Accelerating Connections to Employment Volume I

Final Evaluation Report

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ACE: ACCELERATING CONNECTIONS TO EMPLOYMENT

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Abstract

This report summarizes the implementation and evaluation of the Accelerating Connections to Employment (ACE) program. The ACE program model is designed to improve employment and employment-related outcomes for low-skilled workers through formal partnerships between Workforce Investment Boards (WIBs) and community colleges. Implemented at nine sites across four states (Maryland, Texas, Connecticut and Georgia) from 2012 to 2015, ACE provided training, support services, job readiness and job placement support to 1,258 participants. The ACE program is defined by five core activities: 1) a program planning stage, consisting of a program selection process informed by local labor market information, 2) intake and eligibility testing, consisting of program orientation and suitability assessments, 3) training, incorporating elements of the I-BEST model to provide integrated basic and vocational skills instruction, 4) support services, including academic and transportation support and 5) transition and tracking, including job readiness and placement services. The final report describes these components and their implementation in detail, highlighting challenges encountered and lessons learned. Quantitative results from the randomized controlled trial (RCT) evaluation of ACE are presented, as well as the results of a cost study describing the costs associated with implementing the ACE model.

The research draws on quantitative data collected from state unemployment insurance (UI) records, a one-year and two-year multi-modal follow-up survey and intake and tracking data collected by ACE staff. Additional qualitative information, used to inform the implementation study, are drawn from annual site visit interviews, focus groups and classroom observations, as well as open-ended survey questions included in each of the follow-up surveys.

Key findings. The quantitative results of the RCT evaluation show that ACE has a significant positive impact on employment rates and earnings for ACE participants at all but one of the ACE sites, as well as positive and significant impacts on credential attainment. The implementation study and fidelity assessment indicate that each of the ACE sites followed the program model, although the implementation of the ACE model evolved as sites identified new staffing and service needs. Specifically, sites adapted to unanticipated challenges by adding new staff positions and adapting program procedures to better serve participants.

Key words. Accelerating Connections to Employment, ACE, evaluation, workforce development, I-BEST, community college, randomized controlled trial, implementation study, cost study, unemployment insurance data, workforce innovation fund (WIF).

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Executive Summary

Introduction

Low-skilled job seekers are struggling in today's labor market. Recent workforce demands require that many access and complete occupational training to move along a career path. Most occupational training programs, however, do not offer basic skills instruction and in fact, individuals with low basic skills frequently do not even qualify for occupational training program supports. With its emphasis on placing individuals into high-skilled jobs, the public workforce system and its services are out of reach for many low-skilled job seekers and those resources that are available are fragmented across and outside of the workforce system.[1]

The Accelerating Connections to Employment (ACE) initiative sought to address these challenges. The ACE program combined education and training services within the workforce system to help low-skilled individuals build their career paths. ACE was implemented from 2012 to 2016 by a consortium of nine Workforce Investment Boards (WIBs) and 10 community colleges across four states: Connecticut, Georgia, Maryland and Texas. The initiative was funded by a nearly $12 million Workforce Innovation Fund grant from the U.S. Department of Labor, Employment and Training Administration (USDOL/ETA) to the Baltimore County Department of Economic and Workforce Development (DEWD). The ACE program enrolled 1,258 low-skilled job seekers over four years, 77% completed the program, surpassing the program goal. Consortium partners offered occupational training based on local labor market demands – with all focusing on at least one high-growth health care occupation.

This report summarizes results from three studies conducted on the ACE program by its national independent third-party evaluator, ICF. From 2011 to 2015, ICF assessed the impact of the ACE program through a randomized controlled trial (RCT), analyzing effects on individuals' annual earnings, employment status, receipt of training-related credentials and persistence toward a defined career track. ICF also completed an implementation study to measure fidelity to the ACE model across consortium sites and to identify promising practices. In addition, ICF completed a study to examine the cost components, by site and participant, of the program. This executive summary highlights findings from these three studies, as well as provides a brief overview of the ACE model and how the nine sites that implemented it. To learn more about the ACE evaluation and its findings, see the complete final evaluation report that follows this executive summary.

[1] Accelerating Connections to Employment (ACE). *Grant Submission (2012)*. Baltimore County Department of Economic Development, Division of Workforce Development.

The ACE Model

The ACE model was fashioned in part after Washington State's nationally recognized Integrated Basic Education and Skills Training (I-BEST) strategy, which joins basic skills and technical college faculty to offer occupational instruction to students with basic skill needs.[2] It was also built upon several of the ACE sites' experiences implementing I-BEST-like programs. The consortium, which was brought together through partnerships with the Annie E. Casey Foundation, built the ACE model to include interventions that enhance how WIBs and community colleges help low-skilled workers obtain training and employment supports. The model comprises several evidence-informed components, such as dual instruction and contextualized learning. The model is composed of 10 core components:

