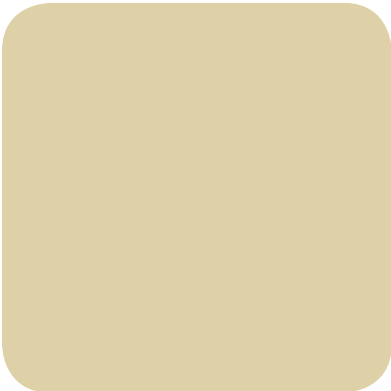
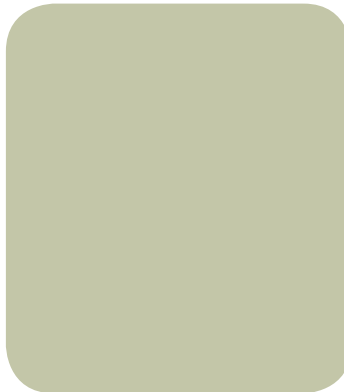


Valley Initiative for Development and Advancement: Implementation and Early Impact Report Appendices



Pathways for Advancing Careers and Education

OPRE Report No. 2017-83



October 2017



PACE
Pathways for Advancing
Careers and Education

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Pathways for Advancing Careers and Education (PACE)

OPRE Report No. 2017-83

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Technical Appendices

Four technical appendices provide additional detail on the data and methods in this report. Appendix A describes data collected at baseline, gives further detail on baseline characteristics of treatment and control group members, and explains procedures for using these data to adjust for imbalances arising by chance during random assignment. Appendix B describes college records data serving as the main source for measuring program impacts on educational progress. Appendix C provides detail on survey-based outcome measures, adjustments for item non-response, and analyses of survey non-response. Finally, Appendix D documents the research team's approach to outliers, or extreme values, in the analysis.

Appendix A: Baseline Characteristics and Adjustments

This appendix describes specifications for baseline covariates—including the approach to missing values in Section A.1. It then compares distributions for treatment and control group members on these measures (A.2). Finally, Section A.3 explains how the analyses control for these covariates in estimating impacts.

A.1 Details on Baseline Covariates

Exhibit A-1 details the specifications and data sources for baseline covariates. Item nonresponse rates on these covariates were generally low. Across all nine PACE sites, item nonresponse rates were under four percent except for parental college attendance (6.0 percent), typical high school grades (7.2 percent), family income (9.5 percent), and expected near-term future work hours (6.0 percent).

The team imputed values for missing covariates using SUDAAN/IMPUTE, a weighted hot-deck imputation procedure (Research Triangle Institute, 2012). This imputation step entailed a single computer run on the combined sample from all nine PACE sites. With this process, each missing value was replaced with an observed response from a similar case. Within specified strata, cases with missing values were random-matched to cases with reported values; the reported value was then copied over to the case where the value was missing. The strata represented a cross-classification of: treatment-control status, site, NSC-reported enrollment status (some or none),¹ NSC-reported credential award (some or none), and number of months of NSC-reported enrollment.²

¹ The National Student Clearinghouse (NSC) has information on monthly enrollment and many credentials for 96% of college students. <https://nscresearchcenter.org/workingwithourdata/>.

² In instances where this level of matching was too restrictive because no matched case with a reported value was found, the procedure was re-run matching only on treatment status and NSC-reported enrollment status.

Exhibit A-1. Operationalization of Baseline Measures Used as Covariates in Regression-Adjusted Impact Estimates

Variable Description	Operationalization Details	Data Source(s) Instrument & Item Number
Demographic Background		
Age	Categorical measure: Under 21 21-24 25-34 35+*	BIF: B2_dob RABIT: R_RA_Date_Assigned
Female	Binary variable 1 if female 0 if male	BIF: B7
Race-ethnicity	Categorical measure: Any race, Hispanic Black, non-Hispanic White, non-Hispanic* Other, non-Hispanic	BIF: B9
Family structure	Categorical measure: Spouse/partner, with children Spouse/partner, without children Single, with children* Single, without children (Only biological and adopted children of randomized participant considered here. Step children, grandchildren, younger siblings, and other children not considered.)	BIF: B13
Living with own parents	Binary variable 1 if living with own parent(s) 0 otherwise (Presence of parents of spouse not considered.)	BIF: B13
Educational Background		
Parent attended college	Binary variable: 1 if either parent attended college 0 otherwise	BIF: B21
Usual high school grades	Categorical measure: Mostly A's Mostly B's Mostly C's or below*	BIF: B23
Highest level of education completed	Categorical measure: No college* Under 1 year's college credit 1 year+ of college credit Associate's degree or above	BIF: B17
Career Knowledge		
Index (average of items)	Proportion of responses to seven questions about career orientation and knowledge to which respondent answered, "strongly agree." Missing if four or more of seven responses blank.	SAQ: S13

Variable Description	Operationalization Details	Data Source(s) Instrument & Item Number
Psycho-Social Indices		
Academic discipline ³	Average of ten items (scale ranging 1-6) after reversing responses to negatively-phrased items. Missing if seven or more of ten responses blank.	SAQ: S11a
Training commitment ⁴	Average of ten items (scale ranging 1-6) after reversing responses to negatively-phrased items. Missing if seven or more of ten responses blank.	SAQ: S11b
Academic confidence ⁵	Average of twelve items (scale ranging 1-6) after reversing responses to negatively-phrased items. Missing if nine or more of twelve responses blank.	SAQ: S11d
Emotional stability ⁶	Average of twelve items (scale ranging 1-6) after reversing responses to negatively-phrased items. Missing if nine or more of twelve responses blank.	SAQ: S11e
Resource Constraints (Financial)		
Family income in past 12 months	Categorical measure: Less than \$15,000 \$15,000-29,999 \$30,000+*	BIF: B27
Received food assistance (WIC/SNAP) in past 12 months	Binary variable: 1 if yes 0 if no	BIF: B26b
Received public assistance or welfare in past 12 months	Binary variable: 1 if yes 0 if no	BIF: B26c
Financial hardship in past 12 months	Binary variable: 1 if yes if ever missed rent/mortgage payment in prior 12 months or reported generally not having enough money left at the end of the month to make ends meet over the last 12 months, 0 otherwise	SAQ: S8, S9
Resource Constraints (Time)		
Current work hours	Categorical measure: 0-19* 20-34 35+	BIF: B24
Expected work hours in next few months	Categorical measure for covariate: 0-19* 20-34 35+	SAQ: S2

³ Modified version of the Academic Discipline scale in the Student Readiness Index (SRI), a proprietary product of ACT, Inc., Le, et al. (2005). Further validation in Peterson, et al., (2006).

⁴ Modified version of Commitment to College scale in the Student Readiness Index (SRI), a proprietary product of ACT, Inc., Le, et al. (2005). Further validation in Peterson, et al., (2006).

⁵ Modified version of the Academic Self-Confidence scale in the Student Readiness Index (SRI), a proprietary product of ACT, Inc., Le, et al. (2005). Further validation in Peterson, et al., (2006).

⁶ Modified version of the Emotional Control scale in the Student Readiness Index (SRI), a proprietary product of ACT, Inc., Le, et al. (2005). Further validation in Peterson, et al., (2006).

