***** (V15) WH *****		
	Before Matching	After Matching
mean treatment.....	0.76106	0.76106
mean control.....	0.83333	0.89381
std mean diff.....	-16.873	-30.991
mean raw eQQ diff.....	0.070796	0.11029
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.036136	0.055147
med eCDF diff.....	0.036136	0.055147
max eCDF diff.....	0.072271	0.11029
var ratio (Tr/Co).....	1.3171	1.9158
T-test p-value.....	0.11062	0.00041832
***** (V16) I(WH * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0.43363	0.43363
mean control.....	0.60819	0.66372
std mean diff.....	-35.067	-46.223
mean raw eQQ diff.....	0.16814	0.22794
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.087279	0.11397
med eCDF diff.....	0.087279	0.11397
max eCDF diff.....	0.17456	0.22794
var ratio (Tr/Co).....	1.0368	1.1004
T-test p-value.....	0.0013844	0.00015353
***** (V17) I(HIS * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0.035398	0.035398
mean control.....	0.038012	0.035398
std mean diff.....	-1.4081	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0.0013067	0
med eCDF diff.....	0.0013067	0
max eCDF diff.....	0.0026135	0
var ratio (Tr/Co).....	0.93936	1
T-test p-value.....	0.89769	1
***** (V18) I(Hispanic * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0.026549	0.026549
mean control.....	0.038012	0.035398
std mean diff.....	-7.0989	-5.4804
mean raw eQQ diff.....	0.0088496	0.0073529

med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0057315	0.0036765
med eCDF diff.....	0.0057315	0.0036765
max eCDF diff.....	0.011463	0.0073529
var ratio (Tr/Co).....	0.71098	0.75688
T-test p-value.....	0.53357	0.31732
***** (V19) I(BL * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0.079646	0.079646
mean control.....	0.020468	0.017699
std mean diff.....	21.761	22.779
mean raw eQQ diff.....	0.061947	0.051471
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.029589	0.025735
med eCDF diff.....	0.029589	0.025735
max eCDF diff.....	0.059178	0.051471
var ratio (Tr/Co).....	3.678	4.2162
T-test p-value.....	0.02841	0.033428
***** (V20) I(Female * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0.25664	0.25664
mean control.....	0.4269	0.30973
std mean diff.....	-38.809	-12.103
mean raw eQQ diff.....	0.16814	0.036765
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.085132	0.018382
med eCDF diff.....	0.085132	0.018382
max eCDF diff.....	0.17026	0.036765
var ratio (Tr/Co).....	0.78443	0.89231
T-test p-value.....	0.00065083	0.22017
***** (V21) I(Female * WH) *****		
	Before Matching	After Matching
mean treatment.....	0.31858	0.31858
mean control.....	0.50585	0.38938
std mean diff.....	-40.013	-15.127
mean raw eQQ diff.....	0.18584	0.058824
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.093632	0.029412
med eCDF diff.....	0.093632	0.029412
max eCDF diff.....	0.18726	0.058824
var ratio (Tr/Co).....	0.87366	0.91304
T-test p-value.....	0.00036767	0.0040574

***** (V22) I(Female * Hispanic) *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0.040936	0.026549
std mean diff.....	-Inf	-Inf
mean raw eQQ diff.....	0.044248	0.022059
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.020468	0.011029
med eCDF diff.....	0.020468	0.011029
max eCDF diff.....	0.040936	0.022059
var ratio (Tr/Co).....	0	0
T-test p-value.....	0.0001616	0.081906
***** (V23) I(Female * BL) *****		
	Before Matching	After Matching
mean treatment.....	0.017699	0.017699
mean control.....	0.017544	0
std mean diff.....	0.11722	13.364
mean raw eQQ diff.....	0	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	1
mean eCDF diff.....	7.7628e-05	0.0073529
med eCDF diff.....	7.7628e-05	0.0073529
max eCDF diff.....	0.00015526	0.014706
var ratio (Tr/Co).....	1.0147	Inf
T-test p-value.....	0.99138	0.15639
***** (V24) I(Female * HIS) *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0.040936	0.026549
std mean diff.....	-Inf	-Inf
mean raw eQQ diff.....	0.044248	0.022059
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.020468	0.011029
med eCDF diff.....	0.020468	0.011029
max eCDF diff.....	0.040936	0.022059
var ratio (Tr/Co).....	0	0
T-test p-value.....	0.0001616	0.081906
***** (V25) I(WH * Pell_Eligible) *****		
	Before Matching	After Matching
mean treatment.....	0.16814	0.16814
mean control.....	0.38304	0.15044
std mean diff.....	-57.206	4.7115
mean raw eQQ diff.....	0.21239	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.10745	0.0073529