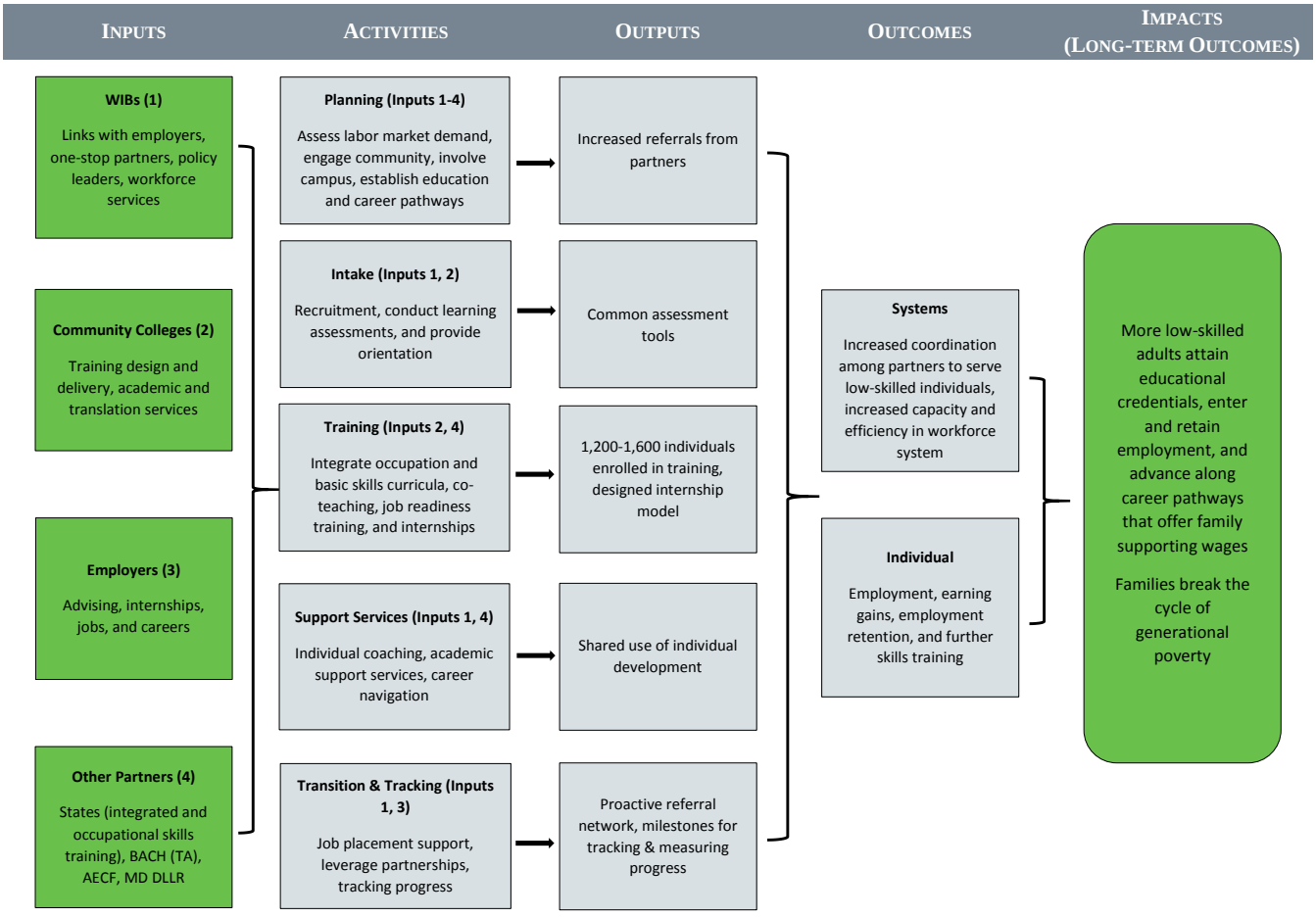
- Labor Market Demand: Targeting occupations and sectors with strong employer demand that offer realistic and navigable career pathways for adults with lower skills.
- Community Engagement: Actively engaging employers, industry associations and WIBs to determine labor market demand, understand skill requirements for entry-level positions and make connections that will help program completers find jobs.
- Credentials: Leading to a credential valued by employers, whether the program is offered for credit or as a non-credit program.
- Learning Assessment: Providing pre-testing and post-testing using Test of Adult Basic Education (TABE) or Comprehensive Adult Student Assessment (CASAS).
- Outcomes: Incorporating a well-defined intake process, including recruitment, screening and orientation to increase the likelihood that selected students will be a good match for the program and the targeted career pathway.
- Integrated Teaching: Integrating occupational and basic skills curricula so that students build their basic and occupational skills simultaneously, and incorporate co-teaching by basic skills or ESL and an occupational skills instructor for at least 50% of the occupational training hours of the program.
- Student Success: Offering student support services, including individual coaching throughout the program, assistance in planning and navigating transitions to further education and employment, and academic support for students who face challenges mastering program content.
- Transition: Offering employment-related services (in-house or through partnerships, particularly with community-based organizations and local One-Stop offices) to increase students' likelihood of moving into relevant jobs or advancing along career pathways.
- Campus Involvement: Resulting from a rigorous planning process involving adult basic education/ESL faculty, occupational skills faculty (credit and non-credit), and staff from a variety of student support and administrative divisions, and information technology staff. These various divisions should together map out educational pathways and supports for students during and after ACE.

[2] Wachen, J., Jenkins, D., & Van Noy, M. (2010). *How I-BEST Works: Findings from a Field Study of Washington State's Integrated Basic Education and Skills Training Program.* New York: Community College Research Center, Teachers College, Columbia University. Available online at http://ccrc.tc.columbia.edu/publications/how-i-best-works.html.

- Tracking: Including a strong data tracking component, using a common system developed in collaboration with other participating ACE WIBs and community colleges, to capture students' educational and employment gains through pre- and post-tests.

The ACE program logic model shown in Exhibit ES1 offers a visual depiction of the activities and anticipated outcomes of the ACE program. The logic model identifies the four major partner types in the ACE program, which included WIBs, community colleges, employers, and other support service partners. It also showcases the 10 core ACE programmatic components, which in Exhibit ES1 are organized by different stages of a participant's engagement – from planning and intake to support services, transition and tracking. Outputs in the logic model represent the immediate results of each step of participant engagement and hypothesized outcomes share the possible benefits systems that participants may reap from ACE training, such as increased coordination among partners (system outcome) and employment retention (individual outcome). Finally, impacts represent the hypothesized long-term effects the ACE program may realize, such as participants attaining occupational credentials, attaining employment, realizing higher wages and advancing along their career paths.

Exhibit ES1: ACE Top-Line Logic Model



Overview of Sites

Six of the nine ACE sites are located in Maryland, with one in Connecticut, one in Georgia, and one in Texas. The areas that these sites served represented a mix of urban, rural, and suburban communities. As Exhibit ES2 shows, the majority of ACE program participants were black or African-American, ranging from about 36% in Austin, TX, to about 96% in Atlanta, GA. Most participants were between 21 and 40 years old and female. The vast majority had not graduated from high school or only had a high school diploma or General Educational Development (GED) and most—with the exception of Montgomery County, MD, participants—were not married.

Exhibit ES2: Demographic Characteristics Among ACE Participants by Site

	Atlanta, GA	Austin, TX	New Haven, CT	Anne Arundel Co., MD	Baltimore Co., MD	Baltimore City, MD	Montgomery Co., MD	Prince George's Co., MD	Upper Shore, MD
DEMOGRAPHIC CHARACTERISTICS									
White	1.5%	53.9%	17.2%	19.3%	15.8%	3.0%	10.7%	5.7%	32.1%
Black or African-American	96.1%	36.1%	54.6%	74.0%	72.7%	88.2%	65.0%	79.8%	64.3%
Hispanic or Latino (of any race)	1.5%	40.1%	22.4%	4.8%	4.3%	1.8%	11.9%	13.5%	1.7%
AGE									
16 to 20 years	16.3%	4.4%	9.8%	6.3%	6.8%	6.5%	2.3%	4.2%	13.3%
21 to 25 years	22.7%	10.6%	13.8%	17.5%	11.8%	15.1%	7.3%	17.1%	21.7%
26 to 30 years	19.7%	18.9%	19.5%	22.7%	25.8%	22.9%	12.4%	16.6%	25.0%
31 to 35 years	12.3%	13.3%	14.9%	13.8%	13.8%	12.8%	17.0%	8.3%	16.7%
36 to 40 years	10.3%	15.6%	10.1%	15.2%	12.0%	11.9%	20.3%	9.3%	11.7%
Over 40	18.7%	37.2%	31.9%	24.5%	29.8%	30.8%	40.7%	44.5%	11.6%
GENDER									
Female	54.2%	83.9%	67.0%	74.4%	51.9%	72.6%	92.1%	88.6%	80.0%
Male	45.8%	16.1%	33.1%	25.7%	48.1%	27.4%	7.9%	11.4%	20.0%
EDUCATIONAL ATTAINMENT									
Less than high school	57.6%	25.0%	4.6%	7.8%	8.0%	12.7%	48.6%	10.9%	16.7%
High school diploma or GED	29.6%	42.8%	47.1%	67.7%	45.4%	55.8%	40/1%	46.1%	53.3%
Some college or associate's degree	10.3%	29.4%	41.1%	21.2%	39.4%	26.6%	9.0%	35.8%	30.0%
Bachelor's degree or higher	2.5%	2.8%	7.2%	3.4%	7.3%	5.0%	2.3%	7.3%	0%
MARITAL STATUS									
Married	7.1%	29.1%	20.5%	17.3%	17.2%	22.1%	53.1%	23.3%	5.5%
Not married	92.9%	70.9%	79.5%	82.7%	82.8%	77.9%	47.0%	76.7%	94.6%