Variable Description	Operationalization Details	Data Source(s) Instrument & Item Number
Expecting to attend school part-time if accepted	Binary variable: 1 if yes 0 if no	SAQ: S1
Life Challenges		
Frequency of situations interfering with school, work, job search or family responsibilities	Average of six items of frequency of problems (scale ranging 1-5). Missing if four or more of six responses blank.	SAQ: S15
Stress ⁷	Average of four items (scale ranging 1-5) after reversing responses to negatively-phrased items. Missing if three or more of four responses blank.	SAQ: S14

Data source abbreviations: RABIT (Random Assignment and Baseline Information Tool), BIF (Basic Information Form), SAQ (Self-Administered Questionnaire). * = category omitted in creating binary (dummy) variables for regression-adjustment models.

A.2 Comparing Treatment and Control Groups at Baseline

Exhibit A-2 shows tests for similarity in characteristics of treatment and control group members at baseline. If the means in the two columns are similar, then it is said that “baseline balance” was achieved. The list expands somewhat on the characteristics in Chapter 2, Exhibit 2-2.

The last column contains p-values for tests of hypotheses that no systematic differences exist between the treatment and control groups. On average, one would expect that out of 28 tests three will fall outside a 90-percent confidence interval due to chance. In fact, the tests show exactly three statistically significant differences, which are marked in red. As described in the next section, regression adjustment helps to control for any effects such chance differences might have on the impact estimates.

⁷ Cohen, et al. (1983).

Exhibit A-2. Baseline Balance for VIDA

Characteristic	All Participants	Treatment Group	Control Group	p-Value
Age (%)				.222
20 or under	14.1	12.3	15.8	
21 to 24	22.9	24.3	21.5	
25 to 34	40.6	39.3	41.9	
35 or older	22.4	24.1	20.8	
Female (%)	70.9	69.7	72.1	.410
Race/Ethnicity (%)				.235
Any race, Hispanic	95.8	95.6	96.0	
Black, Non-Hispanic	0.9	0.4	1.3	
White, Non-Hispanic	3.0	3.6	2.4	
Other, Non-Hispanic	0.1	0.2	0.0	
Family Structure (%)				.018
Not Living with Spouse/Partner and not Living with Children	42.2	40.6	43.9	
Not Living with Spouse/Partner but Living with Children	28.2	30.7	25.6	
Living with Spouse/Partner and not Living with Children	15.8	13.0	18.6	
Living with Spouse/Partner and Children	13.8	15.8	11.9	
Living with Parents (%)	33.2	32.8	33.7	.765
One Parent Has at Least some College (%)	26.3	27.3	25.3	.497
High School Grades (%)				.815
Mostly Got A's	19.3	20.1	18.5	
Mostly Got B's	65.7	64.9	66.5	
Mostly got C's or Below	15.0	15.0	15.0	
Current Education (%)				.038
Less Than a High School Degree	0.7	0.2	1.3	
High School or Equivalent	26.1	23.0	29.2	
Less Than 1 Year of College	15.8	17.0	14.6	
1 or More Years of College	52.7	55.7	49.7	
Associates Degree or Higher	4.7	4.2	5.3	
Received Vocational or Technical Certificate or Diploma (%)	31.4	31.1	31.6	.892
Career Knowledge Index (mean)	0.61	0.61	0.61	.962
Psycho-Social Indices (means)	5.52	5.50	5.54	.320
Academic Discipline Index	5.77	5.76	5.79	.240
Training Commitment Index	5.03	5.02	5.05	.586
Academic Self-Confidence Index	5.23	5.21	5.25	.340
Emotional Stability Index	3.30	3.29	3.32	.256
Social Support Index	2.20	2.21	2.19	.711
Stress Index	1.54	1.57	1.52	.109
Depression Index	5.52	5.50	5.54	.320
Family Income (%)				.238
Less than \$15,000	50.9	49.6	52.3	
\$15,000-\$29,999	36.5	39.0	34.0	
\$30,000 or More	12.6	11.5	13.8	
Family Income (mean)	\$16,376	\$16,277	\$16,474	.813

Characteristic	All Participants	Treatment Group	Control Group	p-Value
Public Assistance/Hardship Past 12 Months				
Received WIC or SNAP (%)	67.6	66.5	68.8	.442
Received Public Assistance or Welfare (%)	5.5	6.0	5.0	.501
Reported Financial Hardship (%)	67.2	66.5	67.9	.630
Current Work Hours (%)				.017
0	64.9	62.8	67.0	
1 to 19	11.8	10.9	12.8	
20 to 34	14.8	18.4	11.1	
35 or more	8.5	7.9	9.1	
Expected Work Hours in Next Few Months (%)				0.321
0	55.3	53.7	56.8	
1 to 19	12.6	11.5	13.6	
20 to 34	21.0	23.3	18.8	
35 or more	11.2	11.5	10.8	
Life Challenges Index (mean)	1.62	1.63	1.61	.648
Owns a Car (%)	67.9	67.7	68.1	.893
Has both Computer and Internet at Home (%)	58.3	59.6	57.1	.436
Ever arrested (%)	17.9	19.5	16.2	.187
Sample size	958	478	480	

SOURCE: Abt Associates calculations based on data from PACE Basic Information Form (BIF) and Self-Administered Questionnaire (SAQ).

NOTES: Tests for statistically significant imbalance were based on SAS/FREQ procedure for categorical outcomes and on the SAS/TTEST procedure for other outcomes.

A.3 Regression Adjustment

In this appendix, the team describes the regression adjustment approach used to improve precision and minimize effects of sampling error on impact point estimates.

Equation A.1 below shows the conventional regression-adjustment model:

$$Y_i = X_i\beta + \delta T_i + e_i, \quad (\text{A.1})$$

where Y_i is the outcome, X_i is a row vector of baseline covariates, β is the vector of parameters indicating the influence of each covariate on the outcome, δ is the effect of treatment, T_i is a 0/1 dummy variable indicating treatment group membership, and e_i is an error term. This method is known as ordinary least squares (OLS) and has excellent properties when the sample size is many times larger than the number of covariates (Lin, 2013) even when the outcomes are not normally distributed (Judkins and Porter, 2016). Estimates of the treatment effect are “asymptotically unbiased” and for adequately large sample sizes, under most conditions, $\text{var}(\hat{\delta}) \approx (1 - R^2)\text{var}(\bar{y}_t - \bar{y}_c)$, where R^2 is proportion of the variance in Y_i that can be explained by X_i , in Equation A.2 below.

The team’s analyses showed that the method can perform poorly when the number of baseline covariates is relatively large compared to the number of observations. Specifically, when the ratio n/p is not very large, it can happen that $var(\hat{\delta}) > var(\bar{y}_T - \bar{y}_C)$, meaning that the variance on the estimated treatment effect using the regression adjustment in Equation A.1 is actually larger than the variance of the simpler randomization-based estimate of the treatment effect, formed by simply contrasting the mean outcomes in the two groups. Unpublished simulations show that the variance penalty increases as the ratio of non-significant to significant covariates grows.⁸ There is a lack of good research on how large the ratio of cases to variables needs to be in order to guarantee that $var(\hat{\delta}) < var(\bar{y}_T - \bar{y}_C)$, but it appears that values of n/p less than 30 may be problematic. Eight of nine of the PACE sites have values of n/p in this potentially problematic range even after trimming the number of baseline predictors to 34 through the examination of their ability to explain measures derived from the National Student Clearinghouse about educational participation, persistence, and attainment (Fein, 2016).

