GROWING REGIONAL OPPORTUNITY FOR THE WORKFORCE (PROJECT GROW)

Final Evaluation Report

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October 2016

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This report was prepared with funds provided by the U.S. Department of Labor under CFDA 17.283 and subcontracted by Jobs for the Future to the Ray Marshall Center for the Study of Human Resources at the University of Texas at Austin. The views expressed here are those of the authors and do not represent the position of the funding agency or The University.

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INTRODUCTION

OVERVIEW

Project GROW (Growing Regional Opportunities for the Workforce) was an ambitious regional, multi-partner, strategically comprehensive effort that sought to build upon successful and innovative practices to accelerate credentialing, employment, and career advancement in demand occupations for an array of economically marginal target groups. The service area encompassed five Workforce Investment Boards (WIBs) that span the entire Texas-Mexico border area from the City of Brownsville in the south to El Paso in the north (see Figure 1). These WIBs formed the Border Workforce Alliance (BWA) to adopt and refine regional approaches to workforce development. Despite significant economic expansion in recent years, the border region remains one of the most disadvantaged areas in the state and the nation in terms of poverty, unemployment, literacy, limited English language proficiency, education, and income. Project GROW was designed to reduce the predominance of these characteristics for sections of the population that generally have the most difficulty successfully navigating available education, training, and employment opportunities through accelerated, entry level occupational credentialing in a career pathway that aligns with the needs of employers in key growth industry sectors.

Project GROW was funded by the U.S. Department of Labor(DOL) under the Workforce Innovation Fund (WIF) Grant Program, which supports innovative approaches to the design and delivery of employment and training services that generate long-term, cost-effective improvements in the performance of the public workforce system in terms of outcomes for job seekers and employers. The Ray Marshall Center at the Lyndon B. Johnson School of Public Affairs at The University of Texas-Austin conducted a multi-method evaluation of Project GROW, including implementation/process, outcomes, net impacts, cost effectiveness analyses, and formative components. The goal of the evaluation was to generate evidence for regional, state, and federal policy makers, workforce development system practitioners and other stakeholders about the experiences, achievements, and value of the demonstration.

Figure 1. Project GROW: Border Workforce Alliance (BWA) WIB areas in Texas

KEY FEATURES OF PROJECT GROW

Central features of Project GROW's comprehensive strategic approach included:

- Border region collaboration/systemic workforce development across programming and within the five WIBs of the BWA that aligns adult education, postsecondary, and workforce services.
- Accelerated credentialing in high demand occupations with identifiable career pathways.
- Partition of the target population into Service Cohorts (Cohorts A, B, and C and subgroups of these) by academic proficiency as determined by Tests of Basic Adult Education (TABE) scores, secondary education credentials, and college readiness to demonstrate the effectiveness of tailored service regimes. Accelerated learning program interventions aligned with service cohorts were:

- College readiness efforts and occupational training for Cohort A participants, who already have a high school diploma or GED, but are not college ready as determined by standardized assessment. Only a fifth of Project GROW participants were individuals enrolled in Cohort A
- Integrated pathways combining GED preparation and occupational training for Cohort B comprising individuals without a secondary credential, but generally functioning within the 9th through 12th grade levels. Nearly half of Project GROW participants were individuals enrolled in Cohort B; and
- Contextualized or bridge learning curricula for Cohort C students who function below high school equivalency levels and require adult basic education and ESL to prepare for academic and occupational advancement. A little over a third of Project GROW participants were individuals enrolled in Cohort C
- The development and use of a common information technology platform—the Administrative System for Program Participation (ASPP)—constructed by Business Access for Project GROW in order to facilitate real time client information exchanges between service delivery partners and to serve as the unique database for program performance management and evaluation purposes.
- A self-paced In Home Learning System (IHLS), including a laptop and internet access, randomly distributed and monitored by Business Access to subgroups of Cohort C to potentially accelerate learning gains.
- Provision of intensive or standard case management to different subgroups of the target populations, as well as intentionally enhanced, timely, supportive services for all participants to increase retention, completion, and employment entry.
- Advanced levels of employer engagement and introduction of industry cluster approaches through which workforce development efforts might more closely

align with the human resource needs of related business in support of regional economic growth and development.

- Capacity-building services provided by Jobs for the Future (JFF), a national workforce intermediary, which also oversees evaluation services, and Abt Associates, which serves as the National Evaluation WIF Grant Coordinator for USDOL, and also provides technical assistance to the WIF grantees and program evaluators.
- Rigorous process, outcome, impact, cost effectiveness, and formative evaluation services provided by the Ray Marshall Center.
- Project GROW funding available for services at the WIB level totals approximately $3.45 million, supplemented by $1 million in committed leveraged resources across the 56-month award period.

PARTICIPATION CRITERIA

Eligibility requirements

The target population included lower-skilled adults (18 years of age or older) along the border who were eligible and/or enrolled in WIA youth or adult or dislocated worker programs, along with TANF recipients who are co-enrolled in WIA programs, and veterans who are a service priority for all of the boards. TABE tests were administered to all prospective participants to determine academic proficiency, prior to enrollment and cohort assignment; the target population did not include individuals with college ready skills. Additionally, a prospective participant had to:

- be a U.S. citizen or eligible to work in the United States;
- meet applicable Selective Service requirements;
- commit to one of the four targeted occupations for their respective workforce area to obtain training and be considered suitable for such training; and
- fit the criteria of the service cohort assignment process.

Participant cohorts

To promote differentiation and alignment of program model interventions with the needs of specific target populations, Project GROW segmented the target lower-skilled adult population into three major service cohorts, each comprising sub-populations, to test various service delivery features. Partition of the target population into the three service cohorts was determined by secondary education credentials, academic proficiency, and college readiness. TABE tests were administered to all prospective participants at eligibility determination; participants were assigned to cohorts based on their level of academic attainment and TABE scores. The criteria for triaging participant service cohorts were:

- **Cohort A: Adults with a GED or high school diploma with high school level TABE scores but not college ready**.
  All scores must be within between 9th & 12th grade score equivalencies), College readiness is determined by the postsecondary training provider using a recognized assessment tool; currently the Texas Success Initiative Assessment (TSIA is required statewide). The plan was for Cohort A participants to receive college readiness training that prepared them to enroll in regular postsecondary academic credit programs leading to a credit-based, certificate or associate degree, while avoiding the need for developmental education that might slow or divert their career progressions.

- **Cohort B: Out of school youth and adults without a GED or high school diploma, but with high school level TABE scores**.
  Cohort B test scores must generally be within 9th & 12th grade score equivalencies, and participants participate in contextualized GED classes, while receiving occupational training.

- **Cohort C: Adults who do not have a GED or high school diploma, and score below high school level equivalencies**.
  At least one section of the Cohort C participant's TABE scores must fall within 6th & 8th grade score equivalency range, and all scores must be higher than a 6th

grade-level equivalency. The design anticipated that the majority of Cohort C participants had limited English proficiency and required ESL services as part of their contextualized adult basic literacy classes.

Participation cohort sub-groups

Participants in service cohorts were intended to be further triaged into sub-groups (see Figure 2). Cohort A was to be divided into subgroups A1 and A2. A1 was to include individuals in the Cameron and Lower Rio Grande WIBs who were to be referred to VIDA for assessment and potential participation, via random assignment, in its *Innovative Strategies for Increasing Self-sufficiency* (ISIS) project.[1] Selected A1 participants were to receive VIDA's case management, intensive supplemental instruction, support services, and enrollment in its semester-long College Readiness Academy (CRA) prior to beginning occupational training at TSTC or STC.[2] VIDA was to leverage ISIS funds to provide the CRA and credit-based training leading to a one-year credential or associates degree. A2 was to comprise of persons scheduled to receive supplemental college readiness instruction and case management before entering occupational training in one of the key industry sectors; they were not to be referred to a CBO for more intensive case management and supportive services.

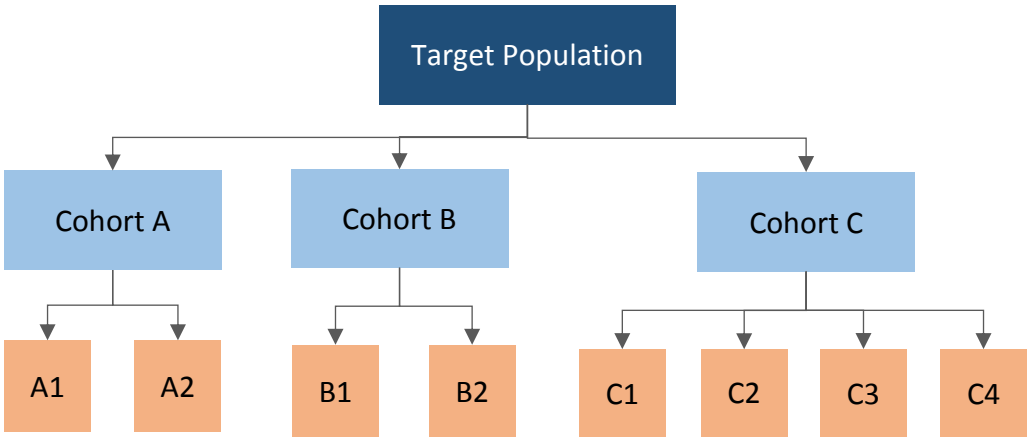
In the initial design, Cohort B originally comprised two subgroups: B1, out of school youth (OSY); and B2, adults. Both subgroups were to participate in integrated, contextualized GED preparation and occupational pathway training in an accelerated format that led to both a high school credential and a post-secondary credential in a 1-2 semester timeframe. By June 2013, partners had decided to collapse these distinctions, noting that there was little practical difference in the two target groups; Project GROW originally anticipated that the two groups might be different based on their skill levels (perhaps

[1] ISIS is funded by the Administration for Children and Families office at the United States Department of Health and Human Services and the Open Society Foundation and is administered by Abt Associates.

[2] Those deemed eligible and not randomly assigned to ISIS were to be banned from receiving workforce services for two years.

favoring younger adults) and motivation and persistence skills (perhaps favoring older adults). Both subgroups also received case management and support services.

Figure 2. Service sub-cohorts



All Cohort C participants were to receive contextualized bridge programs at basic adult literacy levels-and/or ESL possibly extended through GED preparation, and support services. Although not required by contract, three WIB areas also provided access to short-term training leading to a credential. Cohort C also comprised subgroups that were differentiated by access to intensive case management (provided by VIDA and ARRIBA in their respective service areas) and by the provision (or not) of randomly assigned In-Home Learning System (IHLS) through Business Access to further accelerate their learning. Subgroups C1 and C2 received intensive case management and supportive services; C1 also received access to IHLS. Subgroups C3 and C4 received standard WIA case management through the Career Center contractor—there was no CBO involved; C3 was assigned an IHLS, C4 was not, at least as originally laid out. In March, 2015, with some 40 or so laptops yet to be assigned and the project poised to start winding down, the WIBs decided to make the IHLS available to all incoming Cohort C. As a result all late entry Cohort C members received IHLS access. Eventually, 97 of the 105 laptops were distributed.

Participation targets

Table 1 portrays the early and later adjusted target number and distribution by WIB of subgroups within the major service cohorts in the Project GROW model. The original target number distribution was reset in the February to April 2015 time frame to support WIB areas that were having success at serving specific sub-cohorts in order that the BWA region as a whole might come closer to attaining participation targets, as well as to enable distribution of IHLS to areas successfully serving C1 and C3 participants. The total number served by cohort remained unchanged.

Table 1. Participation targets

Early Participation Targets									
	A1	A2	B1	B2	C1	C2	C3	C4	Total
Cameron	30	30	30	15	15	15	0	0	135
Lower Rio	30	30	30	15	15	15	15	0	150
South Texas	0	30	15	30	0	0	30	15	120
Middle Rio	0	30	30	15	0	0	15	30	120
Upper Rio	0	45	15	30	15	15	15	0	135
BWA Total	60	165	120	105	45	45	60	60	660

Later Adjusted Participation Targets								
	A1	A2	B	C1	C2	C3	C4	Total
Cameron	30	30	45	5	25	0	0	135
Lower Rio	30	30	45	22	8	15	0	150
South Texas	0	30	56	0	0	15	30	131
Middle Rio	0	30	45	0	0	10	24	109
Upper Rio	0	45	34	15	15	21	5	135
BWA Total	60	165	225	45	45	60	60	660

EVALUATION DESIGN

The Ray Marshall Center at the LBJ School of Public Affairs provided evaluation services to Project GROW. The multi-method, multi-year evaluation combined qualitative and quantitative methodologies to develop comprehensive analyses of Project GROW from the initial design and implementation phases of the project through the fully operational phase and conclusion of the evaluation period (September 1, 2012 through October 31, 2016). The four methodological components of the evaluation were:

- quantitative outcomes and net impact evaluations, the latter based upon a quasi-experimental design methodology;
- process evaluations tracking the implementation and adaptation of program-related policies, practices, and structures from design through fully operational status;
- formative evaluation services that provide short-term feedback on Project GROW's progression toward stated objectives and goals, based on current analyses and field observations generated by the approaches and best practices in the field of workforce development; and
- cost-effectiveness analyses estimating the net economic value and returns on the investments made to Project GROW in the border area.

RESEARCH QUESTIONS

Major evaluation research questions for Project GROW were drawn from the project design and included:

1. What components of career pathway designs were implemented by the five participating WIBs as part of Project GROW, and, as implemented, how were they similar or different across the region?
2. To what extent did integrated college and career pathway designs achieve scale within and across areas of the region and within individual colleges? What design

and implementation steps, including career center-, college-, and non-governmental organization (NGO)-level activities as well as changes to practices, policies, and systems, were essential to scaling up these programs?

3. What impact did integrated college and career pathway designs have on student progress and outcomes in college and in the labor market relative to comparison groups of students similar to the population in Project GROW but not participating in the program?
4. What was the return-on-investment (ROI) from Project GROW and its component strategies, considered from the participant, taxpayer and societal perspectives? What economic impacts did the Initiative have in the region and each of the participating WIBs?
5. To what extent did Project GROW lead to significant changes in systems and processes in the region and the participating WIBs?

METHODOLOGY

Outcomes evaluation

Documenting the outcomes of Project GROW was a relatively straightforward process that relied on assembling data on education and labor market outcomes over the 52-month period of the evaluation. The Ray Marshall Center examined program completion; education outcomes such as GED attainment and credential attainment; and employment outcomes such as placement, retention and wage gain. The Ray Marshall Center examined outcomes for all Project GROW participants and also explored variation in outcomes by geography (WIB area) and service delivery (cohort assignment).

Impact evaluation

The impact evaluation was designed to address the question: what impact did Project GROW have on student progress and outcomes in education and in the labor

market, relative to comparison groups of students similar to the population in Project GROW but not participating in the program?

The main goal of the impact evaluation was attribution – isolating the effect of the Project GROW from other factors. The main challenge of any impact evaluation is to determine what would have happened to the program participants if the program had not existed i.e. the counterfactual. Without information on the counterfactual, the next best alternative is to compare outcomes of program participants with those of a comparison group of non-participants. Successful impact evaluations hinge on finding a good comparison group (Khandker, Koolwal et al. 2010).

RMC chose propensity score matching (PSM) as the quasi-experimental method to address the key issue of the counterfactual: what would have happened absent the intervention (Rosenbaum and Rubin 1983)? Recent research has demonstrated that, when carried out under the right conditions, quasi-experimental estimation produces impact estimates that are similar in direction and magnitude to those resulting from more expensive and intrusive experimental (random assignment) evaluation methods (Greenberg, Michalopoulos et al. 2006, Card, Kluve et al. 2010). RMC used propensity score matching (PSM) as the quasi-experimental method to estimate impacts from participation in the Project GROW as a whole—encompassing accelerated learning, comprehensive support services, labor market payoff training tied closely to employer needs, and better program alignment—on key education and labor market outcomes.