In addition, almost all of the sites offered several training programs to a range of vulnerable target populations, such as low-skilled individuals. The types of training offered also varied, based on local needs – from certified or geriatric nursing assistants (C.N.A.s or G.N.A.s) to welding and construction. Exhibit ES3 shows the training programs each site offered, along with site target populations, enrollment and completion rates. Completion rates across the consortium ranged from 67% in Upper Shore, MD, which offered two types of training programs, to 93% in Montgomery County, MD, which offered one. Out of all participants who enrolled in an ACE training program, 77% completed their course of study.

Exhibit ES3: ACE Site Training, Target Populations and Completions (Total as of April 30, 2016)

ACE Site	Training Program	Total Enrollment	# Program Completers	Completion Rate
Anne Arundel Co., MD	▪ Dental Assisting ▪ A+ ▪ Dealer ▪ Bus Driver ▪ C.N.A./G.N.A. ▪ CDL 3	159	109	69%
Atlanta, GA*	▪ Welding ▪ Drafter's Assistant ▪ Pharmacy Tech ▪ Medical Billing ▪ Warehouse/Forklift	128	87	68%
Austin, TX	▪ Administrative Assistant ▪ C.N.A. + Acute Care Skills ▪ Apartment Maintenance	120	90	75%
Baltimore City, MD	▪ Multi-skilled Medical Tech ▪ Medical Billing Specialist ▪ Pharmacy Tech ▪ Dietary Aide ▪ C.N.A. ▪ CNC Manufacturing ▪ Warehouse Logistics	192	145	76%
Baltimore Co., MD	▪ Dental Assistant ▪ Utility Installer ▪ Logistics ▪ Construction ▪ CAMT ▪ Medical Office Support ▪ C.N.A./G.N.A.	238	202	85%
Montgomery Co., MD	▪ C.N.A.	96	89	93%
New Haven, CT	▪ Patient Care Technician ▪ Prof. Food and Beverage Server ▪ Community Health Worker ▪ Small Engine Repair and Tech ▪ IT Help Desk Trainee	190	141	74%

ACE Site	Training Program	Total Enrollment	# Program Completers	Completion Rate
Prince George's., MD	▪ C.N.A. ▪ Security Officer ▪ Medical Office Assistant	105	88	84%
Upper Shore, MD*	▪ C.N.A. ▪ Culinary Arts	30	20	67%

* Sites did not offer training for the entire duration of the grant. Atlanta offered training through November 30, 2014, and Upper Shore offered training through August 31, 2014.

Research Questions

The purposes of this multi-prong evaluation were to assess the impacts of the ACE model on program participants and systems, to identify supporting processes and practices and to analyze associated costs. Research questions focused on performance indicators important to the public workforce and community college systems relating to employment rates and credential attainment, as well as the underlying interventions that may support positive results for participants. ICF compiled data from multiple sources, including surveys of randomized study participants (both treatment and control group members), unemployment insurance (UI) data, interviews with site staff and employer partners, student focus groups, and administrative enrollment and tracking records collected through sites' shared data management system – Effort to Outcomes (ETO®). Research questions, organized by each aspect of the evaluation, are listed in Exhibit ES4.

Exhibit ES4: ACE Research Questions by Study

Research Question	Outcome Study	Implementation Study	Cost Study
Does the ACE program have an effect on credential attainment?	✓		
Does the ACE program have an effect on employment rates and retention?	✓		
Does the ACE program have an effect on earnings?	✓		
Does the ACE program have a positive or negative effect on the amount of time needed to secure employment, as measured as the time elapsed between training completion and the first job placement?	✓		
Does the ACE program have an effect on the likelihood that one will receive a high-quality job, defined as a job that is at least 35 hours a week, offering more than $13/hour, with access to benefits, such as health insurance and paid leave?	✓		
Does the ACE program have an effect on reliance on Temporary Assistance for Needy Families (TANF) and other public benefits?	✓		
Does the ACE program have an effect on career pathways?	✓		
Do ACE program impacts vary by participant characteristics (e.g., age, race, and gender), prior work experience, income or occupational focus?	✓		
What are the critical components for implementation at each site over time?		✓	
How was fidelity of implementation and intervention assessed over time?		✓	
What services were provided (e.g., training, education, employment, supportive) to the control group (i.e., what is "business as usual")?		✓	

Research Question	Outcome Study	Implementation Study	Cost Study
What were the successes and challenges to implementation?		✓	
What is the total cost of the program, by labor, equipment and supplies?			✓
What is the cost of the program for each site and per participant?			✓
How does each component of the program contribute to the overall cost, using the" ingredients approach"?			✓

Evaluation Design and Methodology

The ACE program evaluation used a mix-methods design and included an impact study, drawing from quantitative measures of employment outcomes; an implementation study, drawing from qualitative information collected through interviews, focus groups, and open-ended survey questions; and a cost study, drawing from site's grant expenditure data. This multi-level approach provided rigorous evidence of the ACE program's impacts on employment outcomes, supplemented by detailed contextual information designed to shed light on how the ACE program worked at the local level and how it could be replicated in new settings.