med eCDF diff.....	0.10745	0.0073529
max eCDF diff.....	0.2149	0.014706
var ratio (Tr/Co).....	0.5954	1.0944
T-test p-value.....	1.9379e-06	0.41457
***** (v26) I(Hispanic * Pell_Eligible) *****		
	Before Matching	After Matching
mean treatment.....	0.0088496	0.0088496
mean control.....	0.023392	0
std mean diff.....	-15.459	9.4072
mean raw eQQ diff.....	0.017699	0.0073529
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0072711	0.0036765
med eCDF diff.....	0.0072711	0.0036765
max eCDF diff.....	0.014542	0.0073529
var ratio (Tr/Co).....	0.38625	Inf
T-test p-value.....	0.22858	0.31732
***** (v27) I(BL * Pell_Eligible) *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0.017544	0.017699
std mean diff.....	-Inf	-Inf
mean raw eQQ diff.....	0.017699	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0087719	0.0073529
med eCDF diff.....	0.0087719	0.0073529
max eCDF diff.....	0.017544	0.014706
var ratio (Tr/Co).....	0	0
T-test p-value.....	0.014091	0.15639
***** (v28) I(HIS * Pell_Eligible) *****		
	Before Matching	After Matching
mean treatment.....	0.0088496	0.0088496
mean control.....	0.023392	0
std mean diff.....	-15.459	9.4072
mean raw eQQ diff.....	0.017699	0.0073529
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0072711	0.0036765
med eCDF diff.....	0.0072711	0.0036765
max eCDF diff.....	0.014542	0.0073529
var ratio (Tr/Co).....	0.38625	Inf
T-test p-value.....	0.22858	0.31732
***** (v29) I(Female * Pell_Eligible) *****		
	Before Matching	After Matching
mean treatment.....	0.079646	0.079646
mean control.....	0.28655	0.079646
std mean diff.....	-76.081	0

```

mean raw eQQ diff..... 0.20354      0
med  raw eQQ diff..... 0            0
max  raw eQQ diff..... 1            0

mean eCDF diff..... 0.10345      0
med  eCDF diff..... 0.10345      0
max  eCDF diff..... 0.2069      0

var ratio (Tr/Co)..... 0.3607      1
T-test p-value..... 1.2559e-08    1
    
```

```

***** (V30) I(Pell_Eligible * Full_time) *****
                Before Matching      After Matching
mean treatment..... 0.11504          0.11504
mean control..... 0.37427          0.14159
std mean diff..... -80.882         -8.2836

mean raw eQQ diff..... 0.25664          0.022059
med  raw eQQ diff..... 0            0
max  raw eQQ diff..... 1            1

mean eCDF diff..... 0.12961          0.011029
med  eCDF diff..... 0.12961          0.011029
max  eCDF diff..... 0.25922          0.022059

var ratio (Tr/Co)..... 0.43732          0.83763
T-test p-value..... 3.7131e-10        0.17895
    
```

```

***** (V31) I(Veteran * Disable) *****
                Before Matching      After Matching
mean treatment..... 0.18584          0.18584
mean control..... 0            0
std mean diff..... 47.565           47.565

mean raw eQQ diff..... 0.18584          0.15441
med  raw eQQ diff..... 0            0
max  raw eQQ diff..... 1            1

mean eCDF diff..... 0.09292          0.077206
med  eCDF diff..... 0.09292          0.077206
max  eCDF diff..... 0.18584          0.15441

var ratio (Tr/Co)..... Inf            Inf
T-test p-value..... 1.6833e-06        1.529e-06
    
```

```

***** (V32) X14.FA *****
                Before Matching      After Matching
mean treatment..... 0.17699          0.17699
mean control..... 0.19883          0.14159
std mean diff..... -5.6968         9.2336

mean raw eQQ diff..... 0.026549       0.014706
med  raw eQQ diff..... 0            0
max  raw eQQ diff..... 1            1

mean eCDF diff..... 0.01092          0.0073529
med  eCDF diff..... 0.01092          0.0073529
max  eCDF diff..... 0.021839        0.014706

var ratio (Tr/Co)..... 0.91989        1.1985
T-test p-value..... 0.60404          0.48
    
```

***** (V33) X15.FA *****

	Before Matching	After Matching
mean treatment.....	0.23009	0.23009
mean control.....	0.23977	0.088496
std mean diff.....	-2.2891	33.492
mean raw eQQ diff.....	0.0088496	0.13235
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0048388	0.066176
med eCDF diff.....	0.0048388	0.066176
max eCDF diff.....	0.0096776	0.13235
var ratio (Tr/Co).....	0.97766	2.1961
T-test p-value.....	0.8336	0.00084034

***** (V34) X15.SP *****

	Before Matching	After Matching
mean treatment.....	0.053097	0.053097
mean control.....	0.055556	0.18584
std mean diff.....	-1.0914	-58.938
mean raw eQQ diff.....	0	0.11029
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	1
mean eCDF diff.....	0.0012291	0.055147
med eCDF diff.....	0.0012291	0.055147
max eCDF diff.....	0.0024582	0.11029
var ratio (Tr/Co).....	0.96397	0.3323
T-test p-value.....	0.92035	0.00041832

***** (V35) X15.SU *****

	Before Matching	After Matching
mean treatment.....	0.061947	0.061947
mean control.....	0.026316	0.044248
std mean diff.....	14.716	7.3097
mean raw eQQ diff.....	0.035398	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.017816	0.0073529
med eCDF diff.....	0.017816	0.0073529
max eCDF diff.....	0.035631	0.014706
var ratio (Tr/Co).....	2.2814	1.3741
T-test p-value.....	0.1459	0.41457

***** (V36) X16.FA *****

	Before Matching	After Matching
mean treatment.....	0.18584	0.18584
mean control.....	0.24854	0.15929
std mean diff.....	-16.047	6.795
mean raw eQQ diff.....	0.061947	0.022059
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1

mean eCDF diff.....	0.031349	0.011029
med eCDF diff.....	0.031349	0.011029
max eCDF diff.....	0.062697	0.022059
var ratio (Tr/Co).....	0.81497	1.1298
T-test p-value.....	0.15167	0.57806

***** (V37) X16.SP *****

	Before Matching	After Matching
mean treatment.....	0.23894	0.23894
mean control.....	0.084795	0.23894
std mean diff.....	35.987	0
mean raw eQQ diff.....	0.15044	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.077071	0
med eCDF diff.....	0.077071	0
max eCDF diff.....	0.15414	0
var ratio (Tr/Co).....	2.3572	1
T-test p-value.....	0.00046403	1

***** (V38) X16.SU *****

	Before Matching	After Matching
mean treatment.....	0.035398	0.035398
mean control.....	0.038012	0.017699
std mean diff.....	-1.4081	9.5358
mean raw eQQ diff.....	0	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	1
mean eCDF diff.....	0.0013067	0.0073529
med eCDF diff.....	0.0013067	0.0073529
max eCDF diff.....	0.0026135	0.014706
var ratio (Tr/Co).....	0.93936	1.964
T-test p-value.....	0.89769	0.41457