PSM was used to create comparison groups drawn from participants in each WIB who were as similar to Project GROW participants as possible on a wide array of observed variables—e.g., age, gender, race/ethnicity, education level, employment history, SNAP/TANF/Medicaid benefit receipt history—and received services under WIA. Thus, the comparison group in each case was not a no-services but rather a minimal-services group ("minimal" in terms of intensity and duration) or alternate-service group, and estimated impacts captured the incremental value of the intervention over and above receipt of WIA services as traditionally delivered in the region and each workforce area. Estimating impacts

in this manner ensured that the impact of the treatment on the treated was measured, not simply the impact of the intent to treat (King and Heinrich 2011).

Individuals who were determined eligible for the treatment group and enrolled in a GROW program, but who quickly dropped out of the GROW program were considered a part of the treatment group and were not included in the comparison group. However, the comparison group may have included individuals who initially expressed interest but did not qualify or were "screened out" due to a number of factors: weren't interested in occupations, scheduling/timing of commitment, location, had TABE scores not within required range for services, not WIA eligible etc.[3]

DATA SOURCES

The Ray Marshall Center used data from a wide variety of sources for the outcome analysis, impact analysis, and ROI analysis components of the evaluation. Data sources included the program and performance management database, administrative databases from the Texas Workforce Commission (TWC), administrative databases from the Texas Health and Human Services Commission (HHSC) and budget documents provided by participating WIBs.

Administrative System for Program Partners (ASPP)

A key feature in the design of Project GROW was its deployment of the Administrative System for Program Partners (ASPP), a common program database for program and performance management. The evaluation team relied on ASPP data to examine participant demographics, enrollment patterns, cohort and training assignment, and program completion. The most recent ASPP dataset provided to the evaluation team in January 2016 covered the entire program implementation period and included all

[3] The reasons for individuals being screened out were recorded by the case managers in ASPP. However, data was not entered in this field consistently and was largely missing. Thus, the comparison group may include some individuals who were screened out of GROW, but the precise reason why they were screened out may not be known.

participants who entered Project GROW from project start in February 2013 to project end in December 2015.

The Workforce Information System of Texas (TWIST)

Under WIA rules, case managers were required by the Texas Workforce Commission to enter service delivery, service progress, education/training outcomes, and employment outcomes for Project GROW participants into The Workforce Information System of Texas (TWIST). Case managers were also tasked with entering education/training and employment outcomes into the ASPP system for Project GROW. However, with the burden of dual data entry, the evaluation team observed that entry of services and outcomes in the ASPP system was uneven. Often, outcomes were not entered by the case managers at WIBs in real time into ASPP; instead, the Project GROW Program Coordinator exported outcome data on Project GROW participants from the TWIST system and then uploaded the outcome data into ASPP at regular intervals. The evaluation team determined that TWIST was a more reliable and accurate data source than ASPP for the outcome evaluation. Hence, the evaluation team used the TWIST data system as the primary data source for tracking service delivery, service progress, education/training outcomes, and employment outcomes.

TWIST data on Project GROW participants was made available to the evaluation team by the Project GROW Program Coordinator at regular intervals. The most recent TWIST dataset provided to the evaluation team in July 2016 covered the entire program implementation period from project start in February 2013 to project end in December 2015, as well as an additional six months of follow-up from January 2016 through June 2016. Outcomes were available through TWIST for all 425 individuals identified as GROW participants in ASPP.

The TWIST data made available by the Project GROW Program Coordinator only included Project GROW participants, and was used for the outcomes tracking component of the evaluation. However, this dataset could not be used for the impact analysis component, which requires the same data on a comparison group of non-participants.

Administrative databases from Texas state agencies

The Ray Marshall Center has had standing MOUs and Data Sharing Agreements with the Texas Workforce Commission (TWC) and the Texas Health and Human Services Commission (HHSC) for many years. Thus, the evaluation team was able to access longitudinal TWIST (The Workforce Information System of Texas) data and WIT (Work in Texas) program data to examine service delivery and outcomes for all individuals served by the 5 WIBs during the project period. The evaluation team was also able to access longitudinal Unemployment Insurance (UI) wage and claims records from TWC to examine employment history and employment outcomes. Finally, the evaluation team also able to access TANF (Temporary Assistance for Needy Families), Medicaid and SNAP (Supplemental Nutrition Assistance Program, formerly Food Stamps) program participation data from HHSC. These administrative data sources were linked using social security number (SSN). Since the administrative data included both Project GROW participants and non-participants, the linked data could be used for the impact analysis. Of the 425 individuals identified as GROW participants in ASPP, 415 individuals (98%) were matched to the administrative data using SSN.

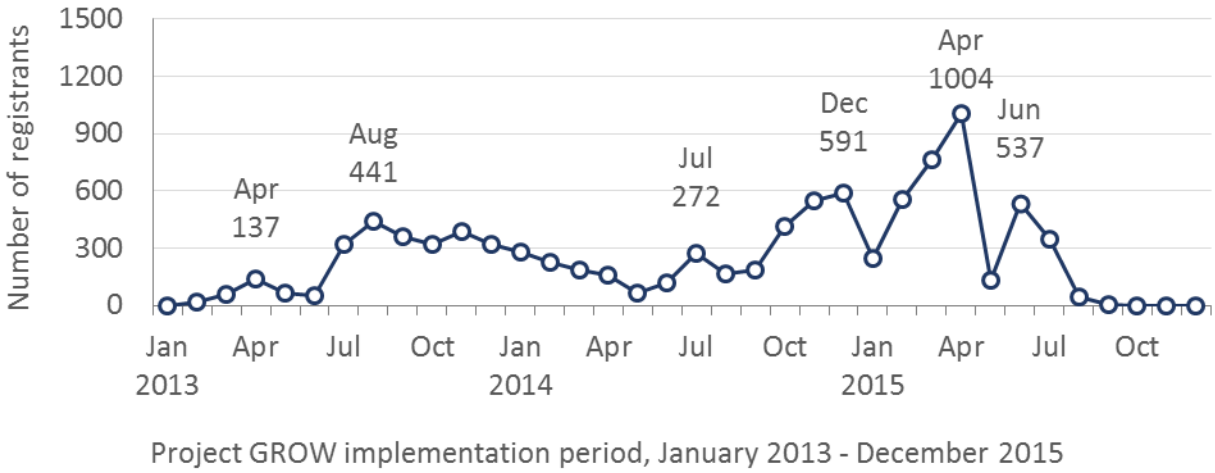
PROJECT GROW PARTICIPANTS

This chapter of the report describes the population served by Project GROW and examines participation patterns, cohort assignment and service delivery.

INTAKE AND REGISTRATION

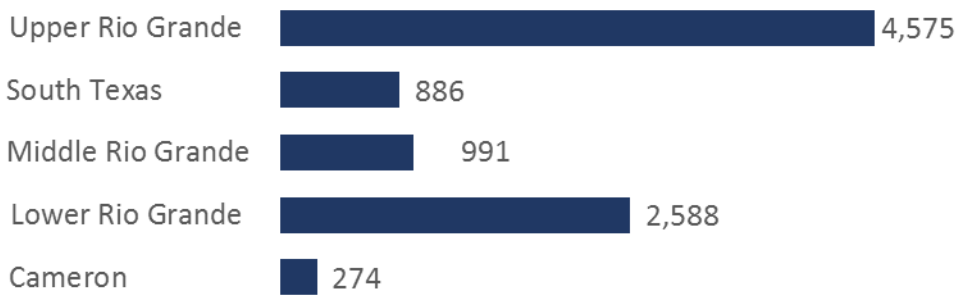
Figure 3 shows the growth of registrations in ASSP over the program implementation period. Registration largely reflects prospective client interest in the demonstration or outreach efforts. ASPP registration for Project GROW began in February 2013 and continued through September 2015. Monthly registrations ranged from a low of 20 in February 2013 to a high of 1,004 in April 2015. ASPP registration began slowly and steadily in the spring of 2013 with a sharp increase in the fall of 2013 as program implementation ramped up. Registration stayed steady at the end of 2013 before declining in the first half of 2014 and then increasing through December 2014. After a drop in January 2015, ASPP registration increased to its peak high of 1,004 in April 2015 as program staff renewed their efforts to meet target goals. Registration then declined in the second half of 2015 as program implementation drew to a close. As of the end of program implementation on December 30, 2015, a total of 9,314 individuals had been registered in ASPP in GROW.

Figure 3. ASPP registration over the program implementation period



ASPP registration across the WIBs varied considerably (see Figure 4), ranging from a high of 4,575 in the Upper Rio Grande to a low of 274 in Cameron. These outliers were related to outreach and initial intake practices. Cameron began to register participants in Project GROW after they completed the initial WIA service sequence. Late in the demonstration, Upper Rio Grande/Borderplex brought an intern on board, which evolved into a full-time position to follow-up on the Public Access Queue, as well as to contact hundreds of individuals who had expressed interest in target occupations drawn from WIT.

Figure 4. GROW registrations across the 5 WIBs



WIB variation was influenced by a number of other inter-related factors, including:

- differences in the number, type, and success of outreach and marketing methods across sites;
- failure to accurately capture interested individuals in the ASPP system due to error, oversight, or underutilization of the ASPP system; and
- variance between sites in the structured responsibility for follow-up with interested individuals in the Public Access Queue (O'Shea 2016).

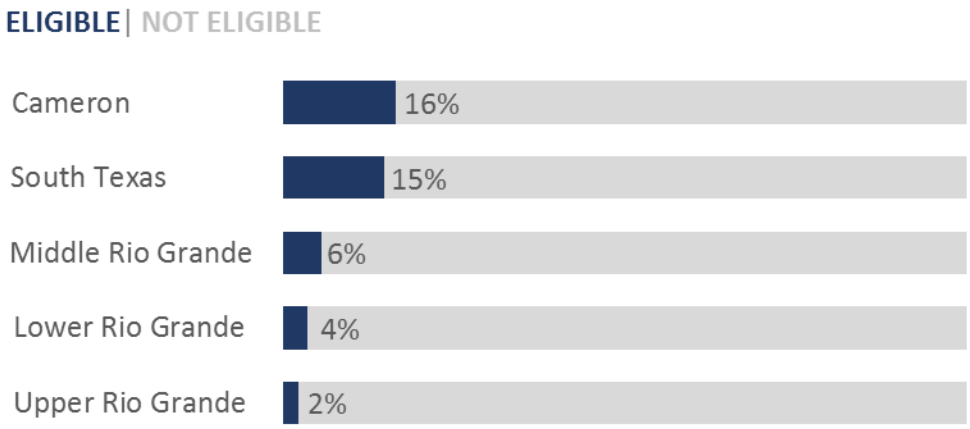
ELIGIBILITY DETERMINATION

Project GROW eligibility determination was a multi-step process that involved meeting demonstration-specific criteria related to target population and cohort assignment (age, education attainment, TABE scores, TSI scores, etc.) and WIA eligibility requirements (O'Shea 2016). Among the 9,314 individuals registered in the ASPP database, only 425 (5

percent) were determined eligible for Project GROW. Eligibility approval rates as a share of all those in the ASPP database varied across the 5 WIBs (see Figure 5), and were highest for Cameron (16%) and South Texas (15%), and lowest for Upper Rio Grande (2%). However, these statistics should be interpreted with care, due to the previously noted variations in outreach, recruitment, and enrollment.

Attempts were made to capture non-eligibility reasons in ASPP. For the 8,889 individuals who were not determined eligible for Project Grow, the non-eligibility reason was missing for about half of these individuals (n=4,505). Since inclusion in the ASPP data count minimally required some attempt at prospective client contact, it may be that data simply was never entered into the ASPP.

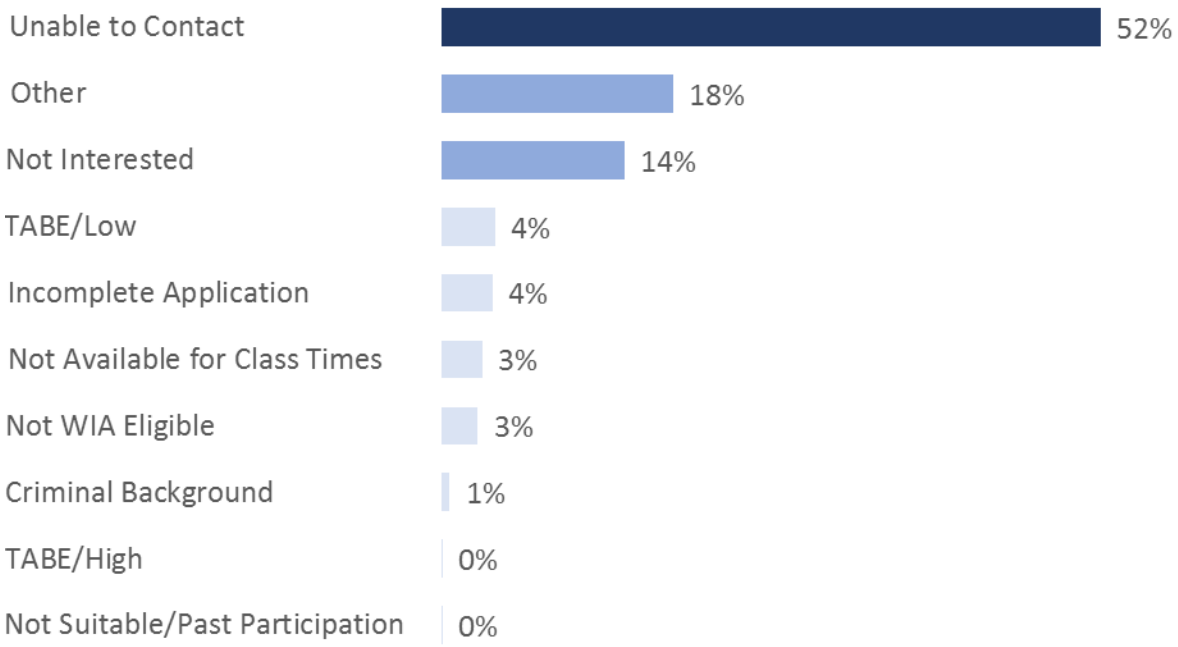
Figure 5. Eligibility approvals by WIB



Among the 4,384 individuals with a "non-eligibility" reason recorded, "unable to contact" was the most frequently recorded reason (see Figure 6); half of individuals (n=2,280) who had expressed interest in GROW did not continue with intake/eligibility procedures because contact was attempted but could not be made. Other frequent non-eligibility reasons were "other" and "not interested". As staff pointed out during site visits, many individuals lost interest when they fully understood the time commitments for the education and occupational training aspects of the services regime. Figure 6 reveals that 14% of individuals (n=635) who had initially expressed interest in GROW were not interested in the trainings offered by Project GROW. Other commonly cited non-eligibility

reasons were “low TABE score” (n=187), “incomplete application” (n=178) and “not available for class times” (n=140).

Figure 6. Non-eligibility reasons



DEMOGRAPHIC CHARACTERISTICS

Demographic characteristics indicate that the majority of GROW participants were female, Hispanic/Latino, single, first generation post-secondary, and currently receiving SNAP and/or TANF assistance (see Table 2). It is significant that nearly three-quarters of the participants were the first generation in their families to have access to postsecondary education; the depth of this representation is a remarkable accomplishment of Project GROW.

The ASPP data system also collected information on individuals’ limited English proficiency status, number of years of formal education, and highest degree attained at intake. Unfortunately, due to inadequate data entry, the extent of missing data for these fields is great and thus these characteristics could not be examined for Project GROW participants.

Table 2. Demographic characteristics of GROW participants

Demographic characteristic		%
Gender	Female	68%
Ethnicity	White/Caucasian	1%
	Black/African American	1%
	Hispanic/Latino	61%
	[Race missing]	35%
Marital Status	Divorced/Not Remarried	10%
	Married	26%
	Single	64%
Household characteristics	Family size>4	21%
	Number of dependents >2	40%
Disability status	Disabled	3%
Veteran status	Is a veteran	1%
First Generation Postsecondary		70%
First Generation US Citizen		45%
Currently Receiving Assistance (FS/TANF)		80%

DEMAND OCCUPATION INTEREST

The ASPP data indicate that two-thirds of GROW participants (68%) were interested in allied health occupations including the Medical Assistant, Medical Record & Health Information Techs, Health Information Coding Clerk, and First Responder occupations (see Figure 7). About a tenth of participants were also interested in the Commercial Driver's License (CDL) training and Maintenance and Repair occupations.