The outcomes associated with ACE program were evaluated using a RCT design, an approach that, when properly monitored for potential sources of bias, such as study attrition, provides a high degree of confidence in results.[3] Processes associated with ACE program implementation were assessed by collecting information from site staff and study participants to analyze fidelity to the ACE model, identify necessary adaptations and to translate results from research to practice. Below is an overview of each evaluation component:

- The **RCT (impact) study** measured the impact of ACE on employment-related outcomes by comparing randomly selected treatment and control group members. Three data sources provided the quantitative measures necessary to conduct the impact study: intake and tracking data collected by ACE site staff; data from a multi-modal follow-up survey, administered one and two years post-enrollment; and UI data collected from state agencies in Connecticut, Georgia, Maryland, and Texas.
- The **implementation study** tracked the evolution of the program at each site and assessed fidelity to the ACE model. Qualitative information used to track and analyze implementation of the ACE model was collected from staff interviews and student focus groups; intake and tracking data collected by ACE site staff and recorded in the ETO® database; and survey items incorporated into the one- and two-year follow-up surveys.
- The **cost study** used program expenditure data for each ACE site to calculate costs per participant and explore possible factors that contributed to cost variations across sites.

[3] According to the standards developed by the What Works Clearinghouse. See *Procedures and Standards Handbook, Version 3.0.* What Works Clearinghouse – Institute of Education Sciences (IES), U.S. Department of Education, pp. 9-10. Available online at: https://ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc_procedures_v3_0_standards_handbook.pdf.

Impacts of the ACE Program

Accounting for attrition, balance and variation within and between randomly assigned groups, overall impact study findings suggest that the ACE model had positive effects on participant employment, earnings and other employment-related outcomes. This section summarizes findings from the ACE impact study relating to credential attainment and employment, which are further detailed in Section IV in the complete final evaluation report following this executive summary, which also includes findings from subgroup analyses by training site and training program.

- **The ACE program had long-term impacts on overall earnings.** Program impacts on earnings were greater at two years post-program exit than at one year post-program exit, suggesting that ACE and similar training programs may require several years to realize positive career outcomes, but that they have durable long-term impacts well after the training ends.
- **The ACE program had a positive and significant impact on other employment-related outcomes**. Compared to the control group, ACE participants were more likely to hold a credential and more likely to work at least 35 hours a week.

Below is a summary of findings from the impact study relating to: the time it took participants to obtain employment, whether participants obtained employment and for how long, job earnings and benefits, credential attainment, the quality of jobs participants attained, and their potential along a career pathway. This summary also notes where findings were statistically significant.[4]

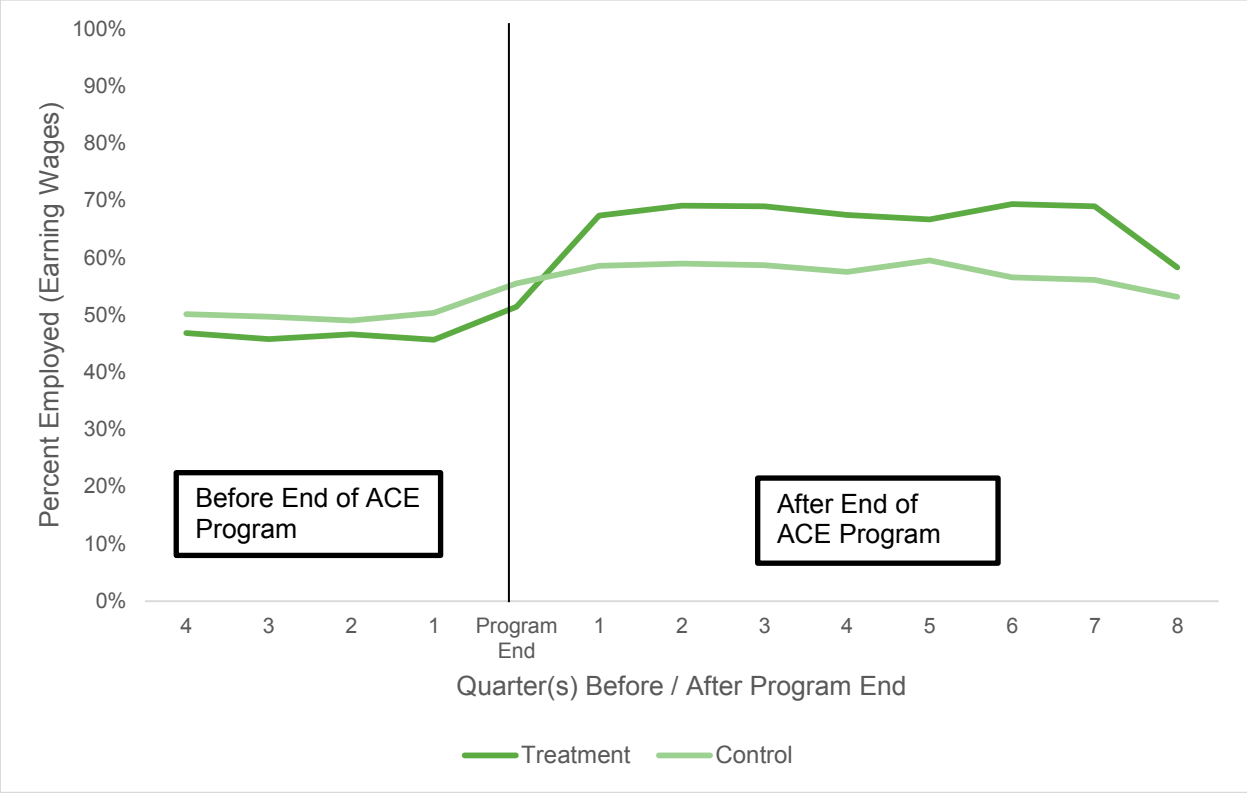
Employment and Retention

ACE participants were more likely to be employed after program completion than control group members were. Exhibit ES5 shows the employment rate for ACE participants and control group members for the year before training and the two years following training, according to UI data records. Both groups had similar levels of employment before training. However, ACE participants had higher levels of employment after the training program ended. A year after training, 63% of the ACE participants were employed, compared to 52% of control group members. Due to restrictions on the use of administrative UI data, it was not possible to estimate the statistical significance of employment outcomes for the entire sample of sites.[5] However, analyses of employment at the Maryland and Texas sites, which provided full UI records for ACE participants and make up 75% of ACE program participants, indicate that employment impacts due to ACE in these states were statistically significant at one year ($p<0.01$) and two years ($p<0.01$) after the training program ended.

[4] Differences between treatment and control group estimates are considered significant when the p-value falls below 0.05.

[5] Due to legal restrictions, Georgia and Connecticut were only able to provide aggregate employment and wage figures for the ACE treatment and control groups (as opposed to individual records for each study participant). Maryland and Texas provided individual employment and wage records. Due to these restrictions, it is possible to show aggregate (overall) employment levels for all four states, but it is not possible to conduct tests of statistical significance using data from all four states combined.