***** (V39) X17.SP *****

	Before Matching	After Matching
mean treatment.....	0.017699	0.017699
mean control.....	0.10819	0.12389
std mean diff.....	-68.322	-80.182
mean raw eQQ diff.....	0.088496	0.088235
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.045244	0.044118
med eCDF diff.....	0.045244	0.044118
max eCDF diff.....	0.090488	0.088235
var ratio (Tr/Co).....	0.18127	0.16017
T-test p-value.....	1.919e-05	0.0022496
Original number of observations.....	455	
Original number of treated obs.....	113	
Matched number of observations.....	113	
Matched number of observations (unweighted).	136	

Program: 'ASN'

***** (V1) Age *****

	Before Matching	After Matching
mean treatment.....	35.21	35.21
mean control.....	31.939	32.758
std mean diff.....	35.625	26.707
mean raw eQQ diff.....	3.4032	2.2647
med raw eQQ diff.....	3	2
max raw eQQ diff.....	10	16
mean eCDF diff.....	0.093912	0.058824
med eCDF diff.....	0.10158	0.058824
max eCDF diff.....	0.18231	0.13235
var ratio (Tr/Co).....	1.3134	1.6112
T-test p-value.....	0.022747	0.00096018
KS Bootstrap p-value..	0.088917	0.44832
KS Naive p-value.....	0.15857	0.59072
KS Statistic.....	0.18231	0.13235

***** (V2) Transfer_Student *****

	Before Matching	After Matching
mean treatment.....	0.016129	0.016129
mean control.....	0	0
std mean diff.....	12.7	12.7
mean raw eQQ diff.....	0.016129	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0080645	0.0073529
med eCDF diff.....	0.0080645	0.0073529
max eCDF diff.....	0.016129	0.014706
var ratio (Tr/Co).....	Inf	Inf
T-test p-value.....	0.32126	0.31736

***** (V3) Female *****

	Before Matching	After Matching
mean treatment.....	0.79032	0.79032
mean control.....	0.80808	0.79032
std mean diff.....	-4.327	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.0088791	0
med eCDF diff.....	0.0088791	0
max eCDF diff.....	0.017758	0
var ratio (Tr/Co).....	1.0751	1
T-test p-value.....	0.78696	1

***** (V4) Hispanic *****

	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.030303	0.032258

std mean diff.....	1.0976	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0.00097752	0
med eCDF diff.....	0.00097752	0
max eCDF diff.....	0.001955	0
var ratio (Tr/Co).....	1.0689	1
T-test p-value.....	0.9454	1

***** (v5) Full_time *****

	Before Matching	After Matching
mean treatment.....	0.98387	0.98387
mean control.....	0.28283	0.80645
std mean diff.....	552	139.7
mean raw eQQ diff.....	0.70968	0.20588
med raw eQQ diff.....	1	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.35052	0.10294
med eCDF diff.....	0.35052	0.10294
max eCDF diff.....	0.70104	0.20588
var ratio (Tr/Co).....	0.078714	0.10167
T-test p-value.....	< 2.22e-16	0.00053374

***** (v6) Veteran *****

	Before Matching	After Matching
mean treatment.....	0.19355	0.19355
mean control.....	0.030303	0.016129
std mean diff.....	40.985	44.544
mean raw eQQ diff.....	0.16129	0.17647
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.081623	0.088235
med eCDF diff.....	0.081623	0.088235
max eCDF diff.....	0.16325	0.17647
var ratio (Tr/Co).....	5.3444	9.8361
T-test p-value.....	0.0031258	0.00053374

***** (v7) Disable *****

	Before Matching	After Matching
mean treatment.....	0.048387	0.048387
mean control.....	0.010101	0
std mean diff.....	17.698	22.367
mean raw eQQ diff.....	0.032258	0.044118
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.019143	0.022059
med eCDF diff.....	0.019143	0.022059
max eCDF diff.....	0.038286	0.044118
var ratio (Tr/Co).....	4.6333	Inf

T-test p-value.....	0.19476	0.080797
***** (V8) Pell_Eligible *****		
	Before Matching	After Matching
mean treatment.....	0.6129	0.6129
mean control.....	0.60606	0.77419
std mean diff.....	1.3934	-32.845
mean raw eQQ diff.....	0.016129	0.14706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0034213	0.073529
med eCDF diff.....	0.0034213	0.073529
max eCDF diff.....	0.0068426	0.14706
var ratio (Tr/Co).....	0.99981	1.3571
T-test p-value.....	0.93157	0.0010134
***** (V9) AN *****		
	Before Matching	After Matching
mean treatment.....	0.016129	0.016129
mean control.....	0.010101	0
std mean diff.....	4.7465	12.7
mean raw eQQ diff.....	0	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	1
mean eCDF diff.....	0.003014	0.0073529
med eCDF diff.....	0.003014	0.0073529
max eCDF diff.....	0.006028	0.014706
var ratio (Tr/Co).....	1.5968	Inf
T-test p-value.....	0.75205	0.31736
***** (V10) AS *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1
***** (V11) BL *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0.010101	0
std mean diff.....	-Inf	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0

```

mean eCDF diff..... 0.0050505      0
med eCDF diff..... 0.0050505      0
max eCDF diff..... 0.010101      0

var ratio (Tr/Co)..... 0      NaN
T-test p-value..... 0.31977      1
    
```

***** (V12) HIS *****

```

                Before Matching      After Matching
mean treatment..... 0.032258      0.032258
mean control..... 0.030303      0.032258
std mean diff..... 1.0976      0

mean raw eQQ diff..... 0      0
med raw eQQ diff..... 0      0
max raw eQQ diff..... 0      0

mean eCDF diff..... 0.00097752      0
med eCDF diff..... 0.00097752      0
max eCDF diff..... 0.001955      0

var ratio (Tr/Co)..... 1.0689      1
T-test p-value..... 0.9454      1
    
```