Concentrations of occupational interest by WIB area are apparent (see Table 3).[4] A majority of participants from Cameron, Lower Rio Grande, Middle Rio Grande, and South

[4] These distributions should be interpreted with caution. They are the occupational interests of *participants*, not *applicants*. Enrollments, cohort formation, and occupational interests served (demand) were modulated by postsecondary course availability (supply), as well as cohort/sub-cohort performance targets and the appropriateness of the training in relation to the variable capacity of the cohorts.

Texas were interested in the Medical Receptionist occupations. The second most popular occupations were Maintenance and Repair in Cameron; Medical Record & Health Information Coding in Lower Rio Grande; and CDL training in Middle Rio Grande and South Texas. By contrast in Upper Rio Grande, First Responders (EMT) was the most popular occupation.

Figure 7. Demand occupation interests for GROW participants

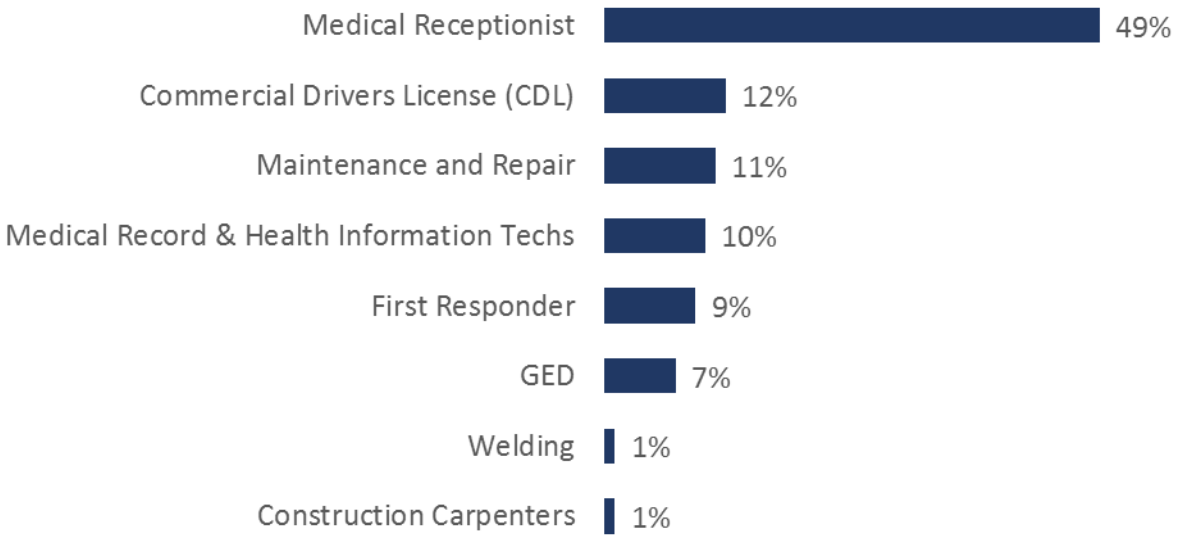


Table 3. Variation in demand occupation interest across the 5 WIBs

HIGH | **MEDIUM** | LOW

	Cameron	Lower Rio Grande	Middle Rio Grande	South Texas	Upper Rio Grande
	n=45	n=91	n=55	n=131	n=103
Commercial Driver's License (CDL)		5%	36%	20%	2%
Construction Carpenters					3%
First Responder		14%	2%		25%
Maintenance and Repair	38%	12%	2%	2%	14%
Medical Receptionist	62%	47%	49%	77%	8%
Medical Record & Health Information		21%	5%		19%
Welding			5%	1%	

Interests in the demand occupations also varied by gender (see Table 4**Error! Not a valid bookmark self-reference.**). The vast majority (87%) of female participants were interested in allied health occupations. The most popular occupation among female GROW participants was Medical Receptionist (67%), although small proportions of female participants were also interested in the Medical Record and Health Information (13%) and First Responders (7%) occupations. A small proportion of female participants were also interested in CDL trainings (4%). About a third of male participants were interested in CDL trainings (31%), another third were interested in Maintenance and Repair occupations (32%), and a little less than a third were also interested in the allied health occupations (28%). Small proportions of male participants were also interested in the Welding (3%) and Construction Carpentry (2%) occupations.

Table 4. Variation in demand occupation interest by gender

HIGH | **MEDIUM** | LOW

	Female n=289	Male n=136
Commercial Driver's License (CDL)	4%	31%
Construction Carpenters		2%
First Responder	7%	15%
Maintenance and Repair		32%
Medical Receptionist	67%	10%
Medical Record & Health Information	13%	3%
Welding		3%

SERVICE DELIVERY

Service cohorts

Following the program design, individuals determined as eligible for Project GROW were partitioned into three service cohorts based on academic ability as determined by TABE scores, secondary education credentials, and college readiness. Overall Project GROW

served mostly students in Cohort B and Cohort C (see Figure 8Figure 8). A little over a third of Project GROW participants were individuals enrolled in Cohort C who functioned below high school equivalency levels and required adult basic education and ESL. Nearly half of Project GROW participants were individuals enrolled in Cohort B who were without a secondary credential, but generally functioned within the 9th through 12th grade levels. Only a fifth of Project GROW participants were individuals enrolled in Cohort A who already had a high school diploma or GED, but were not college ready.

Figure 8. Overall service cohort distribution

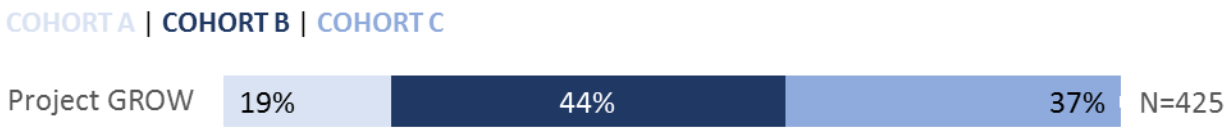
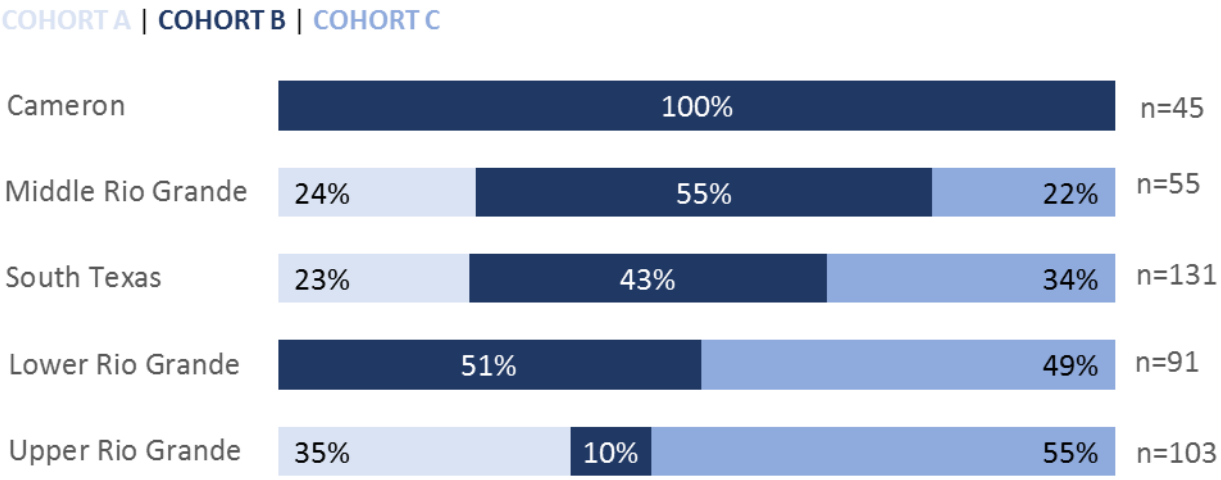


Figure 9 shows the proportion of students in each cohort served in each of the five board areas. Cameron only served participants in Cohort B. Participants in Lower Rio Grande were evenly split between Cohort B and Cohort C. Upper Rio Grande, Middle Rio Grande and South Texas served participants in all three cohorts.

Figure 9. Service cohorts by WIBs



Service sub-cohorts

One of the unique features of Project GROW was its effort to demonstrate effective services for Border residents on the margins of economic viability by further triaging participants in service cohorts into subgroups. Table 5 compares target participant counts and final participant counts, broken down by sub-cohort.

- Cohort A1 and A2 were distinguished by access to intensive case management (ICM) and VIDA's College Readiness Academy (A1) or not (A2). Cameron and Lower Rio served none of either.
- Cohort C was split into four sub-cohorts based on access or not to intensive case management and the In Home Learning System (IHLS). One third of Cohort C participants were enrolled in subgroup C3 (IHLS), nearly another third were enrolled in subgroup C4 (no IHLS, no ICM), while about a quarter were enrolled in subgroup C1 (ICM, IHLS). Subgroup C2 (ICM) had the lowest number of participants.

Table 5. Project GROW targets and final participant count, by cohort

		Original Targets	Revised Targets	Final Counts	% of revised target achieved
Cohort A	A1	60	60	0	0%
	A2	165	165	79	48%
Cohort B	B1	120	225	187	83%
	B2	105			
Cohort C	C1	45	42	37	88%
	C2	45	48	22	46%
	C3	60	76	52	68%
	C4	60	44	48	109%
Total		660	660	425	64%

IHLS

By design only C1 and C3 would have received a randomly assigned IHLS. In March, 2015, with some 40 or so laptops yet to be assigned and the project poised to start winding down, the WIBs decided to make the IHLS available to all incoming Cohort C. Up until that time, sub-Cohort C participants were frequently co-mingled in their adult education class, some with, others without laptops (O'Shea 2016).

Table 6 lists IHLS distribution and outcomes, broken down by sub-cohort. A total of 95 Project GROW participants in Cohort C received In-Home Learning Systems (IHLS). Overall, participants completed 30 modules on average and a majority (72%) earned the laptop with less than a third (28%) having their laptop repossessed. Repossession was highest for the C1 sub-cohort, where nearly half of C1 participants receiving IHLS had their laptops repossessed, compared to only 22% of C3 participants and just 13% of C4 participants.

Table 6. IHLS distribution and outcomes, by sub cohort

	#	Modules completed			Earned Laptop	Laptop Repossessed or Shutdown
		Min	Median	Max		
C1	33	1	34	109	55%	45%
C3	46	2	25	149	78%	22%
C4	16	3	28.5	311	88%	13%
Total	95	1	30	311	72%	28%

OUTCOMES OF PROJECT GROW

This chapter of the report examines the outcomes of Project GROW participants. Outcomes examined include program completion; education outcomes such as learning gains, GED attainment, and credential attainment; and employment outcomes such as placement, retention and wage increase. Outcomes are reported for all Project GROW participants, and variations in outcomes by geography (WIB area) and service delivery (cohort assignment) are also examined.

OUTCOME DEFINITIONS

For the outcomes analysis, the Ray Marshall Center focused on the outcomes designated in the original proposal for Project GROW (see Table 7).

- First, the *total number of participants served* is reported, and this number is broken down by geography and cohort designation.
- Next, the *percent of participants who completed the program* is examined, and also broken down by geography and cohort designation. Completion rates for both components of the training received by Project GROW participants are examined:
    a) the occupational vocational training (for all Cohort A, all Cohort B and some Cohort C participants); and
    b) the academic training, which included
        i. tutoring/study skills instruction (for all Cohort A participants)[5]; and
        ii. GED preparation (for all Cohort B and some Cohort C participants).

[5] College readiness provided to Cohort A under Project GROW was recorded as tutoring/study skills instruction in TWIST.

- Next, education outcomes are reported and analyzed, mainly the *percent of students who earned a GED* (for Cohort B and Cohort C participants). Education outcomes are also broken down by geography and cohort designation.[6]
- Note that originally, the evaluation team had planned to also examine the *percent of students who passed the TSI* (for Cohort A participants), as well as the *percent of students who achieved a learning gain* (for all participants). Although these outcomes were tracked during program implementation, there was great variation in how the pre- and post- TSI and TABE tests were administered across the WIBS, and also across the program implementation period (O'Shea 2016). These outcomes were also not consistently entered into the ASPP system, and are consequently missing for more than half of participants. Since occupational learning games is not a WIA measure, this data was also not required to be entered into TWIST by case managers, and is hence unavailable in the TWIST system as well.
- The evaluation team had also planned to examine the *percent of students who earned an academic certificate or degree* (for all Cohort A participants). However, enrollment and progress in postsecondary academic credit programs (leading to a credit-based, certificate or associate degree) was not tracked and recorded by case managers during program implementation.
- Next, training outcomes are reported and analyzed, mainly the *percent of students who earned an occupational skills credential*.[7] Training outcomes are also broken down by geography and cohort designation.

[6] There was an expectation, but no performance requirement, that Cohort A participants pass the exit TSI exam or enroll in an academic credit-based credentialing course. TSI test scores, course enrollment, course progress, course grades and academic credentials were supposed to be tracked in the ASPP system. Unfortunately, these results were not uniformly entered in ASPP, and were not required to be entered in TWIST. Thus, the evaluation team was unable to study these education outcomes for Cohort A participants.

[7] Occupational skills credential attainment was identified through individuals recorded in TWIST as having successfully completed their occupational training. Per the Project Coordinator, successful completion means that the participant attended all occupational training classes and did receive the credential, while

- Finally, employment outcomes are reported and analyzed including the *percent of participants placed in employment*, the *percent of participants retained in employment*, and the *percent of participants having a wage gain*. Note that this chapter examines self-reported employment obtained by case managers during follow-up and recorded in TWIST. Employment outcomes are defined following DOL guidelines for WIA (DOL) (see Appendix B). Employment outcomes are also broken down by geography and cohort designation.

Table 7. Outcomes examined by cohort

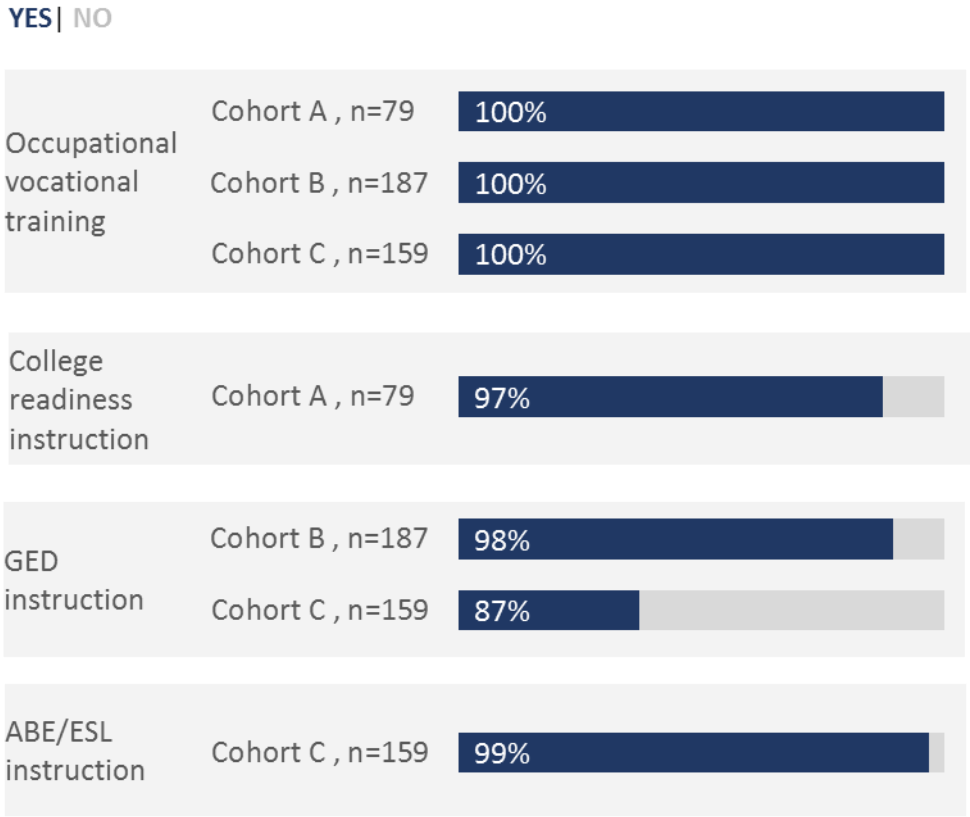
Program completion			
% completed occupational training	Cohort A	Cohort B	Cohort C
% completed GED instruction		Cohort B	Cohort C
% completed tutoring/study skills instruction	Cohort A		
Education outcomes			
% achieved a learning gain	Cohort A	Cohort B	Cohort C
% earned GED		Cohort B	Cohort C
% passed TSI	Cohort A		
% earned an academic certificate/degree	Cohort A		
Training outcomes			
% earned occupational skills credential	Cohort A	Cohort B	Cohort C
Employment outcomes			
% placed in employment	Cohort A	Cohort B	Cohort C
% retained in employment	Cohort A	Cohort B	Cohort C
% earned wage increase	Cohort A	Cohort B	Cohort C

unsuccessful completion means that the participant attended all occupational training classes but did not receive a credential.