Exhibit ES5: Percentage Employed (Earning Wages) by Quarter, Before/After Program End



Source: UI data collected from Maryland, Texas, Georgia, and Connecticut administrative data.
Notes: An individual is counted as "employed" if he or she earned a positive non-zero wage during the quarter. On the horizontal axis, "0" denotes the quarter that the ACE training program ended. Due to data use restrictions that prevent Georgia and Connecticut from providing individual employment records, tests of the statistical significance of the impact of ACE on employment rates are not calculated for participants in all four states combined. The percentage differences between treatment and control group study participants displayed in the figure above are meant to provide an overall descriptive summary and do not indicate a statistically significant impact of the ACE program.

Earnings, Employer Benefits and Public Assistance

On average, ACE participants in Connecticut, Maryland and Texas earned more after the ACE program than control group members did. ACE generated positive employment gains in three of the four participating states and those gains increased over time. ACE participants in Maryland and Texas, for example, earned almost $1,300 more on average than control group members did a year after training and more than $5,000 two years after training (Exhibit ES6).[6] However, ACE program participants in Atlanta, Georgia, underperformed compared to control group members with respect to earnings a year after program end. Atlanta's results, however, were not statistically significant. ICF was not able to track two years of wage data for Atlanta participants since it was not available in Georgia.

[6] Exhibit ES6 uses averages and model estimates and therefore earnings appear low, on average, because they include participants who were employed (and earning wages) and those who were unemployed (and not earning wages). In addition, differences in earnings varied significantly by site, exceeding $10,000 at the New Haven and Montgomery County sites two years after the end of the training program. These differences across sites are likely due in part to the selection of the training program and the fit between credentials and available jobs in the area.

Exhibit ES6: Earnings After Program End Date (UI Data)

	Averages			Significance
	Control	Treatment	Difference in Averages	P Value
Maryland and Texas ACE Study Participants				
Total earnings, four quarters after program end date (n=1,513)	$11,601.80	$12,897.00	$1,295.20	<0.01
Total earnings, eight quarters after program end date (n=619)	$21,790.30	$27,053.00	$5,262.80	<0.01
New Haven ACE Study Participants				
Total earnings, four quarters after program end date (n=348)	$12,578.79	$14,125.19	$1,546.40	0.12
Total earnings, eight quarters after program end date (n=136)	$23,523.25	$34,810.03	$11,286.78	<0.01
Atlanta ACE Study Participants				
Total earnings, four quarters after program end date (n=203)	$7,154.60	$5,783.50	-$1,371.10	0.08

Source: UI data collected from Maryland, Texas, Georgia and Connecticut administrative data.
Notes: Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the control group. Total earnings are calculated as the sum of quarterly wages following the quarter the ACE program ended. If a program ended in the first quarter of 2014, annual wage estimates are calculated as the sum of 2014 quarter 2, 2014 quarter 3, 2014 quarter 4 and 2015 quarter 1.

The study found no statistically significant impact on hourly wages. However, on average, ACE participants reported slightly higher hourly wages than control group members did, one year after training**.** Exhibit ES7 shows hourly wages from survey responses for individuals who indicated they held at least one job. If respondents indicated that they held more than one job, the hourly wage from their primary job was used in the calculations. A year after program completion, ACE participants earned, on average, $.39 more per hour than control group members did. This modest difference was not statistically significant.[7]

Exhibit ES7: Earnings Outcomes: Hourly Wages, Employed Survey Respondents

	Observed Averages			Significance
	Control	Treatment	Difference	P Value
Year 1 Follow-up Survey (All Cohorts)				
Hourly Wages (n=420) [a]	$12.62	$13.01	$0.39	0.47

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization.
Notes: Those reporting wages above $100/hour are excluded from these averages.

[7] Only a small percentage (about 19%) of study participants who responded to the Year 2 survey provided a valid hourly wage, making it difficult to calculate accurately hourly wage differences two years after training.

ACE participants were more likely to receive some employer-sponsored benefits compared to control group members. ACE had a modest impact on the likelihood of receiving certain types of employment benefits; however, in most cases the effect was not significant. Two years after study enrollment, ACE participants were more likely to receive short-term disability insurance compared to control group members; however, there were no significant differences for other forms of employer-sponsored benefits, such as life, dental, or vision insurance.

ACE participants were less likely to receive public assistance than control group members were. The ACE program reduced the number of individuals receiving public assistance (such a Supplemental Nutritional Assistance Program benefits, Supplemental Security Income, and/or TANF). ACE had a statistically significant effect on public assistance receipt, with about 30% of ACE participants accessing benefits one year after enrollment, compared to 34% of control group members.[8]

Time to Employment

The study found no statistically significant impact of ACE on the amount of time it took to find a job. Although the difference is not significant, on average, ACE participants took less time to find a job than control group members did. When study participants with at least one job were asked to indicate the number of months that it took them to find that job, ACE participants required fewer months to find a job, on average, than control group members did (see Exhibit ES8). On average, it took ACE participants about five months to find a job after they enrolled in the ACE study and were randomized, compared to seven months for control group members. This difference, while in the expected direction, was not statistically significant.

Exhibit ES8: Average Time to Employment (Months) for New Hires After ACE Study Enrollment

	Averages		Treatment Effects	Significance
	Control	Treatment	Mean Difference	P Value
Average number of months to employment (n=616)	7.00	5.56	-1.45	0.26

Source: Follow-up survey of randomized ACE participants conducted one year after randomization responses to the question, "In months, how long did it take for you to find this job?" in reference to the respondent's primary job.
Notes: Standardized mean differences are calculated as the mean difference divided by the pooled within-group standard deviation. Analysis excludes study participants who responded that they did not hold a job and those who did not respond to the question. Treatment N=341, Control N=275.

Credential Attainment

ACE participants were more likely to hold occupational credentials than control group members were. ACE participants were more likely to hold at least one vocational, technical, or professional certificate or license a year after enrollment (by over 18%) and two years after enrollment (by almost 22%).

[8] Due to the timing of this report, the Year 2 survey did not include respondents who enrolled in ACE after July 2014. Therefore, nonsignificant findings in Year 2 may be a result of the smaller sample size.

ACE participants were not significantly more likely to hold a GED or higher level of formal education than control group members were. A larger percentage of ACE participants held a high school diploma or GED than control group members a year after enrollment (about 91% compared to about 88%) and after two years (about 91% compared to 86%). However, based on self-reported survey results one year and two years after enrollment, ACE did not appear to have a significant impact on the likelihood study participants held a GED or high school diploma.

ACE participation did not prompt enrollment in other training programs. One year after the study began, control group members were more likely to enroll in other training or educational programs than ACE participants (about 22% compared to 11%). This may reflect that, upon learning they would not participate in ACE, control group members were more likely to seek out other career training opportunities. Two years after enrollment, however, there were no statistically significant differences between ACE participants and control group members regarding whether they enrolled in other training programs (about 14% of ACE participants were enrolled in other programs compared to 12% of control group members).