***** (V13) MULT *****

```

                Before Matching      After Matching
mean treatment..... 0.032258      0.032258
mean control..... 0.020202      0.032258
std mean diff..... 6.7682      0

mean raw eQQ diff..... 0.016129      0
med raw eQQ diff..... 0      0
max raw eQQ diff..... 1      0

mean eCDF diff..... 0.006028      0
med eCDF diff..... 0.006028      0
max eCDF diff..... 0.012056      0

var ratio (Tr/Co)..... 1.5868      1
T-test p-value..... 0.6527      1
    
```

***** (V14) UK *****

```

                Before Matching      After Matching
mean treatment..... 0      0
mean control..... 0.020202      0.016129
std mean diff..... -Inf      -Inf

mean raw eQQ diff..... 0.016129      0.014706
med raw eQQ diff..... 0      0
max raw eQQ diff..... 1      1

mean eCDF diff..... 0.010101      0.0073529
med eCDF diff..... 0.010101      0.0073529
max eCDF diff..... 0.020202      0.014706

var ratio (Tr/Co)..... 0      0
T-test p-value..... 0.15835      0.31736
    
```

***** (V15) WH *****

```

                Before Matching      After Matching
mean treatment..... 0.91935      0.91935
    
```

mean control.....	0.90909	0.91935
std mean diff.....	3.739	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.005132	0
med eCDF diff.....	0.005132	0
max eCDF diff.....	0.010264	0
var ratio (Tr/Co).....	0.90261	1
T-test p-value.....	0.82138	1

***** (v16) I(WH * Full_time) *****

	Before Matching	After Matching
mean treatment.....	0.90323	0.90323
mean control.....	0.25253	0.77419
std mean diff.....	218.31	43.29
mean raw eQQ diff.....	0.66129	0.16176
med raw eQQ diff.....	1	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.32535	0.080882
med eCDF diff.....	0.32535	0.080882
max eCDF diff.....	0.6507	0.16176
var ratio (Tr/Co).....	0.46592	0.5
T-test p-value.....	< 2.22e-16	0.0035768

***** (v17) I(HIS * Full_time) *****

	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.010101	0.016129
std mean diff.....	12.439	9.0548
mean raw eQQ diff.....	0.016129	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.011079	0.0073529
med eCDF diff.....	0.011079	0.0073529
max eCDF diff.....	0.022157	0.014706
var ratio (Tr/Co).....	3.1412	1.9672
T-test p-value.....	0.37365	0.31736

***** (v18) I(Hispanic * Full_time) *****

	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.010101	0.016129
std mean diff.....	12.439	9.0548
mean raw eQQ diff.....	0.016129	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.011079	0.0073529
med eCDF diff.....	0.011079	0.0073529
max eCDF diff.....	0.022157	0.014706

var ratio (Tr/Co).....	3.1412	1.9672
T-test p-value.....	0.37365	0.31736
***** (v19) I(BL * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1
***** (v20) I(Female * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0.77419	0.77419
mean control.....	0.23232	0.62903
std mean diff.....	128.55	34.437
mean raw eQQ diff.....	0.54839	0.17647
med raw eQQ diff.....	1	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.27094	0.088235
med eCDF diff.....	0.27094	0.088235
max eCDF diff.....	0.54187	0.17647
var ratio (Tr/Co).....	0.98621	0.74916
T-test p-value.....	9.3436e-13	0.0019099
***** (v21) I(Female * WH) *****		
	Before Matching	After Matching
mean treatment.....	0.70968	0.70968
mean control.....	0.72727	0.70968
std mean diff.....	-3.845	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.0087977	0
med eCDF diff.....	0.0087977	0
max eCDF diff.....	0.017595	0
var ratio (Tr/Co).....	1.0451	1
T-test p-value.....	0.81117	1
***** (v22) I(Female * Hispanic) *****		
	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.030303	0.032258
std mean diff.....	1.0976	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0

max raw eQQ diff.....	0	0
mean eCDF diff.....	0.00097752	0
med eCDF diff.....	0.00097752	0
max eCDF diff.....	0.001955	0
var ratio (Tr/Co).....	1.0689	1
T-test p-value.....	0.9454	1
***** (V23) I(Female * BL) *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0.010101	0
std mean diff.....	-Inf	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.0050505	0
med eCDF diff.....	0.0050505	0
max eCDF diff.....	0.010101	0
var ratio (Tr/Co).....	0	NaN
T-test p-value.....	0.31977	1
***** (V24) I(Female * HIS) *****		
	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.030303	0.032258
std mean diff.....	1.0976	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0.00097752	0
med eCDF diff.....	0.00097752	0
max eCDF diff.....	0.001955	0
var ratio (Tr/Co).....	1.0689	1
T-test p-value.....	0.9454	1
***** (V25) I(WH * Pell_Eligible) *****		
	Before Matching	After Matching
mean treatment.....	0.56452	0.56452
mean control.....	0.54545	0.69355
std mean diff.....	3.8133	-25.813
mean raw eQQ diff.....	0.032258	0.11765
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.0095308	0.058824
med eCDF diff.....	0.0095308	0.058824
max eCDF diff.....	0.019062	0.11765
var ratio (Tr/Co).....	0.99762	1.1567
T-test p-value.....	0.81431	0.0035768
***** (V26) I(Hispanic * Pell_Eligible) *****		
	Before Matching	After Matching

mean treatment.....	0.016129	0.016129
mean control.....	0.030303	0.032258
std mean diff.....	-11.161	-12.7
mean raw eQQ diff.....	0.016129	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.007087	0.0073529
med eCDF diff.....	0.007087	0.0073529
max eCDF diff.....	0.014174	0.014706
var ratio (Tr/Co).....	0.54335	0.50833
T-test p-value.....	0.55007	0.31736