PROGRAM PARTICIPATION

Figure 10 examines service delivery to Project GROW participants, broken down by cohort. Overall, services provided to Project GROW participants aligns with the service delivery models designed for the cohorts. All participants in all three cohorts received some form of occupational skills training. Nearly all (97%) of the participants in Cohort A received college readiness instruction. Nearly as large shares of the participants in Cohort B and Cohort C (98% and 87% respectively) received GED instruction. Nearly all of the participants in Cohort C (99%) received ABE/ESL instruction.[8]

Figure 10. Service delivery by cohort



[8] Note that in some instances providers made a distinction between ABE/ESL and GED instruction, while in other instances providers did not (with the rationalization that ABE/ESL is the first stage leading to the goal of GED attainment).

Table 8 examines service delivery by cohort and board area. As noted previously, services provided to Project GROW participants align with the service delivery models deigned for the cohorts. The variation in numbers enrolled in different activities within the same cohort reflects service sequencing and attrition.

Table 8. Service delivery by cohort and board area

		# assigned to Cohort	# receiving Occupational/ Vocational Training	# receiving college readiness instruction	#receiving GED instruction	# receiving ABE/ESL instruction
Cameron	Cohort A					
	Cohort B	45	45		41	
	Cohort C					
Lower Rio Grande	Cohort A					
	Cohort B	46	46		46	
	Cohort C	45	45		41	45
Middle Rio Grande	Cohort A	13	13	13		
	Cohort B	30	30		30	
	Cohort C	12	12		1	12
South Texas	Cohort A	30	30	30		
	Cohort B	56	56		56	2
	Cohort C	45	45	1	40	45
Upper Rio Grande	Cohort A	36	36	34		
	Cohort B	10	10		10	
	Cohort C	57	57		57	56

PROGRAM COMPLETION

Two-thirds of Project GROW participants completed their occupational vocational training (64%), but only a quarter *successfully completed* their occupational vocational training (see Figure 11). For occupational vocational training, successful completion means that the participant attended all occupational training classes and did receive the credential,

while unsuccessful completion means that the participant attended all occupational training classes but did not receive a credential.

A vast majority of Project GROW participants who received college readiness instruction (i.e. Cohort A participants) successfully completed their college readiness instruction. However, while nearly three-quarters of Project GROW participants who received GED training (i.e. Cohort B and C participants) completed their GED instruction (74%), only about a quarter *successfully completed* their GED training. For GED trainings, successful completion means that the participant regularly attended GED classes and received their GED, while unsuccessful completion means that the participant attended all GED classes but had not received a GED.

Figure 11. Overall program completion

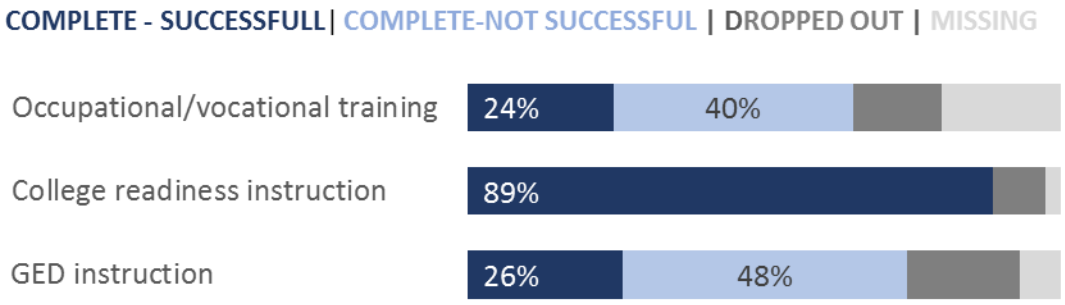
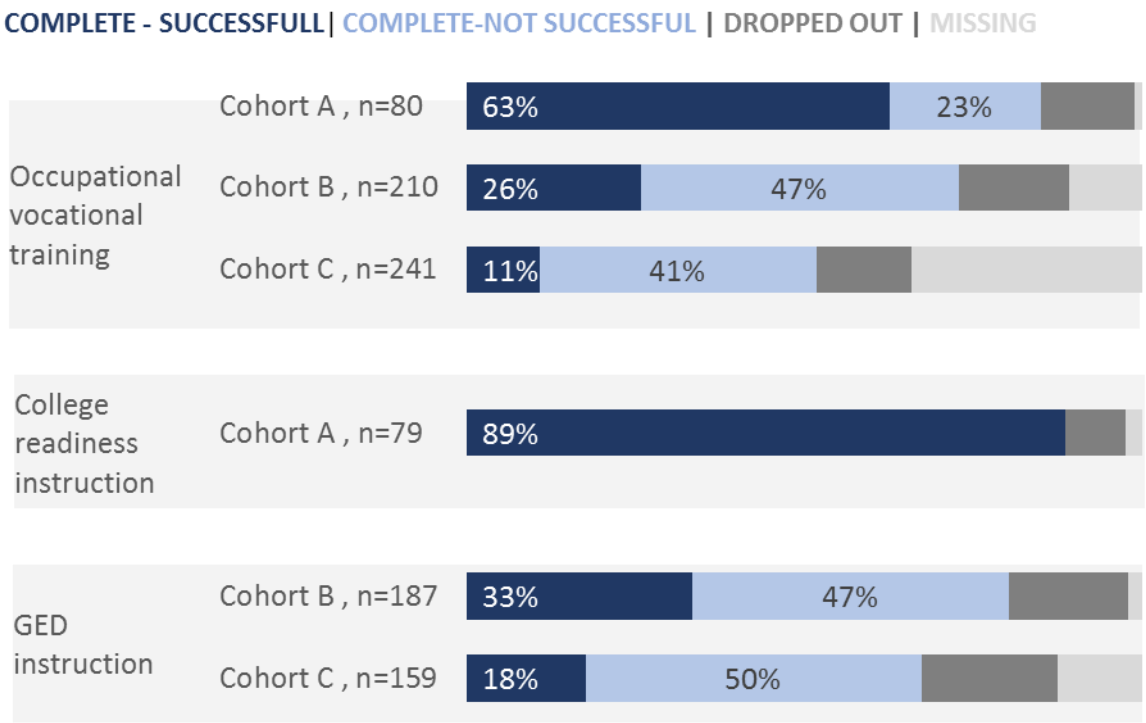


Figure 12 examines program completion broken down by cohort. Vast majorities of Cohort A and Cohort B participants completed their occupational vocational training, but only two-thirds of Cohort A participants (63%) and a quarter of Cohort B participants (26%) *successfully completed* their occupational vocational training. Notably, nearly a quarter of Cohort A participants (23%) and nearly half of Cohort B participants (47%) *unsuccessfully completed* their training, likely due to the fact that many were unable to complete final licensing and credentialing. About half of Cohort C participants (52%) completed occupational vocational training but only about a tenth *successfully completed* occupational vocational training (11%); recall however, that occupational training was not required for Cohort C and thus credential attainment was not a target outcome but a welcome achievement.

A vast majority (89%) of Cohort A participants *successfully completed* their college readiness instruction. While a majority of Cohort B participants (80%) completed their GED instruction, just a third *successfully completed* by attaining their GED (33%). Successful completion rates among Cohort C participants was even lower; while two-thirds of Cohort C participants (68%) completed their ESL/ABE/GED instruction, only a fifth of Cohort C participants (18%) *successfully completed* by attaining their GED. Recall however that GED attainment was not a target outcome for Cohort C, but rather a welcome achievement.[9]

Figure 12. Program completion by cohort



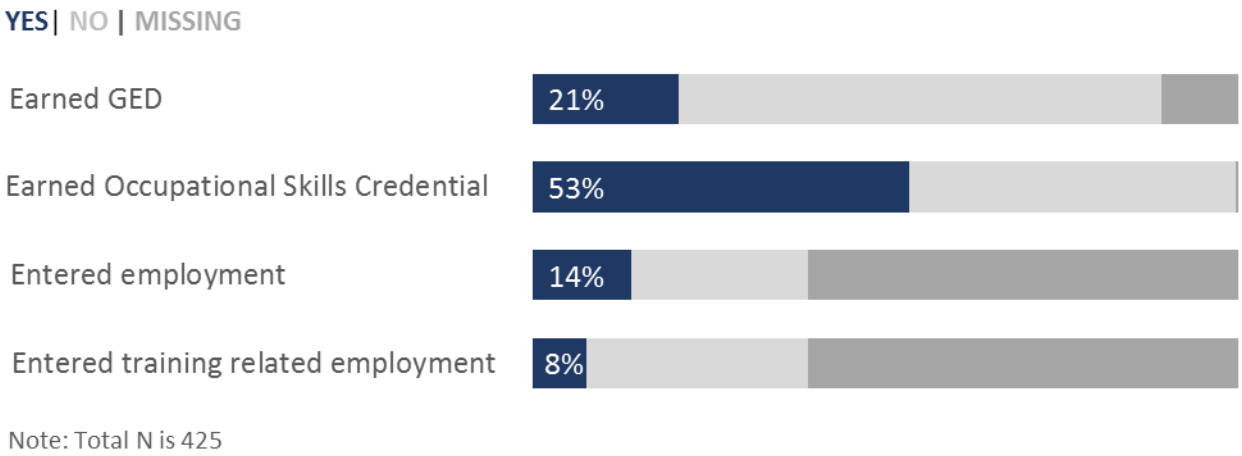
OVERALL OUTCOMES

Figure 13 examines outcomes for all Project GROW participants. A little over half of all Project GROW participants earned an occupational credential (53%), while only a fifth of Project GROW participants earned a GED (21%). Finally, self-reported employment indicates

[9] Recall that Educational Learning Gains was the performance measure linked to Cohort C progress.

that only 14% of Project GROW participants entered employment, while only 8% entered training-related employment.

Figure 13. Overall outcomes



In the following sections of this chapter, variations in education, training and employment outcomes by geography and cohort designation are examined. Precise participant counts for each cohort, board area and outcome can be found in Appendix A.

EDUCATION OUTCOMES

Figure 14 examines GED attainment, broken down by cohort. About a third of Cohort B participants earned a GED (32%), while less than a fifth of Cohort C participants earned a GED (18%). Recall however that GED attainment was not a target outcome but a welcome achievement for Cohort C.

Figure 14. Percent who earned a GED, by cohort

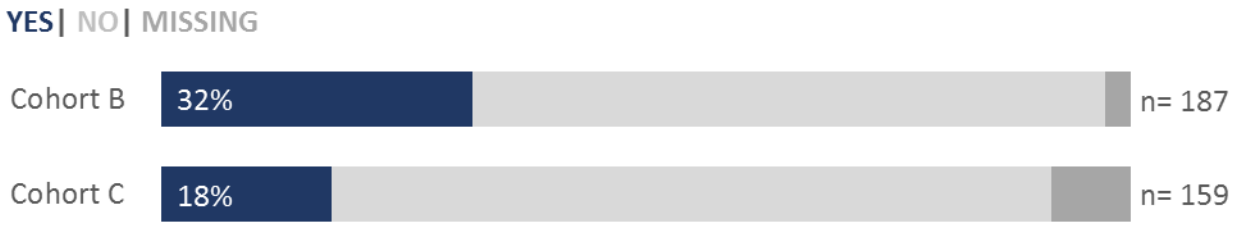
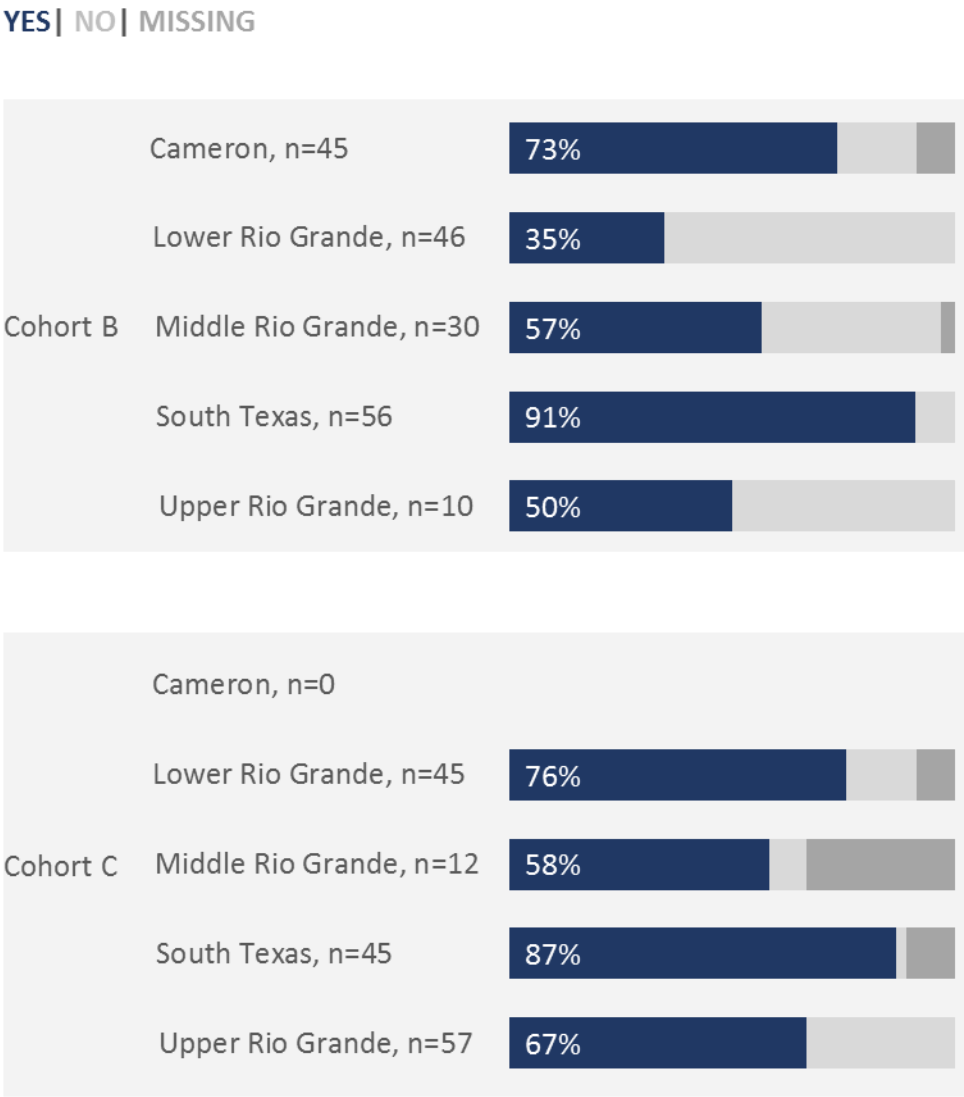


Figure 15 examines GED attainment, broken out by cohort and WIB. GED attainment rates for Cohort B participants were highest in Lower Rio Grande, where nearly two-thirds (65%) of Cohort B participants earned a GED. Half of Cohort B participants in Upper Rio and nearly half (40%) of the Cohort B participants in Middle Rio Grande also earned a GED. However, only 18 % of Cohort B participants in Cameron and 9% of Cohort B participants in South Texas earned a GED. GED attainment rates for Cohort C participants were low across the board areas; this is unsurprising since GED attainment was not a target outcome but a welcome achievement for Cohort C.