Based on this research, the team applied a slightly different approach to estimation for this report. The approach involved first estimating the influences of the baseline characteristics on the outcome under the control condition (Equation A.2 below). The next step was to calculate how different each program and control group member’s outcome was from what would have been expected under control conditions, as in Equation A.3. These differences between actual and predicted outcomes are called “residuals.” The team then calculated the difference between average residual in the program group and the average residual in the control group, as in Equation A.4. Equation A.5 gives the formula used to estimate standard errors on these impact estimates.

$$Y_i = X_i \beta + e_i, \quad (A.2)$$

$$\hat{r}_i = Y_i - X_i \hat{\beta}, \quad (A.3)$$

$$\hat{\delta} = \hat{\mu}_T - \hat{\mu}_C = \frac{\sum_i T_i \hat{r}_i}{\sum_i T_i} - \frac{\sum_i (1-T_i) \hat{r}_i}{\sum_i (1-T_i)}, \quad (A.4)$$

⁸ For example, with a sample size of 1,000, when there are three covariates that explain 57 percent of the variation in the outcome and 97 covariates are uncorrelated with the outcome—and thus explain none of its variation—the standard error of the estimated impact is 11 percent higher with OLS than with Koch’s method (Austin Nichols, Abt Associates, unpublished simulations, 2016). The standard error for each method was estimated by taking the standard deviation of the impact estimates across the simulated samples.

$$se(\hat{\delta}) \sqrt{\frac{\sum_i T_i (\hat{r}_i - \hat{\mu}_T)^2}{\sum_i T_i - 1} + \frac{\sum_i (1 - T_i) (\hat{r}_i - \hat{\mu}_C)^2}{\sum_i (1 - T_i) - 1}}, \quad (A.5)$$

For survey-based outcomes subject to nonresponse, the team used a weighted version of this estimator (see Equation A.6).

$$\hat{\delta} = \frac{\sum_i w_i T_i \hat{r}_i}{\sum_i w_i T_i} - \frac{\sum_i w_i (1 - T_i) \hat{r}_i}{\sum_i w_i (1 - T_i)}, \quad (A.6)$$

where w_i is the nonresponse-adjustment weight for survey-reported outcomes.

This method is similar to the method developed by Koch, et al. (1998), who referred to it as nonparametric ANCOVA. Since then, most authors have referred to it as Koch's estimator. The difference between Koch's estimator and the method applied in this report is that Koch and co-authors fit Equation A.2 on the entire sample rather than just the control sample. The main advantage of fitting A.2 just on the control sample is that the parameters are more easily interpretable when the null hypothesis is rejected. A secondary advantage is that, as Lesaffre and Senn (2003) demonstrated, Koch's estimator can produce overly-liberal significance tests, meaning that the null hypothesis of no program effect is rejected too often. This occurs because the estimated standard errors on the estimated treatment effect using Koch's method are too small. Our goal in fitting Equation A.2 to the control sample instead of the entire sample was to correct for the Koch method's tendency to underestimate the standard error while still producing more precise impact estimates than OLS.

Analysis confirmed that use of the modified Koch's estimator slightly increased precision relative to both pure randomization and OLS (eq. A.1). The variance on the estimate of the impact of the program on the confirmatory outcome (credits earned through month 24) was 8.9 percent smaller with the modified Koch's estimator than it would have been with the OLS approach, and across a collection of primary and secondary outcomes, the average variance reduction due to using the modified Koch's estimator instead of the OLS estimator was 1.9 percent.

Exhibit A-3 shows the regression coefficients from Equation A.2 for the confirmatory outcome, total number of credits through 24 months. These covariates were selected based on a pooled analysis across all nine PACE sites of factors that predict various measures of success reported to the National Student Clearinghouse. The team omitted covariates about ethnicity and race from models for VIDA because almost all of the students were Hispanic. Note that of the 31 baseline covariates allowed into the model, seven of these (highlighted in red) are significantly predictive of future credits for the control group sample. Specifically, living with one's parents, the stress index, full-time employment at baseline, and plans to only attend school part-time are negatively associated with future credits, while being younger and having one year of college experience at baseline are positively associated with future credits.

The team considered the alternative of OLS with a winnowed set of effectual covariates for each outcome at each PACE site but rejected doing so in favor of the greater transparency and convenience of using a common set of covariates for every outcome across the overall project.

Exhibit A-4 shows impacts on selected confirmatory and secondary outcomes before and after regression adjustment. The two sets of estimates are very similar, with adjusted estimates tending to be smaller than the unadjusted ones.

Exhibit A-3. Coefficients for Baseline Characteristics as Predictors of Credits Received at Six South Texas Colleges through 24 Months: VIDA Control Group Members

Baseline Covariate	Estimate	Standard Error	p-Value
Intercept	27.3	14.2	.055
Age			
20 or under	9.0	3.1	.004
21 to 24	5.6	2.7	.038
25 to 34	3.1	2.4	.190
35 or older (omitted)			
Sex			
Female	-2.4	2.1	.260
Male (omitted)			
Family Structure			
Not Living with Spouse/Partner and not Living with Children	-0.3	3.0	.911
Not Living with Spouse/Partner but Living with Children	-4.1	2.5	.105
Living with Spouse/Partner and not Living with Children (omitted)			
Living with Spouse/Partner and Children	-1.7	2.3	.466
Living with Parents	-3.5	2.1	.090
One Parent Has at Least some College	1.1	1.8	.564
High School Grades			
Mostly Got A's	3.9	2.9	.183
Mostly Got B's	3.9	2.5	.123
Mostly got C's or Below (omitted)			
Current Education			
High School Degree or Less (omitted)			
Less Than 1 Year of College	4.6	3.1	.139
1 or More Years of College	12.5	2.1	<0.001
Associates Degree or Higher	2.2	3.3	.509
Career Knowledge Index	-0.9	2.3	.683
Family Income			
Less than \$15,000	-3.8	2.8	.180
\$15,000-\$29,999	-4.3	2.9	.137
\$30,000 or More (omitted)			
Psycho-Social Indices			
Academic Discipline Index	0.4	2.5	.869
Training Commitment Index	-1.8	2.6	.502
Academic Self-Confidence Index	0.0	1.4	.976
Emotional Stability Index	2.0	1.7	.240
Stress Index	-3.9	1.3	.003
Life Challenges Index	2.8	1.9	.131
Public Assistance/Hardship Past 12 Months			
Received WIC or SNAP	-3.0	1.9	.124
Received Public Assistance or Welfare	-5.8	4.1	.161
Reported Financial Hardship	-1.8	1.8	.319
Current Work Hours			
0 to 19 (omitted)			
20 to 34	0.9	2.9	.769

Baseline Covariate	Estimate	Standard Error	p-Value
35 or more	2.2	2.9	0.444
Expected Work Hours in Next Few Months			
0 to 19 (omitted)			
20 to 34	1.6	2.5	.514
35 or more	-6.0	2.8	.033
Plan to attend school only part-time if admitted to VIDA	-11.2	3.0	<0.001

SOURCE: Abt Associates calculations based on data from on data from records at the University of Texas—Brownsville, the University of Texas— Pan-American, the University of Texas—Rio Grande Valley, South Texas College, Texas State Technical College, and Texas Southmost College; the PACE Basic Information Form (BIF); and the PACE Self-Administered Questionnaire (SAQ).