***** (v27) I(BL * Pell_Eligible) *****

	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1

***** (v28) I(HIS * Pell_Eligible) *****

	Before Matching	After Matching
mean treatment.....	0.016129	0.016129
mean control.....	0.030303	0.032258
std mean diff.....	-11.161	-12.7
mean raw eQQ diff.....	0.016129	0.014706
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.007087	0.0073529
med eCDF diff.....	0.007087	0.0073529
max eCDF diff.....	0.014174	0.014706
var ratio (Tr/Co).....	0.54335	0.50833
T-test p-value.....	0.55007	0.31736

***** (v29) I(Female * Pell_Eligible) *****

	Before Matching	After Matching
mean treatment.....	0.48387	0.48387
mean control.....	0.48485	0.58065
std mean diff.....	-0.19402	-19.208
mean raw eQQ diff.....	0	0.088235
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	1
mean eCDF diff.....	0.00048876	0.044118
med eCDF diff.....	0.00048876	0.044118
max eCDF diff.....	0.00097752	0.088235


```

var ratio (Tr/Co).....      1.006                1.0256
T-test p-value.....        0.99045                0.012388

***** (V30) I(Pell_Eligible * Full_time) *****
                        Before Matching          After Matching
mean treatment.....        0.6129                0.6129
mean control.....          0.22222                0.62903
std mean diff.....         79.558                 -3.2845

mean raw eQQ diff.....      0.3871                0.029412
med  raw eQQ diff.....       0                    0
max  raw eQQ diff.....       1                    1

mean eCDF diff.....         0.19534                0.014706
med  eCDF diff.....         0.19534                0.014706
max  eCDF diff.....         0.39068                0.029412

var ratio (Tr/Co).....      1.3811                1.0167
T-test p-value.....        8.9906e-07            0.79702

***** (V31) I(Veteran * Disable) *****
                        Before Matching          After Matching
mean treatment.....        0.048387              0.048387
mean control.....          0                    0
std mean diff.....         22.367                22.367

mean raw eQQ diff.....      0.048387              0.044118
med  raw eQQ diff.....       0                    0
max  raw eQQ diff.....       1                    1

mean eCDF diff.....         0.024194              0.022059
med  eCDF diff.....         0.024194              0.022059
max  eCDF diff.....         0.048387              0.044118

var ratio (Tr/Co).....      Inf                    Inf
T-test p-value.....        0.083222              0.080797

***** (V32) X14.FA *****
                        Before Matching          After Matching
mean treatment.....        0                    0
mean control.....          0                    0
std mean diff.....         0                    0

mean raw eQQ diff.....      0                    0
med  raw eQQ diff.....       0                    0
max  raw eQQ diff.....       0                    0

mean eCDF diff.....         0                    0
med  eCDF diff.....         0                    0
max  eCDF diff.....         0                    0

var ratio (Tr/Co).....      NaN                    NaN
T-test p-value.....        1                    1

***** (V33) X15.FA *****
                        Before Matching          After Matching
mean treatment.....        0                    0
mean control.....          0                    0
std mean diff.....         0                    0

mean raw eQQ diff.....      0                    0

```

med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1

***** (V34) X15.SP *****

	Before Matching	After Matching
mean treatment.....	0.24194	0.24194
mean control.....	0.36364	0.35484
std mean diff.....	-28.188	-26.15
mean raw eQQ diff.....	0.1129	0.10294
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.06085	0.051471
med eCDF diff.....	0.06085	0.051471
max eCDF diff.....	0.1217	0.10294
var ratio (Tr/Co).....	0.79742	0.80114
T-test p-value.....	0.098926	0.0066664

***** (V35) X15.SU *****

	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1

***** (V36) X16.FA *****

	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1

```

***** (V37) X16.SP *****
                Before Matching      After Matching
mean treatment..... 0.37097          0.37097
mean control.....   0.33333          0.45161
std mean diff.....  7.7277          -16.559

mean raw eQQ diff.... 0.048387        0.073529
med  raw eQQ diff.... 0              0
max  raw eQQ diff.... 1              1

mean eCDF diff..... 0.018817        0.036765
med  eCDF diff..... 0.018817        0.036765
max  eCDF diff..... 0.037634        0.073529

var ratio (Tr/Co).... 1.0565          0.94223
T-test p-value.....  0.63054          0.056177

***** (V38) X16.SU *****
                Before Matching      After Matching
mean treatment..... 0              0
mean control.....   0              0
std mean diff.....  0              0

mean raw eQQ diff.... 0              0
med  raw eQQ diff.... 0              0
max  raw eQQ diff.... 0              0

mean eCDF diff..... 0              0
med  eCDF diff..... 0              0
max  eCDF diff..... 0              0

var ratio (Tr/Co).... NaN            NaN
T-test p-value.....  1              1

***** (V39) X17.SP *****
                Before Matching      After Matching
mean treatment.....  0.3871          0.3871
mean control.....   0.30303        0.19355
std mean diff.....  17.119         39.414

mean raw eQQ diff.... 0.080645        0.17647
med  raw eQQ diff.... 0              0
max  raw eQQ diff.... 1              1

mean eCDF diff..... 0.042033        0.088235
med  eCDF diff..... 0.042033        0.088235
max  eCDF diff..... 0.084066        0.17647

var ratio (Tr/Co).... 1.1302          1.52
T-test p-value.....  0.28167        0.00084448

Original number of observations..... 161
Original number of treated obs..... 62
Matched number of observations..... 62
Matched number of observations (unweighted). 68
    
```

Program: 'OTA'