Figure 15. Percent who earned GED, by cohort and WIB



TRAINING OUTCOMES

Figure 16 examines credential attainment, broken down by cohort. Two-thirds of Cohort A[10] and Cohort B participants earned an occupational credential, certificate or license (65% and 63% respectively). A little over a third of Cohort C participants (36%) earned an occupational credential, certificate or license; recall however that occupational credential attainment was not a target outcome but a welcome achievement for Cohort C.

Figure 16. Percent who earned occupational skills credentials, by cohort

Figure 17 examines occupational credential receipt broken down by cohort and WIB. Cohort A participants in Middle Rio Grande and South Texas had high credential attainment rates (77% and 83% respectively). Less than half (44%) of Cohort A participants in Upper Rio Grande earned an occupational skills credential.

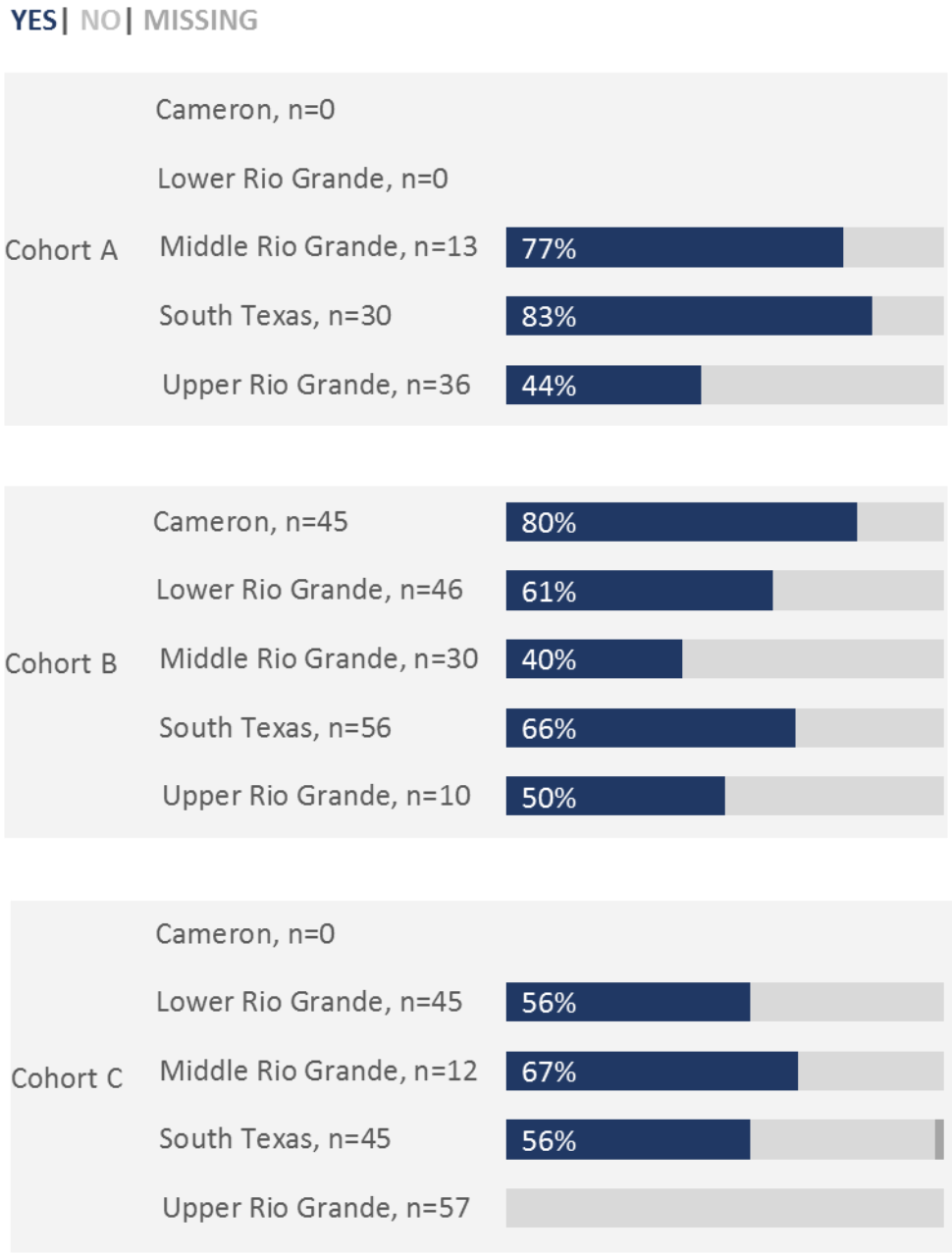
Cohort B participants in Cameron had the highest credential attainment rates (80%), followed by Cohort B participants in Lower Rio Grande and South Texas (61% and 66% respectively). Half of Cohort B participants in Upper Rio Grande and less than half of Cohort B participants in Middle Rio Grande (40%) earned an occupational skills credential.

More than half of Cohort C participants in Lower Rio Grande, Middle Rio Grande and South Texas had earned an occupational skills credential while none of the Cohort C participants in Upper Rio Grande earned an occupational skills credential. The low

[10] A potential outcome for Cohort A was passing the TSI test. However, TSI pre- and post-scores were entered for only half of Cohort A participants, and thus the evaluation team is unable to examine this outcome.

occupational skills credential attainment among Cohort C is unsurprising since occupational skills credential attainment was not a target outcome but a welcome achievement for Cohort C.

Figure 17. Percent who earned occupational skills credentials, by cohort and WIB



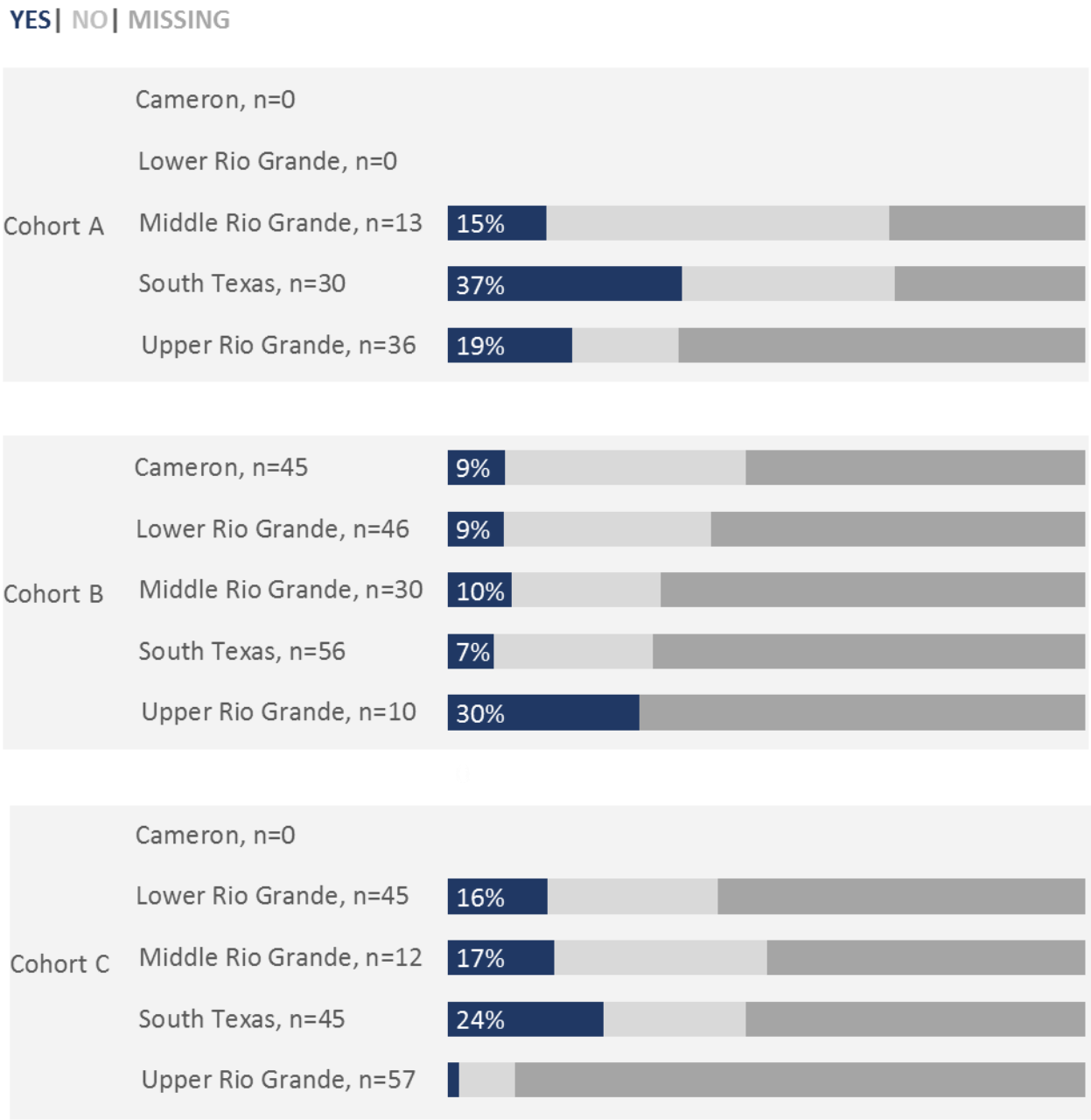
EMPLOYMENT OUTCOMES

Figure 18 examines employment, broken down by cohort. Employment entry rates were poor, ranging from 25% in Cohort A to 10% in Cohort B and 13% in Cohort C.

Figure 18. Percent who entered employment, by cohort

Figure 19 examines variations in employment entry by cohort and WIB. Overall, employment placement rates were poor. The highest employment entry rates observed were: 37% for Cohort A participants in South Texas, 30% for Cohort B participants in Upper Rio Grande, and 24% for Cohort C participants in South Texas.

Figure 19. Percent who entered employment, by cohort and WIB



IMPACTS OF PROJECT GROW

The previous chapter examined and reported outcomes for Project GROW participants i.e. the treatment group. This chapter focuses on understanding the impact of Project GROW using rigorous impact evaluation methods. The impact evaluation is designed to address the research question: what impact did Project GROW have on student progress and outcomes in education and in the labor market relative to comparison groups of students similar to the population in Project GROW but not participating in the program?

The main goal of the impact evaluation is attribution – isolating the effect of the Project GROW from other factors. The main challenge of an impact evaluation is to determine what would have happened to the program participants if the program had not existed i.e. the counterfactual. Without information on the counterfactual, the next best alternative is to compare outcomes of program participants with those of a comparison group of non-participants. Successful impact evaluations hinge on finding a good comparison group (Khandker, Koolwal et al. 2010). The Ray Marshall Center chose propensity score matching (PSM) as the quasi-experimental method to address the key issue of the counterfactual: what would have happened absent the intervention (Rosenbaum and Rubin 1983)? PSM was used to create comparison groups drawn from participants in the 5 WIBs who were as similar to Project GROW participants as possible on a wide array of observed characteristics, and received services under WIA.

IMPACT ANALYSIS DESIGN

Selection of comparison group pool

The comparison group pool comprised of individuals who received WIA services from the 5 WIBs during the Project GROW implementation period.[11] This pool was identified using longitudinal administrative TWIST data made available to the Ray Marshall Center by the Texas Workforce Commission. The comparison group was thus not a no-services but

[11] Individuals referred to GROW but who chose not to participate were included in the comparison group pool if they received WIA services.

rather a minimal-services group ("minimal" in terms of intensity and duration) or an alternate-services group. The estimated impacts captured the incremental value of the Project GROW intervention over and above receipt of WIA services as traditionally delivered in the region.

Comparison of observable characteristics

First, the differences between the treatment group (i.e. Project GROW participants) and the comparison group pool (i.e. non-GROW WIA participants) on a wide range of observable characteristics were examined. These characteristics are not only potential correlates of participation in Project GROW, but are also likely to be related to the training, education and employment outcomes of interest. Table 9 lists these characteristics in detail, documenting the differences between the treatment and the comparison group pool, prior to matching. In some ways, Project GROW participants appear to be relatively similar to non-GROW WIA participants. There are, however, differences worth noting.

Table 9. Comparison of observable characteristics, before matching

Observable characteristics	Comparison group pool n=5011	Treatment group n=415
Demographics		
Age (in years)	30.5	28.2
Female	45%	68%
Black	2%	2%
White	93%	89%
Hispanic	93%	90%
Had high school degree or GED or higher	76%	19%
Years of education	12.1	10.4
Employment and earnings history		

Observable characteristics	Comparison group pool n=5011	Treatment group n=415
Employed at program entry	40%	40%
Percent of time employed over prior two years	50%	50%
Average quarterly earnings over prior two years	$3,716	$2,320
Earnings history sufficient to qualify for UI	46%	53%
Time since first observed earnings (in quarters)	22.4	24.3
Experienced earnings dip of at least 20% within prior two years	36%	44%
Dollar amount of earnings dip (in quarterly earnings)	$1,402	$1,150
Earnings dip as a percentage of prior income	30%	40%
Time between earnings dip and program entry (in quarters)	1.5	1.9
Benefit history		
Filed for unemployment within prior year	30%	19%
Receiving SNAP (Food Stamps) benefits at program entry	42%	65%
Percent of time received SNAP benefits in prior year	30%	50%
Receiving TANF benefits at program entry	1%	3%
Percent of time received TANF benefits in prior year	0%	0%
Receiving Medicaid benefits at program entry	21%	51%
Percent of time enrolled in Medicaid in prior year	20%	50%

The treatment group appeared similar to the comparison group pool in race and ethnicity, with a majority of white and Hispanic participants. The average age was slightly lower in the treatment group (28 years), compared to comparison group pool (31 years). However, two-thirds of the treatment group was female (68%), compared to less than half of the comparison group pool (45%). The treatment group also had a much smaller

proportion of participants with a high school degree, GED or higher (19%), compared to the comparison group pool (76%).[12]

The employment and earning history also indicate that the two groups were similar in some aspects: less than half (40%) were employed when they first started receiving WIA services, and both groups had been employed for 50% of the prior two years. However, the average quarterly earnings in the treatment group ($2,320) was lower than the comparison group ($3,716). A greater proportion of the treatment group (44%) had experienced an earnings dip compared to the comparison group (36%); the earnings dip as a percentage of prior income was also higher for the treatment group (40%) than the comparison group (30%).

The benefit histories of the two groups also differed. Only a fifth of the treatment group (19%) had filed for unemployment in the year prior to program entry, compared to about a third of the comparison group (30%). Two-thirds of the treatment group (65%) were receiving SNAP benefits at program entry, compared to less than half of the comparison group (42%). Half of the treatment group (50%) was receiving Medicaid benefits at program entry, compared to a third of the comparison group (30%). The treatment group also received SNAP and Medicaid benefits for a greater percent of time in the prior year (50% and 50% respectively), compared to the comparison group (30% and 20% respectively). Given these large documented differences between the treatment group and the comparison group pool on the observable characteristics, it is necessary to account for them as well as possible in order to attribute outcome differences to the treatment (i.e. Project GROW participation).

[12] This difference appears unusually large, at first glance. However, it is not surprising. Recall that the treatment group includes a majority of participants (81%) from Cohort B and Cohort C, comprised of individuals without a high school degree or GED. Recall also that Cohort C, which accounts for more than a a third of the treatment group (37%), comprised of individuals who did not have a GED or high school diploma, and scored below high school level equivalencies. Individuals in Cohort C—lacking secondary equivalencies—were not usually enrolled in staff-assisted, intensive, or training services under WIA. Thus, it is not surprising to see this large a difference in prior educational achievement between the treatment group and the comparison group pool. However, it is important that this difference be taken into account when estimating program impacts. Hence, the evaluation team included prior educational achievement as a matching characteristic when conducting propensity score matching, as described later in this chapter.