NOTES: NA stands for not applicable. Model estimated with SAS/SURVEYREG procedure. Sample size=480.

Exhibit A-4. Comparison of Selected Impact Estimates With and Without Adjustment for Baseline Imbalances

Outcome	Unadjusted Est (StdErr)	Adjusted Est (StdErr)
College credits Earned through Month:		
6	1.908*** (0.487)	1.601*** (0.465)
12	4.161*** (0.780)	3.319*** (0.723)
18	5.686*** (1.1017)	4.819*** (0.955)
24	6.56*** (1.20)	5.58*** (1.14)
Proportion enrolled in college during months:		
1-6	0.1132*** (0.0314)	0.0960*** (0.0301)
7-12	0.1210*** (0.0320)	0.1102*** (0.0315)
13-18	0.0554** (0.0287)	0.0690*** (0.0288)
19-24	0.0509** (.0252)	0.0460** (0.256)
1-24	0.1199*** (0.0292)	0.1089*** (0.0281)
Number of months of full-time enrollment over 24 months	1.440*** (0.370)	1.281*** (0.364)
Number of months of part- or full-time enrollment over 24 months	2.511*** (0.488)	2.241*** (0.463)
Proportion earning the following credential from a college:		
Level 1 certificate	0.0214 (0.0208)	0.0151 (0.0201)
Level 2 certificate	0.0361* (0.0228)	0.0321* (0.0214)
Level 1 or 2 certificate	0.0595** (0.283)	0.0492** (0.0281)
Associate's Degree	0.0449* (0.0208)	0.0318 (0.0266)
Bachelor's Degree	0.0022 (0.0095)	0.0057 (0.0092)
Any degree	0.0471 (0.0288)	0.0375* (0.0267)
Any certificate or degree	0.1044*** (0.0322)	0.0834*** (0.0298)
Enrolled in any summer schools within 24 months	0.1823*** (0.0302)	0.1670*** (0.0290)
Sample Sizes (across treatment and control groups)	958	958

SOURCE: Abt Associates calculations based on data from the administrative records at the University of Texas—Brownsville, the University of Texas—Pan-American, the University of Texas—Rio Grande Valley, South Texas College, Texas State Technical College, and Texas Southmost College and response status to the PACE short-term follow-up survey.

NOTES: Standard errors on estimated impacts are shown in parentheses. Adjusted impact estimates and associated standard errors were prepared with the modified Koch's estimator, as defined Equations (A.4) and (A.5). Statistical significance levels, based on one-tailed t-tests tests of differences between research groups, are summarized as follows: *** statistically significant at the one percent level; ** at the five percent level; * at the ten percent level. Sample size=958.

Appendix B: College Records Data

The evaluation team used records from colleges in the area served by VIDA to measure college outcomes in the study. Such administrative data offer strong advantages over survey data—notably in avoiding loss of sample to non-response and any effects on data quality from survey response errors. The colleges that are active in the area are the University of Texas—Rio Grande Valley,⁹ South Texas College, Texas State Technical College, and Texas Southmost College. They all cooperated with the VIDA evaluation.

The main question was whether data from this collection of local colleges could support sufficiently broad measures of college enrollment given that some sample members also attended other colleges. To assess the extent of enrollment at other colleges, the team matched the sample to college records maintained in the National Student Clearinghouse. Covering 96 percent of college enrollments nationwide, the NSC data provide an excellent frame for these purposes.¹⁰ As shown in Exhibit B-1, nearly all sample members enrolling in college (over the period from randomization to November of 2015) only enrolled at one of the colleges cooperating with the evaluation. Given this high level of coverage, the team deemed local records sufficient for the analysis.

Exhibit B-1. National Student Clearinghouse (NSC)-Reported Enrollment at Cooperating South Texas Colleges and Other Colleges by Study Group for the VIDA Evaluation Sample

Group	Enrollment Documented in National Student Clearinghouse (NSC)				
	Enrolled at Cooperating Colleges			Enrolled only at Other Colleges (%)	Total Ever Enrolled (%)
	At Host College (%)	Only at a Cooperating College (%)	At a Cooperating College and at Other Colleges (%)		
Treatment	99.8	98.9	0.9	0.2	100.0
Control	100.0	98.3	1.7	0.0	100.0

SOURCE: Abt Associates calculations based on data from the National Student Clearinghouse.

NOTE: NSC data cover the period from randomization (for the person) to November of 2015, a period that varies in length from 23 months to 48 months, depending on how early the student was randomized. Cooperating colleges included University of Texas—Brownsville, the University of Texas—Pan-American, the University of Texas—Rio Grande Valley, South Texas College, Texas State Technical College, and Texas Southmost College.

⁹ This college was formed by the merger of University of Texas—Brownsville and the University of Texas—Pan American in 2015. The research team was able to acquire records from the predecessors through the new university.

¹⁰ NSC's coverage evaluation shows that coverage of for-profit colleges can be relatively low, but there are no for-profit colleges with local campuses in this area of Texas.

Appendix C: Survey Data Recoding and Adjustments

This appendix documents key technical detail for impact estimates for outcomes based on 18-month follow-up survey data. Section C.1 documents coding for scales based on follow-up survey data. Section C.2 describes the imputation process for some missing survey data elements. Section C.3 analyzes survey nonresponse and documents the decision to apply nonresponse weights in the impact analysis.

C.1 Measures Based on Follow-up Survey Data

Exhibit C-1 provides details on specifications for the process outcomes analyzed in the Implementation Analysis of Chapter 4. Chapter 5, Exhibit 5-1 provided descriptions of outcomes in the impact analysis of VIDA. Exhibit C-2 provides details on the operationalization of each measure and the underlying survey questions.¹¹

¹¹ This table applies to all nine PACE sites. For the evaluation of VIDA, the team substituted parallel outcomes based on administrative data wherever possible. For some variables like receipt of a credential from any source, that meant combining administrative and survey data. For these hybrid recodes, the sample size is just the survey respondent sample size.