***** (V1) Age *****

	Before Matching	After Matching
mean treatment.....	30.065	30.065
mean control.....	30.101	30.258
std mean diff.....	-0.39119	-2.0683
mean raw eQQ diff.....	1.8871	2.8696
med raw eQQ diff.....	1	2
max raw eQQ diff.....	7	11
mean eCDF diff.....	0.051275	0.084886
med eCDF diff.....	0.030355	0.094203
max eCDF diff.....	0.13556	0.2029
var ratio (Tr/Co).....	1.4077	2.1056
T-test p-value.....	0.97994	0.81722
KS Bootstrap p-value..	0.32921	0.071167
KS Naive p-value.....	0.51285	0.11676
KS Statistic.....	0.13556	0.2029

***** (V2) Transfer Student *****

	Before Matching	After Matching
mean treatment.....	0.1129	0.1129
mean control.....	0.022472	0.032258
std mean diff.....	28.343	25.276
mean raw eQQ diff.....	0.096774	0.072464
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.045216	0.036232
med eCDF diff.....	0.045216	0.036232
max eCDF diff.....	0.090431	0.072464
var ratio (Tr/Co).....	4.5821	3.2083
T-test p-value.....	0.040808	0.023014

***** (V3) Female *****

	Before Matching	After Matching
mean treatment.....	0.83871	0.83871
mean control.....	0.7191	0.82258
std mean diff.....	32.257	4.3498
mean raw eQQ diff.....	0.12903	0.014493
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.059804	0.0072464
med eCDF diff.....	0.059804	0.0072464
max eCDF diff.....	0.11961	0.014493
var ratio (Tr/Co).....	0.67303	0.92692
T-test p-value.....	0.077098	0.56478

***** (V4) Hispanic *****

	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.011236	0.032258
std mean diff.....	11.802	0

mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.010511	0
med eCDF diff.....	0.010511	0
max eCDF diff.....	0.021022	0
var ratio (Tr/Co).....	2.8239	1
T-test p-value.....	0.40744	1

***** (V5) Full_time *****

	Before Matching	After Matching
mean treatment.....	0.98387	0.98387
mean control.....	0.80899	0.95161
std mean diff.....	137.7	25.4
mean raw eQQ diff.....	0.17742	0.028986
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.087441	0.014493
med eCDF diff.....	0.087441	0.014493
max eCDF diff.....	0.17488	0.028986
var ratio (Tr/Co).....	0.1032	0.34463
T-test p-value.....	0.00016723	0.15566

***** (V6) Veteran *****

	Before Matching	After Matching
mean treatment.....	0.080645	0.080645
mean control.....	0.033708	0.048387
std mean diff.....	17.098	11.751
mean raw eQQ diff.....	0.048387	0.028986
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.023469	0.014493
med eCDF diff.....	0.023469	0.014493
max eCDF diff.....	0.046937	0.028986
var ratio (Tr/Co).....	2.2876	1.6102
T-test p-value.....	0.24136	0.15566

***** (V7) Disable *****

	Before Matching	After Matching
mean treatment.....	0.064516	0.064516
mean control.....	0.022472	0.016129
std mean diff.....	16.976	19.536
mean raw eQQ diff.....	0.048387	0.043478
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.021022	0.021739
med eCDF diff.....	0.021022	0.021739
max eCDF diff.....	0.042044	0.043478
var ratio (Tr/Co).....	2.7611	3.8033
T-test p-value.....	0.23539	0.080797

```

***** (v8) Pell_Eligible *****
                Before Matching      After Matching
mean treatment..... 0.45161          0.45161
mean control.....   0.41573          0.40323
std mean diff.....   7.152           9.6443

mean raw eQQ diff.... 0.048387        0.043478
med  raw eQQ diff.... 0                0
max  raw eQQ diff.... 1                1

mean eCDF diff.....  0.017941        0.021739
med  eCDF diff.....  0.017941        0.021739
max  eCDF diff.....  0.035883        0.043478

var ratio (Tr/Co).... 1.0247           1.0292
T-test p-value.....  0.66465          0.40601
    
```

```

***** (v9) AN *****
                Before Matching      After Matching
mean treatment.....  0                0
mean control.....   0                0
std mean diff.....  0                0

mean raw eQQ diff.... 0                0
med  raw eQQ diff.... 0                0
max  raw eQQ diff.... 0                0

mean eCDF diff.....  0                0
med  eCDF diff.....  0                0
max  eCDF diff.....  0                0

var ratio (Tr/Co).... NaN              NaN
T-test p-value.....  1                1
    
```

```

***** (v10) AS *****
                Before Matching      After Matching
mean treatment.....  0.032258        0.032258
mean control.....   0.011236        0.016129
std mean diff.....  11.802          9.0548

mean raw eQQ diff.... 0.016129        0.014493
med  raw eQQ diff.... 0                0
max  raw eQQ diff.... 1                1

mean eCDF diff.....  0.010511        0.0072464
med  eCDF diff.....  0.010511        0.0072464
max  eCDF diff.....  0.021022        0.014493

var ratio (Tr/Co).... 2.8239           1.9672
T-test p-value.....  0.40744          0.31736
    
```

```

***** (v11) BL *****
                Before Matching      After Matching
mean treatment.....  0                0
mean control.....   0.011236        0
std mean diff.....  -Inf           0

mean raw eQQ diff.... 0.016129        0
med  raw eQQ diff.... 0                0
max  raw eQQ diff.... 1                0
    
```

```

mean eCDF diff..... 0.005618      0
med eCDF diff..... 0.005618      0
max eCDF diff..... 0.011236      0

var ratio (Tr/Co)..... 0      NaN
T-test p-value..... 0.32005      1
    
```

***** (V12) HIS *****

```

                Before Matching      After Matching
mean treatment..... 0.032258      0.032258
mean control..... 0.011236      0.032258
std mean diff..... 11.802      0

mean raw eQQ diff..... 0.016129      0
med raw eQQ diff..... 0      0
max raw eQQ diff..... 1      0

mean eCDF diff..... 0.010511      0
med eCDF diff..... 0.010511      0
max eCDF diff..... 0.021022      0

var ratio (Tr/Co)..... 2.8239      1
T-test p-value..... 0.40744      1
    
```