Comparison of outcomes

Next, training, education and employment outcomes were compared across the two groups. Note that this chapter examines employment recorded in the state UI wage records, and thus employment measures differ from the self-reported employment examine in the previous chapter. Outcome definitions can be found in Appendix B, and follow DOL guidelines for WIA (DOL). Overall, outcomes for the treatment group appear robust – a vast majority completed their occupational training; about half earned an occupational credential; more than half were placed in employment after program exit; nearly three-quarters were retained in employment; and about two-thirds experienced a wage gain.

Table 10. Comparison of outcomes

Outcomes	Comparison	Treatment
Completed training program	84%	84%
Earned occupational credential	77%	53%
Placed in employment	65%	56%
Retained in employment	81%	71%
Had wage gain	73%	67%
Average earnings change in six months (wage gain)	$6,536	$2,351

However, in a direct comparison of the treatment group (i.e. Project GROW participants) with the comparison group pool (i.e. non-GROW WIA participants), large differences in outcomes are observed (see Table 10). While a majority of both groups completed their occupational training, only half of the treatment group went (53%) on to earn their occupational training credential, compared to three-quarters of the comparison group pool (77%). Employment outcomes indicate higher proportions of the comparison group pool were placed in employment (65%), retained in employment (81%) and had wage gains (73%), compared to the treatment group (56%, 71% and 67% respectively). The

comparison group pool also had much higher wage gain amounts, compared to the treatment group. However, these results are descriptive in nature and do not control for differences among individuals in these groups. Given the differences documented in Table 9 between the treatment group and the comparison group pool on the observable characteristics, it is necessary to account for them as well as possible in order to attribute outcome differences to the treatment (i.e. Project GROW participation).

Propensity score matching

The evaluation team used the propensity score matching (PSM) approach to account for differences on the observable characteristics between the treatment group and the comparison group pool. See Appendix C for a detailed description of the application of this method. Project GROW participants in the treatment group were matched to WIA participants from the comparison group pool. The single nearest-neighbor technique was used; this technique involves finding for each treated individual that non-treated individual with the most similar propensity score and so, the most similar characteristics. The evaluation team assessed and confirmed that this matching approach achieved satisfactory balance in all observables characteristics. Thus, the evaluation team can be quite confident that genuinely comparable students are being compared in the estimates of the causal impact of Project GROW on training, education and employment outcomes.

PROGRAM IMPACT ESTIMATES

After matching, the evaluation team estimated the impacts of participation in Project GROW on training, education and employment outcomes (see Table 11). Outcome definitions for the impact analysis can be found in Appendix B, and follow DOL guidelines for WIA (DOL).[13] Participation in Project GROW was found to have no statistically significant impact on any of the outcomes studied: program completion, credential attainment,

[13] The evaluation team had originally planned to also examine impacts on academic certificate/degree attainment rates (for Cohort A students) and GED attainment rates (for Cohort B and Cohort C Participants). However, these outcomes are not available for the comparison group through TWIST administrative data, and hence cannot be included in the impact analysis.

employment placement, employment retention, wage gain, and earnings. It is not surprising that the impacts of Project GROW on training and employment outcomes are not statistically significant. Power analyses conducted by the evaluation team (see Appendix D) indicated that the minimum detectable effect was 7% for training outcomes, 9% for employment placement outcomes and 17% for employment retention outcomes. As Table 11 documents, the impacts of Project GROW are much smaller than the minimum detectable effects and were found to be not statistically significant.

Table 11. Program impact estimates

Outcome	Matched Comparison Group Mean	Treatment Group Mean	Average treatment effect on the treated(ATT)		
			Diff.	Abadie Imbens Robust S.E	Significance Level
		(n = 415)[14]			
Completed training program	84.8%	83.6%	-1.2%	0.047	Not significant
Earned occupational credential	59.5%	52.8%	-6.7%	0.072	Not significant
		(n = 412)			
Placed in employment	56.7%	56.3%	-0.4%	0.044	Not significant
		(n = 127)[15]			
Retained in employment	67.7%	70.9%	3.1%	0.071	Not significant
Had wage gain	74.8%	66.9%	-7.9%	0.069	Not significant
Average earning change in six months (wage gain)	$4,473	$2,351	-$2,122	1194.927	Not significant

[14] Of the 425 individuals identified as GROW participants in ASPP, 415 individuals (98%) were matched to the administrative data using SSN.

[15] The administrative wage data only covers data through 2016 Q1. Thus the "retained employment" and "six month wage increase" outcome measures can only be calculated for individuals exiting the program in 2015 Q2 or earlier. Also, these outcomes are only calculated for participants who were placed in employment. Of the 415 GROW participants matched to administrative data, 127 individuals exited in 2015 Q2 or earlier and were placed in employment; a matched comparison group is identified for these 127 participants and treatment impact estimates are then calculated for the "retained employment" and "six month wage increase" outcomes.

RETURN-ON-INVESTMENT (ROI) AND ECONOMIC IMPACT ESTIMATION

Project GROW encountered substantial difficulties (see Final Implementation Report for our assessment) that significantly affected its ability to meet the potential implicit in its design. These difficulties have implications for our ability to conduct a defensible return on investment analysis.

Project GROW's cost per participant is $6,151 (excluding estimates of foregone earnings of $3,700); this appears substantially higher than the $1,300 per participant cost for participation in traditional WIA programs, as reported in a 2008 study of the return on WIA investments in Texas. (King et al. 2008). With GROW's $833,000 of leveraged funds added to its $1.7million in expenditures across the 5 WIBs, GROW's cost per placement rises to $11,003. Given the population Project GROW served, it is perhaps not surprising that the cost per participant should be just over 8.4 times the cost for a "typical" participant in WIA programs in Texas. However, we believe that the significantly higher cost per participant has less to do with expenses related to serving a "harder to serve" population than with the rather low participation numbers. Project GROW had projected at the outset that it would serve 660 participants over the 3 years of service delivery, but served only 425.

These differences in cost per participant" between the "typical" participant WIA programs in Texas and participants in GROW are important to bear in mind when considering the findings from the impact evaluation. The fact that the findings were not statistically significantly different from zero suggests that, while they appear smaller than those for the comparison group, the estimates for GROW's impacts are not so vastly different from the comparison group's that they would show up as statistically significant. In other words, had GROW participants performed substantially poorer, or better, than the comparison group, the difference may have been large enough to register as a statistically significant difference, despite the small sample size.

These caveats noted, it is not possible to calculate a return on investment in Project GROW. In order to do so, we would have needed to see a statistically significant difference in placement, earnings, retention, as well as in the education related indicators. Were we able to find a statistically significant difference, we would have been able to estimate the

lifetime earnings, benefits use, taxes paid, etc. of GROW participants as compared to the comparison group's, and so estimate the added value of GROW, over and above "traditional" workforce development services provided by the participating WIBs.

Nevertheless, Project GROW did succeed in placing 232 individuals in employment[16], and earlier studies on the return on investment in the sorts of high-intensity training provided by GROW find positive returns to individuals and to society. In their 2008 study of WIA-funded workforce development programs in Texas, in which they compared low-intensity services (self-directed job search, job referrals, and basic labor force attachment services) to high-intensity services (longer-term skills training services), King et al found that, "On a statewide basis, participating in high-intensity skills development services is associated with annual earnings impacts of $1,848 over and above the impacts estimated for low-intensity services (i.e., $564 for just the first year). The earnings impacts from high intensity services are projected to endure throughout the 10-year period, in line with the evaluation literature on training and related services," and, in terms of returns to the taxpayers, "each dollar invested in workforce services returns $1.17 and $2.08 over the 5-year and 10-year periods, respectively." (King et al. 2008) One could assume that GROW participants who gain employment as a result of participation in GROW could expect to see similar returns. However, it is important to note that King et al's 2008 analysis was only possible because they were able to identify a statistically significant (positive) difference in outcomes between participants in low-intensity services and those in high-intensity services.

Were we able to find a statistically significant difference between the comparison group and GROW participant outcomes, we would be able to calculate the return on investment in GROW using the following steps, adapted from Hollenbeck and Haung (2006) and King et al (2008):

[16] It is safe to assume some individuals trained by GROW, particularly those employed as independent contractors, are not included in the UI wage records, the source used for employment wages and histories for this analysis. However, we have no way of identifying these individuals or how many they may be.

Identify target population. The focus of this analysis are participants in Project GROW activities across a 5 WIB region along the Rio Grande Valley, namely WIBs representing the Cameron County, Lower Rio Grande, Middle Rio Grande, Upper Rio Grande, and South Texas regions.

Specify time periods. Our focus is on participants served by Project GROW between February, 2013 and December, 2015.

Describe service strategy and target group estimation. Project GROW's service strategy was composed of, in essence, three basic components: alignment of adult education, postsecondary education, and workforce services; accelerated credentialing in high demand occupations with identifiable career pathways; and the provision of case management and support services.

Calculate Project GROW expenditures. We base workforce services costs upon certified expenditure reports provided by Project GROW fiscal staff.

Calculate opportunity cost. We would factor in the imputed value of participants' time as a measure of their foregone earnings while receiving program services. Following Hollenbeck and Huang (2006), we would use comparison group earnings for GROW participants' in-program period as the measure of opportunity cost.

Document outcomes from investment in GROW. We access TWIST, UI wage, UI claims, TANF and Food Stamp benefit data to measure the key outcomes of interest, including earnings and receipt of welfare, Food Stamps and UI benefits.

Estimate impact of GROW. As noted above, a quasi-experimental methodology, propensity-score matching (PSM), was employed to measure the impact of GROW participation. Comparison group members were selected from WIA participants who were similar to GROW participants across a range of demographic and socioeconomic characteristics. Comparison group members received "traditional" WIA services, but did not receive GROW services. The estimated impacts captured the incremental value of the Project GROW intervention over and above receipt of WIA services as traditionally delivered in the region.

Calculate discounted lifetime earnings. Based on differences in projected earnings for both comparison and GROW participants, we would have discounted future earnings. We would also impute an additional 10% of earnings impacts to capture the value of associated employee fringe benefits, following Hollenbeck and Huang (2006) who estimate the value of employee benefits at 20% based on recent Bureau of Labor Statistics (BLS) and US Chamber of Commerce survey data.

Calculate taxes on earnings. We would impute the value of federal and local taxes (10.5%) paid on estimated earnings impacts, based on estimates of taxes paid in Texas by household income level from the Institute on Taxation and Economic Policy (2015).

Apply spending multipliers. Estimates for spending multipliers would have been applied to earnings impacts derived from GROW investments. Benefit/cost analysis guidelines suggest that multipliers greater than one can be justified only when resources are not fully employed in the relevant labor market (OMB 2002). Given that, on average, the unemployment rate in the Rio Grande Valley is below the generally accepted "full employment" rate of 5.2%, a spending multiplier of 1.4 could be applied to estimated earnings impacts for a substantial portion of the post-investment periods.

Discount rate. We would have utilized a 4.7 percent (nominal) social discount rate to render benefits and costs in present value terms. Three percent is the midpoint between real social discount rates suggested by OMB (2002) and Moore et al. (2004). We would have added 1.7 percent for inflation based on the 2015 cost-of-living adjustment factor issued by the Social Security Administration.

Sensitivity analysis. We would compute variations in our ROI estimates over 5- and

10-year periods and examine the effects of varying other parameters as well, including employer benefits as a multiple of participants' earnings impacts, fringe benefit coverage, spending multipliers, and others.

Determine changes in use of public benefits. We would also estimate any projected changes in use of public benefits, including UI, TANF, SNAP, and Medicaid as a result of participating in GROW.

Below-the-Line Benefits and Costs. As with all such studies, a number of important benefits and costs cannot be factored directly into our ROI estimates, either because the requisite quantitative data are lacking or relevant research findings to support them are unavailable. We refer to these as "below-the-line" benefits and costs. Including omitted benefits would lead to increased returns, while including additional costs would lower them. It is generally much easier to quantify the costs than the benefits from workforce services. Among these benefits are the following:

- the local economic impacts of spending related to GROW. Spending for service provision would lead to multiplier effects as providers spend these dollars. Including such effects would be appropriate for an economic impact analysis;
- any returns associated with related educational investments. Substantial returns are associated with postsecondary education not financed by WIA or TANF (e.g., tuition and fees, Pell grants), as well as private training investments by employers themselves; and
- any benefits of reduced criminal activity and the savings from reduced teen pregnancy. For example, the Job Corps evaluation showed that participation led to substantial long-term reductions in the costs associated with involvement in the criminal justice system, as well as increased program output (Burghardt et al. 2001).

DISCUSSION

Project GROW was an ambitious regional, multi-partner, and strategically comprehensive effort that sought to accelerate certification, employment, and career advancement in demand occupations for an array of economically marginal target groups. The program encountered significant challenges during implementation, including: complex eligibility procedures such as dual eligibility determination in WIA and Project GROW and pre-eligibility testing in adult education and college readiness in order to form tiered training cohorts; the introduction of a stand-alone program and performance management data system; enhanced levels of employer and industry sector engagement; and the alignment of career pathway options in demand occupation between workforce and postsecondary training providers, as well as alignment within colleges between continuing education departments and academic programs. The outcome and impact evaluation of Project GROW reveals that this complex program has had mixed outcomes, with no demonstrable evidence of program impacts.

OUTCOMES AND IMPACTS OF PROJECT GROW

Credentialing

The evaluation found strong credentialing outcomes for Project GROW participants. Vast majorities of Cohort A participants (86%) and Cohort B participants (73%) completed their occupational vocational training, and two-thirds of Cohort A and Cohort B participants earned an occupational skills credential (65% and 63% respectively). Participants who completed their training but did not earn a credential likely did so due to the fact that many were unable to complete the final steps of licensing and credentialing. About half of Cohort C participants (52%) completed occupational vocational training and only a third earned an occupational skills credential (36%). However, occupational vocational training was not required for Cohort C participants. Thus, even this small number of participants earning an occupational skills credential is a welcome achievement. However, the evaluation did not

find any significant impacts of Project GROW on training program completion and occupational skills credential attainment.

Education

Cohort B integrated pathway preparation contained both contextualized GED coursework, as well as occupational skills training leading to a credential. While a majority of Cohort B participants (80%) completed their GED instruction, just a third earned their GED (32%).[17] The low achievement rate is due to a number of factors. In January, 2014, the GED Testing Service that administers the GED test converted the test from paper and pencil to computer-based, raised the prices, and increased the rigor of the test. Though it is unclear at this time what the test take-up and pass rate for Project GROW participants is at this time due to data limitations, statewide the pass rate for the general population fell from 74.4 percent to 51.9 percent between 2013 and 2014 (2015). In addition to being more difficult to pass, field staff indicated that the switch to a computer-based test created an additional challenge for those less tech savvy or with little keyboarding skills. Moreover, some participants were interested in the occupational certificate, for instance Welding or CDL, and basically "blew off" or skipped the GED exam. For some, practice test scores indicated that the student was not ready to take the exam at the end of their class.

Cohort C participants were provided adult education classes infused with occupational content matter to increase the relevancy of the learning process to the participant's occupational interests, support their occupational skills and knowledge development, and to accelerate their advancement toward credentialing and career pathway employment entry. While two-thirds of Cohort C participants (68%) completed their GED instruction, only a fifth of Cohort C participants (18%) earned their GED. However, since GED attainment was not a target outcome for Cohort C, even this small number of participants earning their GEDs is a welcome achievement.

[17] Program impacts on GED attainment could not be measures since data on GED attainment for the comparison group was not available to the evaluation team.

Cohort A participants enrolled in a college readiness[18] course intended to prepare them to pass the Texas Success Initiative Assessment (TSIA) and enter academic training directly, while avoiding the time and tuition costs of developmental education. There was an expectation, but no performance requirement, that Cohort A participants pass the exit TSI exam or enroll in an academic credit-based credentialing course. TSI test scores, course enrollment, course progress, course grades and academic credentials were supposed to be tracked in the ASPP system. Unfortunately, these results were not uniformly entered in ASPP, and were not required to be entered in TWIST. Thus, the evaluation team was unable to study these education outcomes for Cohort A participants.