Exhibit C-1. Details on Specifications for Survey-Based Outcomes Presented in Chapter 4

Outcome	Details on Derivation of Outcome	Follow-Up Survey Question(s)
Receipt of Education or Training		
Entire Study Sample		
Received education or training since random assignment		
In any subject/field	Two question format with slightly different wordings to try to get all training spells reported.	A1, A1a
In a healthcare occupation	Open-ended responses about name of target occupation and understanding of future duties were coded by staff from the U.S. Census Bureau into Standard Occupation Classification (SOC) codes. Those in programs designed to train them for jobs as health care practitioners/technicians (SOC 29-xxxx) or health care support workers (SOC 31-xxxx) were counted for this outcome. This does not include office workers in the health care industry or personal care aides in nursing homes.	A19a, A20, A21, A27a, A27c, A27d
Since random assignment, ever attended	The team looked up place names reported in A4 in IPEDS and used the IPEDS classification to edit self-reports in A5. Private for-profit colleges were not counted as proprietary schools. Only places not classified as degree-granting in IPEDS and that are privately run for profit were classified as proprietary schools.	A4, A5
Two-year college	Community or technical college (2 year college).	
Four-year college	4 year college/university.	
Proprietary school	Private school/company that provides training.	
Adult high school/education	Adult education / adult high school / community school / night school.	
Community/non-profit organization		
Other	State unemployment/employment office, One-stop career center, your place of employment, or somewhere else.	
Of Those Who Attended Any Education or Training		
<i>Time spent at school and work at first place attended</i>	Question was asked about each place attended since randomization, but only information on first place was analyzed. Enrollment dates were used to determine first place attended since randomization.	A7
<i>Full-time school and full-time work</i>		
<i>Full-time school with no or part-time work</i>		
<i>Part-time school and full-time work</i>		
<i>Part-time school with no or part-time work</i>		
<i>Views of classes at first place attended</i>	Questions about career relevance and learning methods were only asked about first place attended. This was done to reduce respondent burden. First place was chosen rather than last place because PACE programs put particularly emphasis on innovative teaching methods for basic education classes, which would typically be the first classes taken.	

Outcome	Details on Derivation of Outcome	Follow-Up Survey Question(s)
<i>Strongly agrees relevant to life/career</i>	Strongly agrees that, "These classes were relevant to my career interests," or strongly disagrees that, "These classes did not relate to much of anything else in my life."	A46c, A46d
<i>Used active learning methods most/all of the time</i>	Responses to 6-item battery were reverse scaled (1=none of the time, 4=all the time) and then averaged. Anyone with an average of 2.5 or larger was counted. Cronbach alpha coefficient=0.69.	A47a-A47f
<i>Perceived strong emphasis on community</i>	People who responded "a great deal" were counted.	A37
Basic Skills Instruction and Tests		
Received basic skills instruction since random assignment		
Academic skills		A10b
English as a Second Language		A10a
Took college placement exam		
English		A57
Math		A58
Passed college placement exam		
English		A57a
Math		A58a
Life Skills Instruction		
Received life skills instruction since random assignment		A10e
Receipt of Various Supports		
Received assistance from any organization since random assignment (%)	This was asked of everyone, even those with no training since randomization.	A62
Career counseling		
Help arranging supports for school/work/family		
Job search or placement		
Cited financial support as challenge in enrollment or persistence	Reported money troubles as reason for not continuing studies, not currently studying, or never starting studies; or reported that it was very or somewhat difficult to obtain adequate financial support to continue their studies.	A11a, A14a, A23a, A26a, A35, A59, A60
<i>Received supports at first place of instruction attended (%)</i>	Question was asked about first and second places attended since randomization, but only information on first place was analyzed. Enrollment dates were used to determine first place attended since randomization.	
<i>Career counseling</i>		A36d
<i>Ever</i>		
<i>Three or more times</i>		
<i>Academic advising</i>		A36a
<i>Ever</i>		
<i>Three or more times</i>		
<i>Financial advising</i>		A36b
<i>Ever</i>		

Outcome	Details on Derivation of Outcome	Follow-Up Survey Question(s)
Three or more times Tutoring Ever Three or more times Help arranging supports for school or work Ever Three or more times Job search/placement assistance Ever Three or more times		A36d A36f A36e
Received financial assistance at first place of instruction (%)	Question was asked about each place attended since randomization, but only information on first place was analyzed. Enrollment dates were used to determine first place attended since randomization.	
Grants/scholarship	A Pell grant or other government grant or scholarship—not counting loans you have to pay back. Must indicate in A31 that funds were used with for tuition, other school related expense, or living expenses.	A30g, A31
Loan	Loans in your own name or loans in your parents' names. Must indicate in A31 that funds were used with for tuition, other school related expense, or living expenses.	A30e, A30f
Offered opportunities for related work experience as part of training at first place of instruction (%)	Question was asked about each place attended since randomization, but only information on first place was analyzed. Enrollment dates were used to determine first place attended since randomization.	
Clinical internship		A38b
Visits to local employer		A38c
Work-study job		A38a
Apprenticeship		A38e
Any related work experience (including other)		A38f

Exhibit C-2. Details on Specifications for Survey-Based Outcomes in Chapter 5

Outcome	Details on Derivation of Outcome	Follow-Up Survey Question(s)
Confirmatory and Secondary		
Education		
Hours of occupational training at colleges ^a	1) Students receiving noncredit occupational training were asked for duration of training (e.g., weeks) and intensity (e.g., hours per week). These were multiplied together to obtain hours of occupational training. 2) If students reported earning regular college credits at colleges, the evaluation team translated credits for hours using a rule of 15 hours of training time per credit. (Typical 3-credit college classes at most U.S. colleges and universities meet three hours per week for 15 weeks, so each credit represents 15 hours of class time.) 3) If a student reported receiving both noncredit and credit training at a college, the team summed the hours from both.	A24, A28, A29
Hours of occupational training at places other than colleges	Same as at colleges.	A24, A28, A29
Hours of occupational training at any place	Sum of prior two outcomes.	A24, A28, A29
Credential receipt from colleges ^a	The survey had separate questions about credentials awarded for regular for-credit classes and for noncredit occupational classes. If the respondent indicated receiving either type of credential, then this variable was coded as 1 (for yes); otherwise, it was coded as 0 (for no). The survey did not ask for credentials awarded as a result of ESL, ABE, or life-skills classes.	A22, A23, A27e, A27f
Credential receipt from another type of education-training institution	Same as at colleges.	A22, A23, A27e, A27f
Credential receipt from a licensing/certification body	The survey asked about the highest level of occupation training completed. One of the possible answers was “a professional, state or industry certification, license or credential.” If the respondent picked this level, then there was a follow-up question about the year of award. If the year of award was the same as the year of randomization or later, then the person was coded as having earned such a credential.	A56
Received a credential from any source ^b	See cells above for receipt of credentials from colleges, for other education training institutions, and from licensing/certification bodies. If a student had obtained any of these, he or she was classified as having received a credential.	A22, A23, A27e, A27f, A56
Career Progress		
Employment and earning \$12 or per hour	Analyzed response to survey question for control group. Selected the threshold because it was close to the 60 th percentile of hourly wages among employed control group members. This percentile was picked as being a reasonable goal for programs being evaluated as part of PACE.	E2