***** (V13) MULT *****

```

                Before Matching      After Matching
mean treatment..... 0      0
mean control..... 0.022472      0
std mean diff..... -Inf      0

mean raw eQQ diff..... 0.016129      0
med raw eQQ diff..... 0      0
max raw eQQ diff..... 1      0

mean eCDF diff..... 0.011236      0
med eCDF diff..... 0.011236      0
max eCDF diff..... 0.022472      0

var ratio (Tr/Co)..... 0      NaN
T-test p-value..... 0.15847      1
    
```

***** (V14) UK *****

```

                Before Matching      After Matching
mean treatment..... 0      0
mean control..... 0      0
std mean diff..... 0      0

mean raw eQQ diff..... 0      0
med raw eQQ diff..... 0      0
max raw eQQ diff..... 0      0

mean eCDF diff..... 0      0
med eCDF diff..... 0      0
max eCDF diff..... 0      0

var ratio (Tr/Co)..... NaN      NaN
T-test p-value..... 1      1
    
```

***** (V15) WH *****

```

                Before Matching      After Matching
mean treatment..... 0.93548      0.93548
mean control..... 0.94382      0.95161
    
```

std mean diff.....	-3.3658	-6.5122
mean raw eQQ diff.....	0	0.014493
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	1
mean eCDF diff.....	0.0041682	0.0072464
med eCDF diff.....	0.0041682	0.0072464
max eCDF diff.....	0.0083364	0.014493
var ratio (Tr/Co).....	1.1439	1.3107
T-test p-value.....	0.83484	0.31736

***** (v16) I(WH * Full_time) *****

	Before Matching	After Matching
mean treatment.....	0.91935	0.91935
mean control.....	0.76404	0.90323
std mean diff.....	56.577	5.8755
mean raw eQQ diff.....	0.16129	0.014493
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.077655	0.0072464
med eCDF diff.....	0.077655	0.0072464
max eCDF diff.....	0.15531	0.014493
var ratio (Tr/Co).....	0.4133	0.84821
T-test p-value.....	0.0073421	0.56478

***** (v17) I(HIS * Full_time) *****

	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.011236	0.032258
std mean diff.....	11.802	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.010511	0
med eCDF diff.....	0.010511	0
max eCDF diff.....	0.021022	0
var ratio (Tr/Co).....	2.8239	1
T-test p-value.....	0.40744	1

***** (v18) I(Hispanic * Full_time) *****

	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.011236	0.032258
std mean diff.....	11.802	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.010511	0
med eCDF diff.....	0.010511	0
max eCDF diff.....	0.021022	0
var ratio (Tr/Co).....	2.8239	1

T-test p-value.....	0.40744	1
***** (v19) I(BL * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0.011236	0
std mean diff.....	-Inf	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.005618	0
med eCDF diff.....	0.005618	0
max eCDF diff.....	0.011236	0
var ratio (Tr/Co).....	0	NaN
T-test p-value.....	0.32005	1
***** (v20) I(Female * Full_time) *****		
	Before Matching	After Matching
mean treatment.....	0.83871	0.83871
mean control.....	0.58427	0.82258
std mean diff.....	68.619	4.3498
mean raw eQQ diff.....	0.25806	0.014493
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.12722	0.0072464
med eCDF diff.....	0.12722	0.0072464
max eCDF diff.....	0.25444	0.014493
var ratio (Tr/Co).....	0.55969	0.92692
T-test p-value.....	0.00042373	0.56478
***** (v21) I(Female * WH) *****		
	Before Matching	After Matching
mean treatment.....	0.77419	0.77419
mean control.....	0.70787	0.79032
std mean diff.....	15.735	-3.8263
mean raw eQQ diff.....	0.080645	0.014493
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.033164	0.0072464
med eCDF diff.....	0.033164	0.0072464
max eCDF diff.....	0.066328	0.014493
var ratio (Tr/Co).....	0.84958	1.0549
T-test p-value.....	0.36001	0.56478
***** (v22) I(Female * Hispanic) *****		
	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.011236	0.032258
std mean diff.....	11.802	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0

mean eCDF diff.....	0.010511	0
med eCDF diff.....	0.010511	0
max eCDF diff.....	0.021022	0
var ratio (Tr/Co).....	2.8239	1
T-test p-value.....	0.40744	1
***** (v23) I(Female * BL) *****		
	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1
***** (v24) I(Female * HIS) *****		
	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.011236	0.032258
std mean diff.....	11.802	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.010511	0
med eCDF diff.....	0.010511	0
max eCDF diff.....	0.021022	0
var ratio (Tr/Co).....	2.8239	1
T-test p-value.....	0.40744	1
***** (v25) I(WH * Pell_Eligible) *****		
	Before Matching	After Matching
mean treatment.....	0.40323	0.40323
mean control.....	0.37079	0.35484
std mean diff.....	6.5594	9.7841
mean raw eQQ diff.....	0.032258	0.043478
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.01622	0.021739
med eCDF diff.....	0.01622	0.021739
max eCDF diff.....	0.032439	0.043478
var ratio (Tr/Co).....	1.0366	1.0511
T-test p-value.....	0.69024	0.40601
***** (v26) I(Hispanic * Pell_Eligible) *****		
	Before Matching	After Matching
mean treatment.....	0.032258	0.032258

mean control.....	0.011236	0.032258
std mean diff.....	11.802	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.010511	0
med eCDF diff.....	0.010511	0
max eCDF diff.....	0.021022	0
var ratio (Tr/Co).....	2.8239	1
T-test p-value.....	0.40744	1

***** (v27) I(BL * Pell_Eligible) *****

	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0.011236	0
std mean diff.....	-Inf	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.005618	0
med eCDF diff.....	0.005618	0
max eCDF diff.....	0.011236	0
var ratio (Tr/Co).....	0	NaN
T-test p-value.....	0.32005	1