Employment

Self-reported employment, tracked by case managers and recorded in TWIST, indicated poor employment outcomes for Project GROW participants, well short of program targets. Employment outcome tracking in TWIST by the Project GROW program coordinator indicated that only 14% of Project GROW participants entered employment, while only 8% entered training-related employment. Employment entry rates ranged from 25% in Cohort A to 10% in Cohort B and 13% in Cohort C.

The evaluation team also examined employment reported in state UI wage records. The UI wage data indicated robust employment for Project GROW participants: more than half were placed in employment after program exit (56%), nearly three-quarters were retained in employment (71%), and about two-thirds experienced a wage gain (67%). However, the evaluation did not find any significant impacts of Project GROW on employment outcomes, including placement, retention, and wage gain. However, this is not surprising given the short follow-up period available for the evaluation. A recent meta-analysis of active labor market policy evaluations (Card, Kluve et al. 2010) found "many programs with insignificant or even negative impacts after only a year have significantly positive impact estimates after 2 or 3 years". It may be the case that, with additional follow-

[18] College readiness fills the gap between the acquisition of a high school diploma or GED and the functional academic skills required for college-level studies.

up over a longer period of time, Project GROW's outcomes and impacts would have improved.

While none of the findings for Project GROW were statistically significant, it is notable that, but for the completion of training programs indicator, the comparison group's outcomes appear to better than the program participants' outcomes. When differences between groups are controlled for in the impact evaluation, program participants appeared to outperform comparison group members in terms of retaining employment, but to lag behind the comparison group in all other metrics. Again, though, these findings are not statistically significant due to the fact that any differences between the two groups were too small to say definitively whether or not Project GROW played a role in the outcomes.

STRENGTHS OF THE EVALUATION

Integration of evaluation with program implementation

A strength of this evaluation of Project GROW was the integration of the evaluation with the program implementation, and the close working relationship between the evaluation team and the Project GROW program coordinator. Additionally, the field research team provided formative guidance at all sites during the four rounds of site visits.

The evaluation team worked closely with the Project GROW program coordinator and Business Access during the deployment of the ASPP data system. The evaluation team performed early data quality checks that allowed Business Access to make modifications to ASPP, enabling accurate and timely data entry. Over the three-year program implementation period, the evaluation team received program data from ASSP every quarter. This allowed the evaluation team to continuously track enrollment, service delivery and progress towards outcomes. The evaluation team was thus able to assess program fidelity on an ongoing basis and provide timely feedback to the Project GROW program coordinator.

Access to longitudinal administrative data

Another great strength of this evaluation was the ability of the evaluation team to access longitudinal administrative databases from state agencies, including data on wages, unemployment insurance claims, SNAP (formerly Food Stamps) enrollment, Medicaid enrollment, and TANF usage. This extensive data were available only because the Ray Marshall Center has had standing MOUs and Data Sharing Agreements with the Texas Workforce Commission and the Texas Health and Human Services Commission for many years.

As a result, the evaluation team was able to include prior labor market experiences for the treatment and matched comparison group in the impact analysis. This is significant, since prior labor market experience is an important characteristic in considering selection bias; evaluations of job training programs in the US have found the employment histories of individuals to be good predictors of program participation (Friedlander and Robins 1995, Friedlander, Greenberg et al. 1997). Prior unemployment and earnings are important when using propensity score matching because they are important predictors of program entry and employment outcomes; they also help capture otherwise unobservable characteristics, such as motivation, which can also influence participation and outcomes (Bryson, Dorsett et al. 2002). The evaluation team was also able incorporate prior use of social services (Medicaid, SNAP or TANF) in the impact analysis.

Evaluation design

Since an experimental design was not feasible, the Ray Marshall Center selected a quasi-experimental design for the impact analysis: propensity score matching. The comparison group pool comprised of individuals who received WIA services from the 5 WIBs during the Project GROW implementation period; this design controls for difference in local conditions over time, as well as differences in local conditions across geography.

LIMITATIONS OF THE EVALUATION

Evaluation design

The impact analysis is clearly limited by its non-experimental nature. While propensity core matching (PSM) controls for observed differences between the treatment group (Project GROW participants) and comparison group, it cannot control for selection bias that may be due to unobserved differences between the groups, although there is evidence this may well be an overrated problem (Dehejia and Wahba 1998, Heckman, Ichimura et al. 1998, Dehejia and Wahba 1999). As with all PSM approaches, the degree to which unmeasured sources of bias affect the comparability of groups is unknown. The evaluation team made efforts to incorporate all available and important characteristics such as age, gender, race/ethnicity, prior education, prior labor market experience, prior use of unemployment insurance, and prior use of social services (Medicaid, SNAP or TANF). However, some important characteristics such as household size and family characteristics could not be included in the analysis, since data on these characteristics was not available.[19] PSM does not allow us to correct for selection bias that might be caused by characteristics not observed or measured; this remains a limitation of this study.

Sample size

Another important limitation of this impact evaluation is the small sample size. Project GROW did not meet its participation target at the end of the program implementation period; instead of the original target of 660, the final count of Project GROW participants was 425. With this small sample size, power analyses indicated that minimum detectable effects (MDEs) would need to be large (see Appendix D). Unfortunately, the impacts estimated for Project GROW were much smaller than the MDEs and were found to be not statistically significant.

[19] Note that while rich data on additional characteristics were available for the treatment group (Project GROW participants) in the ASPP system, no data on these characteristics was available in the administrative data for the comparison group. Thus, these additional characteristics could not be incorporated in the impact analysis.

This small sample size also meant that the evaluation team was only able to analyze the impact of Project GROW as a whole, and was unable to study variations in program impacts for Project GROW (by geography or by service cohort designation or by industry sector). This is a significant limitation because Project GROW was a strategically comprehensive effort that incorporated a variety of service delivery features. The evaluation team's implementation report documents and discusses the variations in program implementation that occurred across time, across the 5 WIBs, across the three cohorts (and their sub-cohort), and across the target industry sectors. Unfortunately, these variations cannot be captured or measured in the impact analysis because of the small total sample size; the evaluation team is only able to measure the impact of Project GROW overall. However, the evaluation team was able to capture, document and discuss these variations in the outcomes analysis.

Failure of ASPP to capture data

A key feature of the Project GROW demonstration was the development and use of a customized data collection and project collaboration platform developed by Business Access, the Administrative System for Program Participation (ASPP). ASPP was a significant feature of Project GROW because it was the proposed nexus of real time exchanges between program partners at local and regional levels, as well as the database for unique data elements selected to serve the demonstration's program management and evaluation purposes.

However, ASPP was not universally or consistently used across the BWA area or between local partners in Project GROW. The use of ASPP sustained a major setback when the Texas Workforce Commission withheld permission to allow client intake and management data in TWIST to migrate to ASPP; the BWA and Business Access had incorrectly assumed at start-up that TWC would support the data system exchange. This resulted in dual data entry for field staff, an unnecessary burden that led to under-utilization. Unassigned or loosely defined responsibility within the WIBs also contributed to the inconsistency in data entry for ASPP

Throughout the program implementation period, the evaluation team perform quality checks of ASPP data on a quarterly basis and provided feedback to the Project Coordinator. In response, the Project Coordinator regularly provided technical assistance to field staff and reminded WIB area partners of incorrect and missing data entries. However, local partners were not responsive to the system they felt redundant and for which responsibility for data entry and quality assurance at the WIB level was often weak or diffused.[20]

As a result, several data fields in ASPP remained missing or incomplete by the end of the grant period (for e.g. demographic characteristics like limited English proficiency status, number of years of formal education, and highest degree attained at intake, and educational outcomes like as course enrollment, course completion, grades, key test scores, and credentials awarded. The flexibility and customization of ASPP was intended to be a tailored, comprehensive database for Project GROW program and performance management, to be supplemented, as needed, by TWIST and WIT for evaluation purposes. Unfortunately, the evaluation team was only able to use ASPP in a limited way, primarily to obtain client demographic data. The evaluation team eventually had to rely on TWIST data for tracking service delivery and outcomes.

Insufficient follow-up time

As noted above, it is critical to bear in mind that the administrative wage data used for this study only covers data through 2016 Q1. The "retained employment" and "six month wage increase" outcome measures can only be calculated for individuals exiting the program in 2015 Q2 or earlier. Also, these outcomes are only calculated for participants who were placed in employment. Of the 415 GROW participants matched to administrative data, 127 individuals exited in 2015 Q2 or earlier and were placed in employment; a matched comparison group is identified for these 127 participants and treatment impact estimates are then calculated for the "retained employment" and "six month wage

[20] As noted in the evaluation team's implementation evaluation report, almost every informant in the field when asked what they would eliminate from the model if they were to start anew indicated ASPP.

increase" outcomes. And, as noted in Card and Kluve (2010) "many programs with insignificant or even negative impacts after only a year have significantly positive impact estimates after 2 or 3 years". It is conceivable that, with additional follow up, we would see significantly better placement rates.

CONTEXTUAL FACTORS CONTRIBUTING TO GROW'S OUTCOMES

As noted in the Final Implementation Evaluation report, several factors may have contributed to Project GROW's poor outcomes, including:

Cohort formation and participation levels were not as successful as anticipated in the original plan. Because of low outreach responses, misalignment of client interests and the type of training available, and low eligibility rates by cohorts, particularly due to testing outside of the TABE score range, it was difficult to form cohorts for planned career path trainings or to coordinate training starts due to an insufficient number of recruits. Geographic distances, the disbursed populations, and locations of training sites in many areas of the border region exacerbate these challenges.

Additionally, previously approved eligible persons often lost interest or became otherwise engaged when anticipated cohort start dates were rolled back. All of the sites tried various tactics to recruit eligible, interested individuals who would make the extensive commitment to GROW, but prospective clients continued to test outside of established cohort boundaries. All administrators and staff commented upon the extensive time and energy expended on outreach/eligibility efforts to recruit, enroll, and form training cohorts. Only South Texas attained or exceeded its targeted participant levels across all Cohort Sub-groups. Lower Rio Grande attained all its targeted participant levels except for Cohort Sub-groups A1 and A2. Cameron served only Cohort B participants.

For several reasons, including late contracting dates, tight and complex eligibility requirement and processes, attrition, and lack of capacity early on, Project GROW has not achieved any of its performance measures across the entire region as a whole. The BWA did best in credentialing (65%). Education measures (GED acquisition at 32% and Learning Gains at 28%) and employment measures (Employment Entry-Training Related at 14% and

60-day Retention at 8%) fell well short of their targets. Three of five WIBs met or exceeded their target number of engaged employers (12).

Employer engagement fell short of expectations regarding scope and depth of involvement, and there was no observed advance in industry sector development. Beyond recruiting individual employers for curriculum review, employment prospects, and internship or work experience placements, there was little expansion or deepening of employer engagement efforts by Business Services Representatives (BSRs). BSRs conducted an initial BSRs distributed a one-page survey to identified employers to solicit and gauge their support. The Employer Survey gathered contact information and asked about entry-level hiring practices, the availability of paid or unpaid internships, willingness to consider Project GROW participants for these, if available, and the employers willing ness to participate in an Employer Engagement "panel," as well as the skills and competencies that the employer deemed important for entry-level workers.

Other dimensions of employer engagement anticipated in the evaluation design were the direct participation of employers as supplemental instructors, direct referrals of incumbent workers to workforce services to enhance their career prospects (potentially creating openings for entry level workers as incumbent workers advance along the career pathway); workplace flexibility, for example, in scheduling to accommodate training and support for advanced training such as tuition reimbursement or raises tied to the additional credential; and expanding placement prospects for training participants–including internships/clinicals, work experience, and employment—pursuant to career pathways. There was very sparse activity in any of these areas.

The anticipated contributions and involvement of community-based organizations were not realized. There were no enrollments in the College Readiness Academy and postsecondary education for Cohort A through VIDA in Cameron or the Lower Rio Grande areas. Intensive case management for Cohorts C1 and C3, the very least job-ready, through VIDA in Cameron did not occur and such referrals to ARRIBA in Upper Rio Grande were late in starting and did not attain expected enrollment numbers. Nevertheless, ARRIBA did help several participants along the path to their GED, and both VIDA and ARRIBA enrolled former

participants in their own career pathway training subsequent to their exit from Project GROW.

The In Home Learning System (IHLS) was distributed late in the demonstration and the ability to evaluate its effectiveness has largely been compromised.

IHLS distribution was hampered by low enrollments and its efficacy as a learning enhancement was questioned by many in the field. The teaching modules were all in English—there was no ESL training and no explicit GED prep program. Random assignment caused some concern because some of those who received the IHLS already had access to a computer. Universal assignment at the end of the demonstration reportedly improved its usefulness for teaching, since instructors and students could communicate and written assignments could be submitted electronically. Reportedly, class cohesion improved as well, since all were figuratively "on the same page."

CONCLUSION

In spite of the substantial difficulties encountered by the project that significantly affected its ability to meet the potential implicit in its design, Project GROW is to be commended. Project GROW was an ambitious attempt to address, simultaneously, multiple barriers to labor market advancement encountered by low-skilled, low-wage workers, many of whom with limited English proficiency, in the Rio Grande Valley, one of the most persistently economically disadvantaged regions of the country. It provided workers with skills training and industry-recognized certification in high-demand occupations that, in some cases, also provided opportunity for advancement; it addressed the need for support services by those participating in training; it addressed language barriers through English instruction contextualized within skills training; and it, in some cases, brought workers onto a college campus for the first time. As noted in the Final Implementation Report, by design, Project GROW focused on serving a "harder to serve" population - participants included those with TABE test scores as low as a 6th grade level, as well as those in need of ESL training. In addition, Project GROW created an infrastructure for cooperation among the

workforce development, postsecondary, and support services fields that may persist and improve with time, to the benefit of workers and communities alike.

APPENDIX A. PARTICIPANT COUNTS BY COHORT, BOARD AREA & OUTCOME

Table A-1. Participant counts by cohort

	# assigned	# received occupational training	# earned occupational credential	# received GED instruction	# earned GED	# entered employment (self-reported)
Cohort A	79	79	51			20
Cohort B	187	187	118	183	60	18
Cohort C	159	159	58	139	28	21

Table A-2. Participant outcomes by cohort and WIB

Board	Cohort	# assigned	# receiving occupational training	# earning occupational credential	# receiving GED instruction	# earning GED	# entered employment (self-reported)
Cameron	Cohort A						
	Cohort B	45	45	36	41	8	4
	Cohort C						
Lower Rio Grande	Cohort A						
	Cohort B	46	46	28	46	30	4
	Cohort C	45	45	25	41	7	7
Middle Rio Grande	Cohort A	13	13	10			2
	Cohort B	30	30	12	30	12	3
	Cohort C	12	12	8	1	1	2
South Texas	Cohort A	30	30	25			11
	Cohort B	56	56	37	56	5	4
	Cohort C	45	45	25	40	1	11
Upper Rio Grande	Cohort A	36	36	16			7
	Cohort B	10	10	5	10	5	3
	Cohort C	57	57		57	19	1

APPENDIX B. OUTCOME DEFINITIONS FOR IMPACT ANALYSIS

Completed training program

$$\frac{\text{(\# of participants who completed the occupational training)}}{\text{(total \# of participants)}}$$

Earned occupational training credential

$$\frac{\text{(\# of participants who successfully completed the occupational training)}}{\text{(total \# of participants)}}$$

Entered employment

$$\frac{\text{(\# of participants who are employed in Q1 after the exit quarter)}}{\text{(total \# of participants)}}$$

Employment retention

$$\frac{\text{(\# of participants who are employed in both Q2 and Q3 after the exit quarter)}}{\text{(\# of participants who are employed Q1 after the exit quarter)}}$$

Average earnings change in six months (wage gain)

$$\frac{\text{(Total post-program earnings (earnings in Q2 + Q3 after exit)) minus (pre-program earnings (earnings in Q2 + Q3 prior to registration))}}{\text{(\# of participants who are employed in Q1 after the exit quarter)}}$$

APPENDIX C. PROPENSITY SCORE MATCHING (PSM)

The Ray Marshall Center used the propensity score matching approach to account for differences on the observable characteristics between the treatment group and the comparison group pool. The aim of propensity score matching is to construct a balanced sample of treatment and comparison students who both participated in WIA services, but are distinct only in their participation in Project GROW. The PSCORE, PSMATCH2 and TEFFECTS modules in the Stata statistical software package were utilized (Garrido, Kelley et al. 2014).