Outcome	Details on Derivation of Outcome	Follow-Up Survey Question(s)
Employment in job requiring mid-level skills	Three open-ended questions about the kind of work done, the usual activities completed, and the job title were coded into one of the Department of Labor Standard Occupational Classification (SOC) codes. The team then looked up the Job Zone ¹² for each SOC code in the BLS O*NET system. ¹³ There are five Job Zones. A Job Zone is a group of occupations that are similar in education needed to do the work, related experience needed to do the work, and amount of on-the-job training needed to do the work. Job Zone of 3—occupations that need medium preparation—seemed a reasonable goal for graduates of VIDA. This Job Zone is described in the O*NET system documentation as, “Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. A recognized apprenticeship program may be associated with these occupations.”	E3, E4, E5
Working in a healthcare occupation	Three open-ended questions about the kind of work, usual activities, and job title were coded into one of the SOC codes. If the first two digits of the SOC were 29 (Healthcare Practitioners and Technical Occupations) or 31 (Healthcare Support Occupations), then the respondent was considered working in a healthcare occupation. Note, being employed in a healthcare occupation is usually associated with employment in the healthcare industry, but this is not always true. The survey did not ask about industry of employer.	E3, E4, E5
Perceived career progress	This was a new scale created for PACE. It is a 3-item scale of self-assessed career progress; response categories range from 1=‘strongly disagree’ to 4=‘strongly agree’. It was designed specifically to measure an individual’s sense of progress a career pathways program as described in Fein (2012). Cronbach alpha coefficient=0.74.	C5, C6
Confidence in career knowledge	This seven-item scale was based on a review of six survey instruments, as well as literature. The first two scale items (a-b) were adapted from the Career Decision Self-Efficacy-Short Form (Betz and Taylor, 2001). Items d-f were adapted from Career Exploration Survey. Two items (c and g) were new and written specifically for the PACE BIF. Response categories ranged from 1=‘strongly disagree’ to 4=‘strongly agree’. Cronbach alpha coefficient=0.73.	C3
Access to career supports	This was a new scale created for PACE. It is a 6-item scale, counting number of types of career-supportive relationships in workforce and education settings, ranging from 0 to 6 possible types. The motivation for creating this scale was the theory richer social networks are one of the benefits of higher education (e.g., Goldrick-Rab and Sorenson, 2010).	C1
Exploratory		
Psycho-Social Skills		
Grit	Existing scale from Duckworth, et al. (2007). The 8-item scale captures persistence and determination. Response categories ranged from 1 (strongly disagree) to 4 (strongly agree). Cronbach alpha coefficient=0.55.	B3
Academic self-confidence	Existing scale from Le, et al. (2005). This scale was used for a second time in the follow-up survey. It was used initially in the BIF. The 12-item scale includes response categories that range from 1=‘strongly disagree’ to 6=‘strongly agree’. Cronbach alpha coefficient=0.73.	B4

¹² See <https://www.onetonline.org/help/online/zones> [last accessed September 12, 2016].

¹³ See <https://www.onetonline.org/> [last accessed September 12, 2016].

Outcome	Details on Derivation of Outcome	Follow-Up Survey Question(s)
Core self-evaluation	Existing scale from Judge (2009). The 12- item scale response categories ranged from 1='strongly disagree' to 4='strongly agree'. Cronbach alpha coefficient=0.76.	B6
Social belonging in school	Shorter version of an existing scale by Walton and Cohen (2007 and 2011). The 5-item scale captured sense of belonging; response categories ranged from 1='strongly disagree' to 4='strongly agree'. Cronbach alpha coefficient=0.53.	B7
Life Stressors		
Financial hardship	This was a new scale created for PACE. This scale was used for a second time in the follow-up survey. It was used initially in in the BIF. The two-item scale asked about financial hardship, reported as either an inability to pay rent/mortgage or not enough money to make ends meet. Response categories were 0='no' or 1='yes'.	D1, D2
Life challenges	This was a new scale created for PACE. It was adapted from a longer instrument by Kessler, et al. (1998). This scale was used for a second time in the follow-up survey. It was used initially in in the BIF. The 7- item scale captured life challenges that interfered with school, work, or family responsibilities. The response categories ranged from 1='never' to 5='very often'.	D3
Perceived stress	Existing scale from Cohen et al. (1983). This scale was used for a second time in the follow-up survey. It was used initially in in the BIF. The 4-item scale captured perceived stress. The response categories ranged from 1='never' to 4='very often'. Cronbach alpha coefficient=0.50.	D4

^a Not used in the evaluation of VIDA. Administrative data used instead.

^b Hybrid of survey and administrative data used in the evaluation of VIDA.

C.2 Imputation of Item Nonresponse in the Follow-up Survey

This section documents the research team’s response to two sources of missing data affecting survey outcomes. First, initial data quality assessment revealed that a small fraction of respondents who initially indicated receiving some education and training did not answer subsequent questions on the nature of these experiences. Second, all outcomes were affected by at least some missing data where respondents either declined to answer a question or gave an answer of “don’t know.”

Concerning the first issue, checks against two independent data sources—the Health Profession Opportunity Grant Performance Reporting System and National Student Clearinghouse—confirmed education and training receipt and suggested misunderstanding survey questions as a likely source of the missing data. Across all nine PACE sites, the discrepancy affected fewer than 10 percent of respondents and occurred at similar rates for treatment (nine percent) and control (seven percent) group members. Specifically, the missing data involved responses to a filter question (A10) ascertaining participation in each of a series of types of education and training activities (ESL, adult basic education, classes for college credit, noncredit occupational training, life skills classes). For VIDA, the discrepancy affected nine and 11 percent of treatment and control cases, respectively.

To adjust for these missing data, the team imputed new responses for A10 using a nearest neighbor hot deck procedure (Andridge and Little, 2010).¹⁴ The hot deck involves “binning” and sorting. Within a bin, the procedure matches each case that is missing an outcome to the “nearest” complete case with respect to the sort.¹⁵ This hot deck imputation procedure matched spells with consistent responses to A10 (*consistent spells*) to spells with inconsistent responses to A10 (*inconsistent spells*). The team used site and treatment status to define the bins and the modeled propensity of a spell being consistent to define the sorting variable. To model the propensity that a spell would be consistent, the team searched a large potential set of predictor variables from baseline variables and from sections of the follow-up survey for which A10 was not a filter question. The team included interactions as well as main effects. The team conducted this search and fit the final model on a pooled dataset including observations from other PACE sites to boost power. The final imputation model used 24 variables and interactions from the survey.

In the course of imputing A10, the team kept track of the ID of the consistent spell that was matched to each inconsistent spell. After imputation of A10 was complete, the team then filled

¹⁴ If A10e was answered “no” or was not answered, then items A49-A51 were skipped. The team decided not to impute values for these items in the cases where A10e was imputed to have a value of “yes,” as A49-A51 do not provide important outcomes for PACE impact analyses.

¹⁵ Nearest in this context means either the case immediately prior to or immediately posterior to the case with a missing value, depending on which was closer.

in responses to the detailed questions (A11-A29) filtered by A10 by copying the responses for the consistent spell that had been matched to the inconsistent spell.

In response to the second issue—the common problem of small fractions missing on most questions due to refusals and don’t knows—the team for the most part simply omitted people with such responses from the relevant analyses. This was done separately for each outcome, meaning that the maximum number of usable responses was used for estimating the impact of each outcome. However, for training hours the team imputed responses for each types of classes at each school the respondent attended. This imputation allowed the team to sum training hours across schools and types of classes without having high missing data rates on the sums because of scattered item missingness. To carry out this imputation, the team used SUDAAN/IMPUTE, as discussed in Section A.1 for missingness of baseline covariates. This random matching was constrained to occur within strata defined by treatment status, site, type of training, and self-reported completion status of the spell.