Career Pathways

The study found no statistically significant ACE impact on the likelihood of earning a promotion or a raise. However, ACE participants were, on average, slightly more likely to receive a promotion or raise than control group members, and the difference falls just short of statistical significance two years after randomization. As shown at Exhibit ES9, follow-up surveys also asked ACE and control group members whether they had received a promotion or raise along their career path. At the year-one follow-up, about 27% of ACE participants had received a promotion or raise compared to about 24% of control group members. After two years, about 44% of ACE participants had received a raise or promotion compared to about 34% of control group members. Neither finding, however, was statistically significant.

Exhibit ES9: Career Pathways Outcomes: Treatment Effects

	Observed Percentages			Significance
	Control	Treatment	Difference	P Value
Year 1 Follow Up Survey (All Cohorts)				
Received Promotion or Raise (n=722)	24.5%	27.3%	2.8	0.39
Year 2 Follow Up Survey (August 2013 Through July 2014 Cohorts)				
Received Promotion or Raise (n=234)	33.6%	44.1%	10.5	0.07

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization.
Notes: Effect estimates are average treatment effects of participating in the ACE training (treatment).

Implementation of the ACE Program

All sites, on average, implemented the major and ancillary components of the ACE model as intended and with fidelity. This section shares summary findings from the ACE implementation study, which are further detailed in the complete final evaluation report.

The implementation study assesses challenges, lessons learned, and implementation stories over the four-year ACE evaluation period. It also retrospectively measures the fidelity of the implementation using a fidelity-scoring rubric to see whether sites implemented the ACE model as intended. The implementation study includes qualitative analyses from multiple data sources, including site visit observations, structured interviews, focus group discussions, participant surveys and data from the ETO® system. Key implementation findings include:

- **Sites' partnerships between WIBs and community colleges matured over time and partners leveraged lessons learned into new collaborative efforts.** Required to work together under this grant, WIBs and community colleges came into the partnership with different organizational norms and cultures. Initial collaboration steps were slow and depended in part on a mix of personal relationships, personalities, communication styles and staff and leadership supports.
- **Sites modified their intake processes to implement the ACE model and to adhere to RCT guidelines and quotas**. As programs matured, orientation strategies, such as speed dating and lengthy information sessions were implemented to better identify ready applicants and decrease dropout rates.
- **Sites modified and adjusted ACE model components relative to job readiness training and job placement by creating a job developer role.** Initially, career navigators performed most recruitment, intake and orientation duties in addition to offering job readiness and job placement supports. The addition of job developers relieved career navigators' workloads and allowed most navigators to focus on coaching and guiding participants through their career path.

Below is an overview of findings from the implementation study relating to: partnership development, site recruitment and intake efforts, training and support services and employer engagement. The summary below also includes highlights from implementation fidelity scoring, which assessed sites' overall adherence to the ACE model. It also includes a summary of site reflections on costs and sustainability of the ACE program.

WIB-Community College Partnership

Central to the ACE program was the collaborative relationship between WIBs and community colleges – as each could leverage their expertise and combine training students and connecting them to employment. The level of collaboration between partners, however, varied across sites and evolved over the course of implementation.

The success of the WIB-community college partnerships often depended on a mix of personal relationships, personalities, and communication styles and levels. The required level of WIB-community college collaboration through ACE was greater than either organization was accustomed to. Nevertheless, as with any partnership, the mix of personalities and communication and leadership styles influenced each collaboration's success. Many sites faced initial hurdles in defining roles and responsibilities and being upfront about resource constraints. Site partners variably described their relationships as ranging from tolerable and workable to very strong. New Haven, CT, and Montgomery County, MD, sites attempted to bridge early gaps by identifying a single staff person as the liaison between partners. Others, such as the Austin, TX, site established regular meetings between partners to discuss and resolve

collaboration issues. Baltimore City, MD, staff shared that the relationship between their WIB and community college is stronger because of the ACE program – they benefited from each other's expertise and now have established communication channels. The partners plan to collaborate on future projects, including on an adult basic skills boot camp.

Recruitment and Intake

Site partners worked together to recruit their target populations and decrease dropout rates and collectively meet targets for enrollment and program completion. The grant target enrollment for the ACE program, across all sites, was 1,281 participants while the adjusted enrollment agreed upon in the sub-awardee contracts was 1,252; actual enrollment slightly exceeded that number, at 1,258. The overall program completion target was 75%; sites had an actual completion rate of 77%. To meet these targets, ACE sites modified their intake strategies to address early recruitment challenges, including creating customized processes to assess the "readiness" of applicants to participate in training programs.

Staff used a variety of creative strategies for recruitment, including reaching out to community partners and encouraging referrals and innovative marketing. Sites shared that the use of fliers, radio advertisements, word of mouth, and reaching out to community partners proved successful in recruiting ACE participants. Recruitment also improved when the WIBs and community colleges worked together. For example, in Anne Arundel County, MD, the site hired a recruitment coordinator, rather than having staff across partners focus on recruitment efforts. ACE sites also connected with local housing authorities, churches, and retailers as part of their recruitment efforts. For example, the Baltimore Housing Authority supported two large recruitment efforts for the Baltimore City, MD, site. In Montgomery County, MD, program alumni rapidly spread the word about the program, bringing in new prospective participants. In New Haven, CT, site staff invested funds in branding and marketing materials – creating catch phrases to target potential applicants who may not go to college, but who were interested in a career path.

Orientation activities varied by site and often included lengthy information sessions, one-on-one meetings and interviews. Sites established standardized processes and activities during ACE orientation. These activities varied by site and often included lengthy information sessions, one-on-one meetings and interviews. The Baltimore City, MD, New Haven, CT, and Montgomery County, MD, sites held three-hour orientation workshops to discuss the training program, its requirements and qualifications, and also administered educational aptitude tests. Some sites also implemented strategies to keep applicants engaged during the orientation process and before classes began. The New Haven, CT, site created an individualized timeline for each participant so s/he knew what to expect in the months or weeks before class started. The Baltimore County, MD, site created a "vestibule"—a multi-day eligibility and orientation process—to ensure prospective students were a good fit for the program and to decrease dropout rates.

Training

The ACE model included a costly co-teaching component (in which a vocational skills instructor and a basic skills instructor served as co-teachers). The content and focus of co-teaching was

influenced early by sites' planning activities where they sought employer feedback. Sites refined content, however, over time and as student needs became apparent.

The integrated curriculum and co-teaching approach evolved as instructors and staff learned more about student needs. As instructors gained more experience with students, they learned that some skills instructions were more needed than others were. They also found that co-teaching 100% of the time might not be needed or appropriate. For example, email etiquette and resume writing required more class-time attention than anticipated at the Baltimore County, MD, site – prompting the site to devote more class time to these capacities. In some sites, instructors found that not all classes were appropriate for co-teaching, such as the self-defense class offered at the Prince Georges' County, MD, site. Despite some of these shifts, several sites found that the co-teaching model allowed them to identify problems faster, such as learning disabilities or difficulty understanding certain concepts, and then work one-on-one with students to address them.