Step 1: Propensity score estimation

First, a propensity score was constructed for each individual (in both the treatment group and the comparison group pool) that estimated the likelihood of participating in Project GROW, using all the observable characteristics. This was done by using the *pscore* procedure in Stata (Becker and Ichino 2002) to perform a probit regression of the treatment dummy variable on all available covariates that, in the evaluation team's judgment, had the potential to influence the chances of being treated.

Overlap in the range of propensity scores across the treatment and comparison groups, called "common support", was ensured. This is important because no inferences about treatment effects can be made for a treated individual for whom there is not a comparison individual with a similar propensity score. Common support was subjectively assessed by examining a graph of propensity scores across treatment and comparison groups.

Step 2: Matching

Next, individuals in the treatment group were matched to individuals from the comparison group pool, using the *psmatch2* procedure in Stata (Leuven and Sianesi 2014). Each treatment group individual can be matched to one or many comparison group individuals. When matching at the individual level, the first match is always best and will lead to the least biased estimates, but the decrease in bias from fewer matches needs to be weighed against the lower efficiency of the estimate that will occur with fewer

observations. A broader one-to-many match will increase sample size and efficiency but can also result in greater bias from matches that are not as close as the initial match (Caliendo and Kopeinig 2008). The evaluation team selected to use the single nearest-neighbor technique was used; this technique involves finding for each treated individual that non-treated individual with the most similar propensity score and so, the most similar characteristics.

Matching with replacement was also used, which allows each comparison group individual to be used as a match more than once; matching with replacement improves the performance of the match and produces matches of higher quality than matching without replacement by increasing the set of possible matches (Dehejia and Wahba 1998, Abadie and Imbens 2006). Matching with replacement is also less demanding of the data than permitting comparison group individuals to be used only once. “Essentially, it avoids the problem of the non-treatment group being ‘used up’. Should a certain type of individual be common in the treatment group but relatively uncommon in the comparator group, the pool of comparators able to provide a close match would become exhausted were non treatment group members used only once” (Bryson, Dorsett et al. 2002). Also, if two or more observations had the same propensity score and were thus tied for "nearest neighbor", all ties were used for the match; including all the ties provides a more precise estimator (Abadie, Drukker et al. 2004).

Next, the evaluation team assessed if balance in the observable characteristics had been achieved, using the *pstest* procedure in Stata. Propensity score matching can only lead to viable estimates of the causal effects of treatment, if the desired balancing of observable covariates is achieved. The evaluation team found that our approach was quite successful in achieving covariate balance. Table B-1 lists overall measures of covariate balance and Table B-2 lists individual measures of covariate balance for the propensity score model examining impacts on employment placement.

Table B-1 Overall Balance

Sample	Ps R^2	LR chi^2	p>chi^2	Mean Bias	Med Bias	B	R	%Var
Unmatched	0.292	819.82	0	46.8	32.2	163.9*	1.28	80
Matched	0.005	6	0.916	3.3	2.4	17.2	0.77	40

Table B-2 Covariate Balance

Observable Characteristics	Match Status	Mean		%bias	%reduct |bias|	t-test	
		Treated	Control			t	p>|t|
Age group: 22 to 35	Unmatched	0.52184	0.38086	28.6		5.62	0.000*
	Matched	0.51117	0.5062	1	96.5	0.14	0.888
Age group: 35 & older	Unmatched	0.22087	0.31342	-21		-3.91	0.000*
	Matched	0.22581	0.24566	-4.5	78.5	-0.66	0.507
Gender: Male	Unmatched	0.32282	0.5542	-47.9		-9.08	0.000*
	Matched	0.33002	0.37469	-9.3	80.7	-1.33	0.185
Race: White	Unmatched	0.8932	0.93121	-13.4		-2.86	0.004
	Matched	0.89826	0.86849	10.5	21.6	1.32	0.188
Number of years of education	Unmatched	109.59	150.85	-109.6		-18.95	0.000*
	Matched	110.29	111.26	-2.6	97.7	-0.39	0.696
Highest degree: High school diploma or GED or Higher	Unmatched	0.18689	0.77762	-146.5		-27.7	0.000*
	Matched	0.19107	0.19107	0	100	0	1
Average quarterly earnings over prior two years	Unmatched	1.30E+07	3.20E+07	-35.9		-5.73	0.000*
	Matched	1.30E+07	1.50E+07	-2.8	92.2	-0.65	0.517
Dollar amount of earnings dip (in quarterly earnings)	Unmatched	6.80E+06	1.10E+07	-9.9		-1.66	0.097
	Matched	6.90E+06	7.60E+06	-1.9	80.5	-0.35	0.73

Observable Characteristics	Match Status	Mean		%bias	%reduct |bias|	t-test	
		Treated	Control			t	p>|t|
Earnings dip as a percentage of prior income	Unmatched	0.34186	0.28913	12.5		2.45	0.014*
	Matched	0.33466	0.33396	0.2	98.7	0.02	0.982
Filed for unemployment within prior year	Unmatched	0.19175	0.30459	-26.3		-4.81	0.000*
	Matched	0.19603	0.20596	-2.3	91.2	-0.35	0.726
Receiving SNAP (Food Stamps) benefits at program entry	Unmatched	0.65049	0.41457	48.6		9.32	0.000*
	Matched	0.64268	0.64516	-0.5	98.9	-0.07	0.941
Percent of time enrolled in Medicaid in prior year	Unmatched	0.42312	0.17182	61.2		13.43	0.000*
	Matched	0.41219	0.43011	-4.4	92.9	-0.55	0.583

After matching, the measures indicate good covariate balance: (1) standardized bias[21] for all covariates is less than 5%, (2) t-tests for all covariates are non-significant, (3) the pseudo-R^2 is very low[22], (4) the likelihood-ratio test[23] is non-significant, (5) the mean and median absolute bias are less than 5%, (6) Rubin's B[24] is close to 0, and (7) Rubin's R[25] is close to 1. Figure B-2 shows the distribution of the standardized percentage bias across covariates using a histogram. Figure B-3 shows the standardized percentage bias for each covariate using a dot chart.

[21] The standardized bias is the % difference of the sample means in the treated and non-treated (full or matched) sub-samples as a percentage of the square root of the average of the sample variances in the treated and non-treated groups.

[22] The pseudo-R2 indicates how well the regressors X explain the participation probability.

[23] the likelihood-ratio test of the joint insignificance of all the regressors.

[24] Rubin's B is the standardized difference in mean of the linear prediction of the propensity score before and after matching.

[25] Rubin's R is the ratio of variance of the treated and comparison group for the linear prediction of the propensity score.

Figure B-2. Overall Covariate Balance

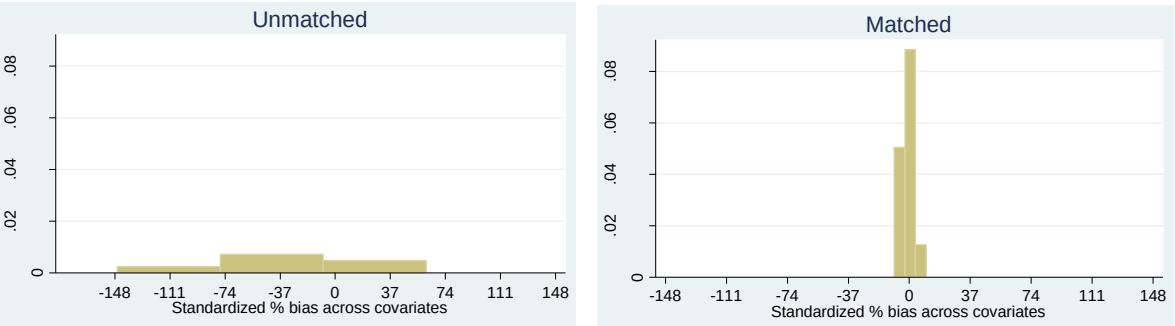
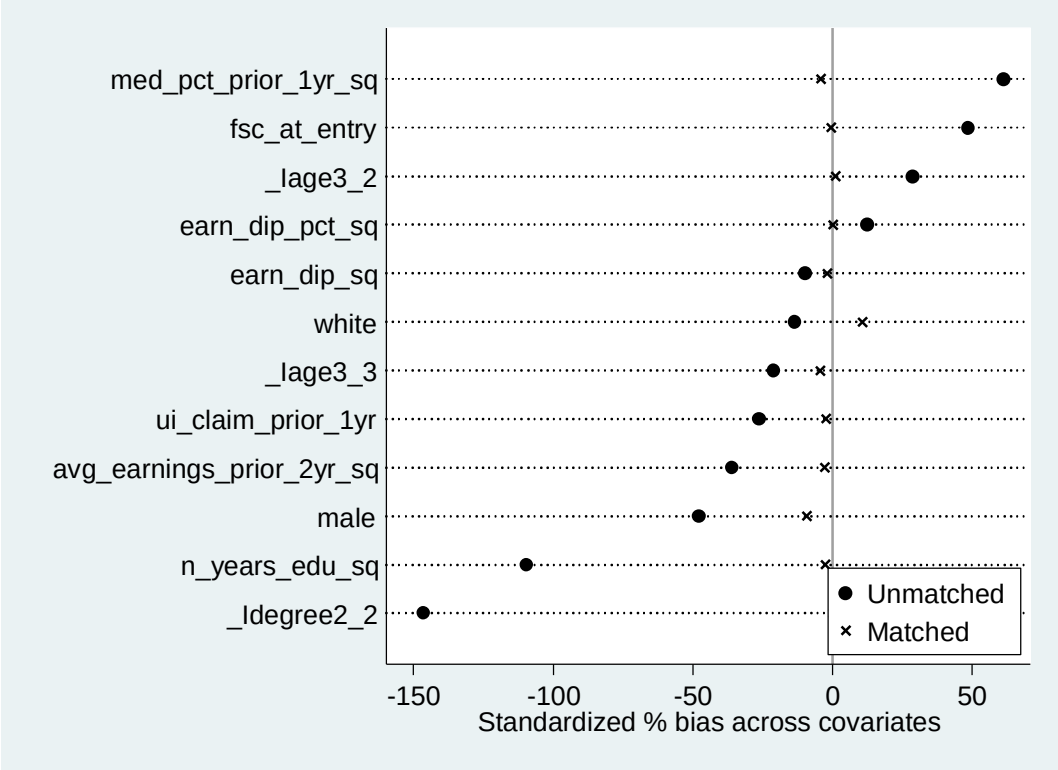


Figure B-3. Individual Covariate Balance



Thus, while the differences between the treatment group and the comparison group pool in observable characteristics were documented in Table 9 to be substantial in the unmatched sample, the evaluation team's matching approach (nearest neighbor matching with replacement) achieved satisfactory balance in all observable characteristics. The evaluation team can be quite confident that in the estimates of the causal impact of the Project GROW on outcomes, genuinely comparable students are being compared.

Step 3: Treatment effects estimation

Finally, the average treatment effect on the treated (ATT) is estimated, which is the average difference on an outcome of interest between the matched treated and untreated observations. The ATT is the average effect of the treatment on the sort of person who participates in the program. The effectiveness of PSM is, in part, a function of having enough relevant information about the cases to accurately estimate the propensity score, and thus accurately estimate the ATT using the matching process that uses this score. The *teffects psmatch* procedure in Stata (StataCorp) calculates the treatment effect along with the Abadie Imbens corrected standard error calculation (Abadie and Imbens 2012).

APPENDIX D. POWER ANALYSIS AND MINIMUM DETECTABLE EFFECT

Following the end of program implementation, the evaluation team conducted a power analysis to determine the minimum detectable effect (MDE) for each outcome of interest. MDE is defined as the smallest true impact that would usually be found to be statistically significantly different from zero with the specified level of significance and power. MDE is calculated using the method described by Bloom and represents a statistical power of .80, an alpha of .05, and a two-tailed test (Bloom 1995). The formula takes into account (a) the explanatory power (or R^2) of the impact regression, and (b) any loss of sample size due to lack of common support in PSM.

Table D-1. Minimum detectable effect, by outcome

Outcome	N	% of Participants	Minimum Detectable Effect (MDE)
Participants served	415	100%	
Participants completing funded program of study	347	84%	7%
Participants earning credentials	219	53%	7%
Participants placed in employment	232	56%	7%
Participants retained in employment	90	71%	13%
Participants who received a wage increase	85	67%	14%
Wage increase amounts	127		$2,049

REFERENCES

(2015). GED: Tougher Test. Less Success. Austin American Statesman.

Abadie, A., D. Drukker, J. L. Herr and G. W. Imbens (2004). "Implementing matching estimators for average treatment effects in Stata." Stata journal **4**: 290-311.

Abadie, A. and G. Imbens (2006). "Large sample properties of matching estimators for average treatment effects." Econometrica **74**(1): 235-267.

Abadie, A. and G. Imbens (2012). Matching on the estimated propensity score. Harvard University and National Bureau of Economic Research.

Becker, S. O. and A. Ichino (2002). "Estimation of average treatment effects based on propensity scores." Stata Journal **2**(4): 358-377.

Bloom, H. S. (1995). "Minimum detectable effects a simple way to report the statistical power of experimental designs." Evaluation review **19**(5): 547-556.

Bryson, A., R. Dorsett and S. Purdon (2002). "The use of propensity score matching in the evaluation of active labour market policies."

Caliendo, M. and S. Kopeinig (2008). "Some practical guidance for the implementation of propensity score matching." Journal of economic surveys **22**(1): 31-72.

Card, D., J. Kluve and A. Weber (2010). "Active labour market policy evaluations: A meta-analysis." The Economic Journal **120**(548): F452-F477.

Dehejia, R. H. and S. Wahba (1998). "Propensity score matching methods for non-experimental casual studies."

Dehejia, R. H. and S. Wahba (1999). "Causal effects in nonexperimental studies: Reevaluating the evaluation of training programs." Journal of the American statistical Association **94**(448): 1053-1062.

DOL, U. S. Common Measures Policy. ETA.

Friedlander, D., D. H. Greenberg and P. K. Robins (1997). "Evaluating government training programs for the economically disadvantaged." Journal of economic literature **35**(4): 1809-1855.

Friedlander, D. and P. K. Robins (1995). "Evaluating program evaluations: New evidence on commonly used nonexperimental methods." The American Economic Review: 923-937.

Garrido, M. M., A. S. Kelley, J. Paris, K. Roza, D. E. Meier, R. S. Morrison and M. D. Aldridge (2014). "Methods for constructing and assessing propensity scores." Health services research **49**(5): 1701-1720.

Greenberg, D. H., C. Michalopoulos and P. K. Robin (2006). "Do experimental and nonexperimental evaluations give different answers about the effectiveness of government-funded training programs?" Journal of Policy Analysis and Management **25**(3): 523-552.

Heckman, J., H. Ichimura, J. Smith and P. Todd (1998). Characterizing selection bias using experimental data, National bureau of economic research.

Khandker, S. R., G. B. Koolwal and H. A. Samad (2010). Handbook on impact evaluation: quantitative methods and practices, World Bank Publications.

King, C. T. and C. Heinrich (2011). "How effective are workforce development programs? Implications for US workforce policies." Unpublished paper.

Leuven, E. and B. Sianesi (2014). "PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing." Statistical Software Components.

O'Shea, D. P., Ashweeta; Prince, Heath (2016). Project Grow Final Implementation Analysis Report. Austin, TX, Ray Marshall Center for the Study of Human Resources.

Rosenbaum, P. R. and D. B. Rubin (1983). "The central role of the propensity score in observational studies for causal effects." Biometrika **70**(1): 41-55.

StataCorp "STATA Treatment-Effects Reference Manual."