C.3 Survey Nonresponse Analysis

The 18-month follow-up survey obtained substantially different response rates in the treatment (91 percent) and control (78 percent) groups. In this section, the team assesses the implications of this non-response for the study’s impact findings.

Exhibit C-3 compares distributions on baseline characteristics for all sample members and survey respondents. Distributions are similar within both arms. As reported earlier, there are three statistically significant treatment-control differences in the full sample. Of these three two persist as significant in the unweighted respondent sample and one become impossible to calculate because of an empty cell.

Exhibit C-4 compares regression-adjusted impacts on college outcomes from administrative records for the full and respondent samples. Point estimates on survey respondents for the effects of VIDA on college credit accumulation and full-time enrollment are smaller than those on the full sample but larger for the effects of VIDA on degree attainment and summer enrollment than those on the full sample. Standard errors on the survey are larger, as expected given the smaller sample sizes.

In response, the team developed and applied weights to adjust for nonresponse, based on statistical models of the association between baseline characteristics and response probabilities within each of the two randomly assigned groups. Covariates also included several measures of college enrollment and credential receipt over the follow-up period. These methods are common in survey research.

The main steps in constructing weights included:

1. Winnow the list of potential covariates that are statistically significant in a logistic regression model for response status.¹⁶ Do this separately for treatment and control cases. This approach identified age, family structure, living with parents, parental history of college going, high school grades, having home computer with internet access, and college completions (per NSC records) as significant predictors of response status in the treatment sample. The set of significant predictors in the control sample was smaller, consisting only of arrest history, college persistence (per NSC records), and college completions (per NSC records).
2. Using the winnowed list of potential covariates, estimate the response propensity for each member of the treatment and control sample—both for respondents and nonrespondents.
3. Sort the sample in each study arm by the estimated response propensity, and then divide the sample into five equal-size groups (quintiles).
4. Within each arm and quintile, calculate the empirical response rate. Invert it to calculate the nonresponse-adjusted weight.

The last column in Exhibit C-3 shows that the weighting added one statistically significant baseline imbalance (on social support) where none previously existed.¹⁷ On the other hand, the last column in Exhibit C-4 shows that the use of weights shifts twelve of the nineteen point estimates of program impacts closer to the corresponding impacts for the full sample. For example, the estimated impact on credits through 24 months is 5.6 credits for the full sample, 4.5 credits for the unweighted survey sample, and 4.9 credits for the weighted survey sample. Given this evidence of improvement, the research team used non-response weights in analyzing *survey*-based outcomes in this report.

¹⁶ The team used the stepwise search option in SAS/LOGISTIC for this purpose with a p-value to enter the model of 0.20 and a p-value to stay in the model of 0.10. All variables reflect baseline measurements except the NSC variables.

¹⁷ Not shown in this table, the adjustment was effective in making the weighted treatment respondent sample resemble the full treatment sample more closely. However, given that the paramount focus of this study is on treatment/control differences, the team did not think that this improvement should be an important consideration in whether to use nonresponse adjustment weights.

Exhibit C-3. Baseline Balance on Full Sample, Unweighted Respondent Sample, and Weighted Respondent Sample

VIDA Baseline Characteristics									
	All Participants			Survey Respondents, Unweighted			Survey Respondents, Weighted		
	Treatment	Control	p-value	Treatment	Control	p-value	Treatment	Control	p-value
Age (%)			.222			.283			.220
20 or under	12.3	15.8		13.4	16.4		12.4	16.0	
21 to 24	24.3	21.5		23.5	21.5		23.6	21.6	
25 to 34	39.3	41.9		39.9	43.2		40.2	43.0	
35 or older	24.1	20.8		23.3	19.0		23.8	19.4	
Sex (%)			.410			.383			.709
Female	69.7	72.1		71.0	73.7		69.5	70.8	
Male	30.3	27.9		29.0	26.3		30.5	29.2	
Race/Ethnicity			.235			.383			.709
Hispanic	95.6	96.0		96.3	97.5		96.2	97.4	
Black Non-Hispanic	0.4	1.3		0.0	1.7		0.0	1.7	
White Non-Hispanic	3.6	2.4		3.3	0.6		3.3	0.6	
Other Non-Hispanic	0.2	0.0		0.2	0.0		0.2	0.0	
Family Structure (%)			.018			.072			.031
Not Living with Spouse/Partner and not Living with Children	40.6	43.9		39.8	42.6		40.7	43.3	
Not Living with Spouse/Partner but Living with Children	30.7	25.6		30.1	26.2		30.3	25.0	
Living with Spouse/Partner and not Living with Children	13.0	18.6		13.4	18.6		12.9	19.2	
Living with Spouse/Partner and Children	15.8	11.9		16.7	12.6		16.1	12.6	
Living with Parents (%)	32.8	33.7	.765	34.3	33.9	.910	32.8	34.0	.724
One Parent Has at Least some College (%)	27.3	25.3	.497	26.7	26.0	.827	27.0	26.2	.801
High School Grades (%)			.815			.794			.679
Mostly Got A's	20.1	18.5		20.5	19.3		20.7	18.9	
Mostly Got B's	64.9	66.5		66.5	66.3		66.0	65.8	
Mostly got C's or Below	15.0	15.0		13.0	14.5		13.3	15.3	
Current Education (%)			.038			NA			NA
Less Than a High School Degree	0.2	1.3		0.0	1.4		0.0	1.4	
High School or Equivalent	23.0	29.2		22.8	28.1		23.1	29.0	
Less Than 1 Year of College	17.0	14.6		16.6	13.9		16.5	14.5	