Adequate planning time for co-teachers led to more successful co-teaching relationships, but was not easy to accomplish. Sites shared that implementing a co-teaching approach was costly and time consuming – requiring careful coordination between different teaching styles and content into one delivery. Co-teachers had to build in ample planning time and dedicate more time to collaborate with each other outside the classroom. Some shared that they did not have enough preparation time with only one or two months to set the program up and expressed frustration about tight timelines and last minute instructor pairings. They also advised that to establish a well-integrated curriculum, programs must carefully plan ahead, have leadership support, and communicate with potential ACE graduate employers about the co-teaching approach.

Student Support Services

ACE sites' target populations often faced complex challenges that may have hindered their ability to successfully complete training, earn certifications and start their careers. To help address these challenges, sites offered tailored wraparound services, including career navigators as a core component of the ACE model.

In focus groups, students expressed appreciation for supportive services – identifying them as essential to participating in class and finding a job. Students were most satisfied with supports when they focused on personal issues and life stressors.

The role of the career navigator shifted over time and sites hired job developers to assist with heavy workloads. Originally, the ACE career navigator was involved in all aspects of the program and had responsibilities relating to recruitment, onboarding, job readiness training, and job placement. When sites added job developers' at staggered times over the course of the study, career navigators were able to better focus their attention on forming strong relationships with participants and guiding them through the training program. Site staff noted that adding a job developer role required additional resources, but also agreed that it was a common best practice they wish they had implemented sooner. While most sites hired one job developer, the Baltimore County site hired three because of large caseload demands. Once implemented, career navigators in Baltimore City helped students prepare for employment

during their course of instruction and build individual employment plans. Baltimore City job developers prepared students for jobs through job search and interview preparation support – one job developer was tasked with overseeing employer engagement efforts.

Site staff identified comprehensive support services as one of the most important ACE components. Despite some resource and coordination struggles in the WIB-community college partnership, ACE site staff shared that the model's wraparound services were critical to students' success. Sites offered a range of services, such as transportation and childcare assistance and academic supports. Staff at Montgomery and Anne Arundel counties in Maryland felt academic supports in particular helped students stay in and finish the program.

Employer Engagement

Site staff also espoused the importance of early employer engagement in planning the ACE program – to ensure training matched employer needs and to promote high job placement rates after program completion.

Early employer engagement helped sites assess labor market demand and tailor vocational and basic skills content to employer needs. Site staff shared that early employer engagement helped determine what training programs to offer and how many students to enroll. For example, the site in Anne Arundel County, MD, considered a cyber-security training, but did not pursue it after conversations with employers where they shared the educational levels required for incoming employees and compared those to incoming ACE students. Employer feedback was also important in customizing training curricula and determining recruitment goals that would match local employer needs. The Baltimore City, MD, site engaged area hospitals and other potential C.N.A. employers to help determine how many students they should recruit and train based on positions available. The Baltimore County, MD, site also developed employer partnerships before training began to tailor programs to employer needs and ensure employers understood that ACE graduates received both basic and vocational skills supports.

In-class employer engagement and internships engaged ACE participants in visualizing and planning for their future careers. The level of employer engagement varied by site and ranged from classroom presentations to internship opportunities. In-class employer presentations often included discussions of employer expectations, hiring practices, and stories of personal experiences within the field. Sites also worked with local employers to establish internship opportunities for ACE participants – particularly for health care careers. Establishing and sustaining these relationships was often challenging however, with some employers backing out of placement agreements or reticent about hiring ACE participants. Sites had to inform employers about the ACE program to gain buy-in, but still some only wanted to hire interns with previous experience within that field or worried about liability issues in hiring inexperienced interns. The New Haven, Connecticut, site developed a systematic process to address some of these concerns. New Haven's strategy included the development of a standard agreement the site and employer could sign, an offer of insurance through the community college, and an evaluation form employers could complete after internships ended.

Fidelity to the ACE Model

Measuring sites' adherence to the ACE model helps confirm the intervention's delivery, as well as offers insights into replicability and scale-up opportunities. ICF developed an implementation fidelity rubric, which is discussed in more depth in the complete final evaluation report, to assess retrospectively how well ACE sites implemented the model as intended. Using data from participant surveys, program documentation and the ETO® system, sites were scored using the fidelity rubric. While "implementation with fidelity" was not a guarantor of an ideal or impactful implementation, it did offer a "fair implementation test" of the model. After scoring each site using the standardized rubric, all sites, on average, implemented the major and ancillary components of the ACE model as intended and with fidelity. Below is a summary of which components of the ACE model sites adhered to or not, based on fidelity scoring.

ACE sites used Labor Market Information (LMI) data and developed partnerships during the planning phase. All sites analyzed local labor markets to determine what training and career pathway opportunities should be offered, which was reflected in their grant applications and early planning stage efforts. Information gathered from site visits also reflected that many sites continued to use labor market assessments throughout the program to decide which in-demand training programs to offer. Sites also reached out to program and external partners in planning phases to establish strong partnerships.

ACE sites implemented standardized processes during intake. All sites assessed incoming study participants before program entry and seven of nine sites met their recruitment targets. All sites implemented a standard orientation process, although what that process was varied by site. One site, Baltimore County, MD, exceeded fidelity requirements by implementing additional processes, such as the "vestibule," to enhance the orientation experience for study participants and to make sure participants who consented to the study had a firm understanding of its requirements.

ACE sites consistently implemented academic components of the model with fidelity. Students rated the integrated curriculum—an ancillary component to the ACE model—extremely favorably. The high rating by students suggests that the integration of the basic skills and vocational content was implemented effectively and enhanced student classroom environment and learning. Students at all sites also rated their basic and vocational skill instructors and instruction very favorably and believed that they received needed academic supports from ACE staff.

ACE sites varied in their implementation of job-related and other support service components. ACE sites variably implemented job readiness training, but the majority of job placement supports relating to finding and obtaining a job were effectively implemented. In addition, sites offered employment supports individually or in a group and both were implemented as intended. For the majority of sites, the introduction of the job developer role afforded other staff time and capacity to offer other supports and training.

Sites did not often meet the requirement to place participants in internships and other on-the-job opportunities. Although participants felt supported in their job search, students at only five of nine sites felt that the program helped them meet the requirements when it came time to find internships, an important stepping stone to job placement. According to

participants, the career navigator at some sites seldom connected them with internships or job opportunities, with only three of nine sites meeting that fidelity requirement.