***** (v28) I(HIS * Pell_Eligible) *****

	Before Matching	After Matching
mean treatment.....	0.032258	0.032258
mean control.....	0.011236	0.032258
std mean diff.....	11.802	0
mean raw eQQ diff.....	0.016129	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	0
mean eCDF diff.....	0.010511	0
med eCDF diff.....	0.010511	0
max eCDF diff.....	0.021022	0
var ratio (Tr/Co).....	2.8239	1
T-test p-value.....	0.40744	1

***** (v29) I(Female * Pell_Eligible) *****

	Before Matching	After Matching
mean treatment.....	0.43548	0.43548
mean control.....	0.33708	0.27419
std mean diff.....	19.686	32.267
mean raw eQQ diff.....	0.096774	0.14493
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.049203	0.072464
med eCDF diff.....	0.049203	0.072464
max eCDF diff.....	0.098405	0.14493

```

var ratio (Tr/Co).....      1.1056                1.2353
T-test p-value.....        0.22696                0.0010134

***** (V30) I(Pell_Eligible * Full_time) *****
                               Before Matching      After Matching
mean treatment.....         0.45161                0.45161
mean control.....          0.33708                0.3871
std mean diff.....         22.829                 12.859

mean raw eQQ diff.....      0.1129                0.057971
med raw eQQ diff.....        0                      0
max raw eQQ diff.....        1                      1

mean eCDF diff.....         0.057267              0.028986
med eCDF diff.....          0.057267              0.028986
max eCDF diff.....          0.11453                0.057971

var ratio (Tr/Co).....      1.1138                1.0439
T-test p-value.....        0.16102                0.24762

***** (V31) I(Veteran * Disable) *****
                               Before Matching      After Matching
mean treatment.....         0                      0
mean control.....          0                      0
std mean diff.....         0                      0

mean raw eQQ diff.....      0                      0
med raw eQQ diff.....        0                      0
max raw eQQ diff.....        0                      0

mean eCDF diff.....         0                      0
med eCDF diff.....          0                      0
max eCDF diff.....          0                      0

var ratio (Tr/Co).....      NaN                    NaN
T-test p-value.....         1                      1

***** (V32) X14.FA *****
                               Before Matching      After Matching
mean treatment.....         0                      0
mean control.....          0                      0
std mean diff.....         0                      0

mean raw eQQ diff.....      0                      0
med raw eQQ diff.....        0                      0
max raw eQQ diff.....        0                      0

mean eCDF diff.....         0                      0
med eCDF diff.....          0                      0
max eCDF diff.....          0                      0

var ratio (Tr/Co).....      NaN                    NaN
T-test p-value.....         1                      1

***** (V33) X15.FA *****
                               Before Matching      After Matching
mean treatment.....         0.37097                0.37097
mean control.....          0.067416              0.33871
std mean diff.....         62.33                 6.6237

mean raw eQQ diff.....      0.30645                0.028986
med raw eQQ diff.....        0                      0
    
```

max raw eQQ diff.....	1	1
mean eCDF diff.....	0.15178	0.014493
med eCDF diff.....	0.15178	0.014493
max eCDF diff.....	0.30355	0.028986
var ratio (Tr/Co).....	3.73	1.0418
T-test p-value.....	2.1283e-05	0.15566

***** (V34) X15.SP *****

	Before Matching	After Matching
mean treatment.....	0.25806	0.25806
mean control.....	0.68539	0.32258
std mean diff.....	-96.869	-14.625
mean raw eQQ diff.....	0.41935	0.057971
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.21366	0.028986
med eCDF diff.....	0.21366	0.028986
max eCDF diff.....	0.42733	0.057971
var ratio (Tr/Co).....	0.89236	0.87619
T-test p-value.....	6.6125e-08	0.042906

***** (V35) X15.SU *****

	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1

***** (V36) X16.FA *****

	Before Matching	After Matching
mean treatment.....	0.37097	0.37097
mean control.....	0.24719	0.33871
std mean diff.....	25.416	6.6237
mean raw eQQ diff.....	0.12903	0.028986
med raw eQQ diff.....	0	0
max raw eQQ diff.....	1	1
mean eCDF diff.....	0.061888	0.014493
med eCDF diff.....	0.061888	0.014493
max eCDF diff.....	0.12378	0.028986
var ratio (Tr/Co).....	1.2602	1.0418
T-test p-value.....	0.11087	0.15566

***** (V37) X16.SP *****

	Before Matching	After Matching
--	-----------------	----------------

```

mean treatment..... 0 0
mean control..... 0 0
std mean diff..... 0 0

mean raw eQQ diff..... 0 0
med raw eQQ diff..... 0 0
max raw eQQ diff..... 0 0

mean eCDF diff..... 0 0
med eCDF diff..... 0 0
max eCDF diff..... 0 0

var ratio (Tr/Co)..... NaN NaN
T-test p-value..... 1 1
    
```

***** (V38) X16.SU *****

	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1

***** (V39) X17.SP *****

	Before Matching	After Matching
mean treatment.....	0	0
mean control.....	0	0
std mean diff.....	0	0
mean raw eQQ diff.....	0	0
med raw eQQ diff.....	0	0
max raw eQQ diff.....	0	0
mean eCDF diff.....	0	0
med eCDF diff.....	0	0
max eCDF diff.....	0	0
var ratio (Tr/Co).....	NaN	NaN
T-test p-value.....	1	1

Before Matching Minimum p.value: 6.6125e-08
 Variable Name(s): X15.SP Number(s): 34

After Matching Minimum p.value: 0.0010134
 Variable Name(s): I(Female * Pell_Eligible) Number(s): 29

> summary(mgen3)

```

Estimate... 0
SE..... 0
T-stat..... NaN
p.val..... NA
    
```

Original number of observations.....	151
Original number of treated obs.....	62
Matched number of observations.....	62
Matched number of observations (unweighted).	69

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