VIDA Baseline Characteristics									
	All Participants			Survey Respondents, Unweighted			Survey Respondents, Weighted		
	Treatment	Control	p-value	Treatment	Control	p-value	Treatment	Control	p-value
1 or More Years of College	55.7	49.7		56.2	51.1		56.0	49.4	
Associates Degree or Higher	4.2	5.3		4.4	5.5		4.3	5.7	
Received Vocational or Technical Certificate or Diploma (%)	31.1	31.6	.892	31.5	30.3	.724	31.6	29.5	.530
Career Knowledge Index (average of items)	0.61	0.61	.962	0.61	0.62	.836	0.61	0.62	.804
Psycho-Social Indices									
Academic Discipline Index	5.50	5.54	.320	5.50	5.55	.146	5.50	5.55	.166
Training Commitment Index	5.76	5.79	.240	5.76	5.80	.120	5.75	5.80	.130
Academic Self-Confidence Index	5.02	5.05	.586	5.01	5.08	.206	5.01	5.08	.223
Emotional Stability Index	5.21	5.25	.340	5.20	5.26	.300	5.21	5.26	.322
Social Support Index	3.29	3.32	.256	3.29	3.33	.122	3.29	3.34	.083
Stress Index	2.21	2.19	.711	2.22	2.18	.470	2.21	2.18	.593
Depression Index	1.57	1.52	.109	1.57	1.51	.124	1.57	1.51	.139
Income (%)			.238			.107			.149
Less than \$15,000	49.6	52.3		48.9	51.7		49.0	51.7	
\$15,000-\$29,999	39.0	34.0		39.7	33.2		39.4	33.3	
\$30,000 or More	11.5	13.8		11.4	15.1		11.6	15.0	
Mean	\$16,277	\$16,474	.813	\$16,395	\$16,636	.790	\$16,414	\$16,585	.852
Public Assistance/Hardship Past 12 Months (%)									
Received WIC or SNAP	66.5	68.8	.442	66.6	70.7	.214	65.6	70.1	.182
Received Public Assistance or Welfare	6.0	5.0	.501	6.4	6.0	.804	6.2	6.1	.947
Reported Financial Hardship	66.5	67.9	.630	66.0	66.0	.999	66.5	66.1	.911
Current Work Hours (%)									
0	62.8	67.0	.017	62.7	68.7	.046	62.6	69.1	.045
1 to 19	10.9	12.8		11.3	11.7		11.3	11.4	
20 to 34	18.4	11.1		18.1	10.9		18.1	10.9	
35 or more	7.9	9.1		8.0	8.7		8.0	8.6	
Expected Work Hours in Next Few Months (%)									
0	53.7	56.8	.321	53.6	58.2	.361	52.4	56.7	.461
1 to 19	11.5	13.6		12.2	13.3		12.4	13.4	
20 to 34	23.3	18.8		23.5	18.6		23.6	19.1	

VIDA Baseline Characteristics									
	All Participants			Survey Respondents, Unweighted			Survey Respondents, Weighted		
	Treatment	Control	p-value	Treatment	Control	p-value	Treatment	Control	p-value
35 or more	11.5	10.8		10.8	10.0		11.6	10.9	
Life Challenges Index (averages in original units 1-5)	1.63	1.61	.648	1.63	1.61	.758	1.63	1.60	.472
Owns a Car (%)	67.7	68.1	.893	67.3	66.9	.915	67.2	67.8	.866
Has both Computer and Internet at Home (%)	59.6	57.1	.436	60.8	58.2	.453	60.4	57.3	.386
Ever arrested (%)	19.5	16.2	.187	19.4	15.4	.136	20.2	16.0	.141
Sample size	478	480		434	373		434	373	

SOURCE: Abt Associates calculations based on data from the PACE Basic Information Form (BIF), the PACE Self-Administered Questionnaire (SAQ), and response status to the PACE short-term follow-up survey.

NOTES: NA stands for not available. P-values for frequencies with any empty cells are generally not valid. SAS/SURVEYFREQ used to test for significant imbalances for categorical variables. SAS/TTEST was used to significant imbalances for other variables.

Exhibit C-4. Comparison of Selected Impact Estimates for the Full Sample and Unweighted and Weighted Survey Samples

Outcome	Full Sample	Survey Respondents	
		Unweighted Est (StdErr)	Weighted Est (StdErr)
College credits Earned through Month:			
6	1.601*** (0.465)	1.584*** (0.509)	1.637*** (0.516)
12	3.319*** (0.723)	3.011*** (0.788)	3.206*** (0.799)
18	4.819*** (0.955)	4.218*** (1.023)	4.471*** (1.038)
24	5.58*** (1.14)	4.54*** (1.23)	4.87*** (1.24)
Proportion enrolled in full-time college during months:			
1-6	0.0960*** (0.0301)	0.0706** (0.0324)	0.0755** (0.0326)
7-12	0.1102*** (0.0315)	0.0800** (0.0346)	0.0872*** (0.0344)
13-18	0.0690*** (0.0288)	0.0497* (0.0317)	0.0576** (0.0314)
19-24	0.0460** (0.0256)	0.0389* (0.0284)	0.0454* (0.0276)
1-24	0.1089*** (0.0281)	0.0622** (0.0301)	0.0698** (0.0306)
Number of months of full-time enrollment over 24 months	1.281*** (0.364)	1.023*** (0.391)	1.176*** (0.388)
Number of months of part- or full-time enrollment over 24 months	2.241*** (0.463)	1.974*** (0.498)	2.153*** (0.507)
Proportion earning the following credential from a college:			
Level 1 certificate	0.0151 (0.0201)	-0.0112 (0.0218)	-0.0134 (0.0219)
Level 2 certificate	0.0321* (0.0214)	0.0285 (0.0237)	0.0302* (0.0229)
Level 1 or 2 certificate	0.0492** (0.0281)	0.0191 (0.0309)	0.0187 (0.0305)
Associate's Degree	0.0318 (0.0266)	0.0711*** (0.0295)	0.0709*** (0.0289)
Bachelor's Degree	0.0057 (0.0092)	0.0127 (0.0101)	0.0149* (0.0102)
Any degree	0.0375* (0.0267)	0.0838*** (0.0298)	0.0858*** (0.0293)
Any credential	0.0834*** (0.0298)	0.0985*** (0.0333)	0.0990*** (0.0333)
Enrolled in any summer schools within 24 months	0.1670*** (0.0290)	0.1936*** (0.0312)	0.1950*** (0.0316)
Sample size	958	807	807

SOURCE: Abt Associates calculations based on data from the administrative records at the University of Texas—Brownsville, the University of Texas—Pan-American, the University of Texas—Rio Grande Valley, South Texas College, Texas State Technical College, and Texas Southmost College and response status to the PACE short-term follow-up survey.

NOTES: Standard errors on estimated impacts are shown in parentheses. Adjusted impact estimates and associated standard errors were prepared with the modified Koch's estimator, as defined Equations (A.4) and (A.5). Statistical significance levels, based on one-tailed t-tests tests of differences between research groups, are summarized as follows: *** statistically significant at the one percent level; ** at the five percent level; * at the ten percent level.

Appendix D: Treatment of Outliers

The team took a conservative approach to outliers, retaining extreme values except where they were clearly impossible. This approach is based on the general difficulty of discriminating between errors and legitimate large values and the fact that remedies require assumptions about true values that may not be correct.

Trimming observations could easily introduce non-ignorable nonresponse by making nonresponse a function of Y. Trimming by definition creates item nonresponse since the provided response is discarded. If trimming is a function of observed Y, as is standard, and if there is some relationship between observed Y and true Y, then item nonresponse becomes a function of true Y, which is known as “non-ignorable nonresponse.” Since there is no known way to remove bias due to non-ignorable nonresponse, trimming is likely to create uncorrectable biases in estimated treatment effects.

Winsorizing observations (also known as top-coding, where values above a threshold are set equal to the threshold) could introduce bias if there is a treatment impact but the same threshold is used for treatment and control group members (and there is no reasonable basis for setting different thresholds for the two groups).

Furthermore, evidence suggests that results are generally robust to extreme values. In particular, research by Judkins and Porter (2006) and Lumley et al. (2002) indicate that, for the sample sizes available in this evaluation, OLS (ordinary least squares) inference on the reported data should be robust to outliers.

Outcomes assessed for extreme values included instructional hours (by type of instruction) and credits. The research team found no values that were clearly impossible and thus retained all reported values in the analysis.