The majority of ACE sites met or were very close to meeting all program performance targets. Five of nine sites met or exceeded target completion rates for enrollment, completion, employment and wages, a reflection of academic and wraparound support services that helped retain ACE students. Seven of nine sites met or exceeded the 75% employment rate target, and all nine met or exceeded the average hourly wage goal of $9 per hour.

Site Reflections on Sustainability

Despite some early implementation challenges and some costly aspects to the model, many ACE sites hope to leverage other funding sources to sustain and retain critical aspects of the program beyond grant funding. Some are exploring charging tuition, braided funding models and additional grant opportunities. Below are some site reflections about ACE implementation and its costs that may affect the model's sustainability and replicability:

- **Adjusting the co-teaching model to minimize costs**: Sites shared that the co-teaching component was one of the most expensive aspects of the ACE model. Instead of using the co-teaching model 100% of the time, sites felt that implementing the integrated curriculum 50% to 75% of the time could still achieve similar participant outcomes. Several sites also suggested that to appreciate fully the benefits of the co-teaching approach more pre-planning in early implementation stages is required to better align teaching approaches and training offerings with employer needs.
- **Leveraging staff resources outside the ACE budget:** Shifts in staffing posed challenges for many sites, as new staff time was not built in to initial ACE budgets. Several sites had to pay for new staff resources out of pocket. Sites adapted to these challenges in various ways, some brought staff onto the project on a part-time basis for various tasks. For example, one site hired a part-time administrator to support its career navigator. Others hired instructional specialists to implement pieces of training curricula – such as the basic skills course. In reflecting on these challenges, project directors shared a desire for more flexibility in their budgets to hire staff when needed and who could work more closely with students.
- **Being cognizant of hidden costs:** There were costs associated with implementing the ACE model, which most sites did not account for at the beginning and subsequently had to absorb. These hidden costs included pre-eligibility determination costs, such as fees associated with drug testing and background checks. They also included costs related to organizing job fairs and paying for certifications and licensing fees.

Costs of the ACE Program

The final prong of the ACE evaluation was a cost study. This study, which is discussed in more detail in the complete evaluation report, provides a description of the cost components of ACE and examines the actual budgets of each ACE site. The cost study offers important information for ACE sites or those interested in implementing ACE as it reveals the level of funding

programs should appropriate to each ACE component. Cost study findings can also inform ACE sites as they consider continuing and/or scaling the ACE model beyond the grant period.

ACE is a complex program model, requiring numerous components implemented by multiple entities. Because of this complexity, it was difficult to estimate the true and complete cost of the program as it was implemented, and particularly when only grant funding was examined. Exhibit ES10 shares the various cost categories associated with the ACE program and how they relate to different ingredients or components of the ACE model.[9]

Exhibit ES10: Cost Categories for the Ingredients Approach

Cost Category	ACE Ingredients
Personnel costs	Instructors, support staff, career navigators, job developers, curriculum developers, student support service providers, administrators, program managers, WIB staff
Facility costs	Classrooms, computer labs, shared spaces, maintenance, etc.
Equipment and materials costs	Desks, chairs, books, training materials, computers, assessment costs
Other program inputs	Consultants, financial analysts, data analysts
Required client inputs	In-kind time from instructors, program staff, students

ICF collected information on actual grant expenditures from each ACE site and used that to calculate costs per participant. Exhibit ES11 shows ACE grant expenditures for each site and their costs per participant. Anne Arundel, MD, Austin, TX, and New Haven, CT, had among the highest costs per student – all above $7,000 when measured by grant expenditures. This could be a reflection of class size and number of classes held; Anne Arundel and Austin had relatively smaller class sizes than other sites. The Upper Shore, MD, site provides another example of how economies of scale may have influenced costs per student. The Upper Shore site had, by far, the greatest costs per student, but also had the smallest class sizes – an average of eight students per class.

Exhibit ES11: ACE Grant Expenditures by Site

Anne Arundel	159	12	14	13	$1,115,000	$7,013
Atlanta	128	6	16	21	$618,000	$4,828
Austin	120	10	8	12	$897,000	$7,475
Baltimore City	192	13	26	15	$1,078,000	$5,615

[9] ICF used the Ingredients Approach to the ACE cost study. This approach to cost analysis provides a systematic way for evaluators to estimate the cost of social interventions, and comprises five main steps: (1) describing your program comprehensively; (2) listing all program resources or ingredients; (3) matching ingredients to their market prices; (4) calculating total and average costs; and (5) matching costs and effects to calculate a cost-effectiveness ratio. Levin, H.M., *Cost-Effectiveness: A Primer. New Perspectives in Education, Vol. 4* (1983). Norwest Regional Educational Laboratory and Sage Publications: Newbury Park, CA; Levin, H.M. & McEwan, P.J., *Cost-Effectiveness Analysis: Methods and Applications, 2nd ed.* (2001), Sage Publications: Thousand Oaks, CA.

	Number of Students Served	Number of Classes	Average Class Length (Weeks)	Average Class Size	Total Grant Expenditures*	Grant Expenditures Per Student
Baltimore County	238	17	16	14	$1,510,000	$6,345
Montgomery County	96	6	13	16	$645,000	$6,719
New Haven	190	12	18	16	$1,371,000	$7,216
Prince George's County	105	10	18	11	$603,000	$5,743
Upper Shore	30	4	22	8	$391,000	$13,033

Source: Baltimore County DEWD.
Note: *Expenditures are the estimated final expenditures based on April 30, 2016 expenditures and are rounded to the nearest whole number.

The major findings from the cost study included:

- **To minimize the cost per student and thus maximize the number of students trained with a given amount of funding, sites could implement larger class sizes and provide a smaller number of individual curricula.** The information on ACE expenditures by site indicates that the resources required to implement a class do not change proportionately with the number of students in the class, thus offering larger class sizes can be economically more efficient (reflecting economies of scale). Additionally, the number of different types of programs offered may also influence the cost per student, as curriculum development, additional instructors, and additional materials and equipment are needed as new classes are added.
- **Facility and equipment expenditures were not often accounted for in estimating costs since they are typically shared with other non-program functions.** Since these expenditures are necessary for program implementation, they should be included in determining costs.

What We Learned

Low-skilled workers face steep challenges completing training, gaining employment and progressing along a career path. Government agencies, educational institutions, and non-profit organizations are testing innovative approaches to help these workers meet these challenges. Training models, such as I-BEST, provide contextual and vocational skills to workers who need them to succeed; support services address the barriers that often prevent training completion; and employer engagement and job development help training programs succeed through industry partnerships. ACE adopted components of each of these approaches, and forged unique partnerships between WIBs and community colleges to deliver training and services. The ACE evaluation findings show that the ACE model can be an effective approach to improve the employment outcomes of low-skilled workers.

The section below summarizes the findings of the ACE evaluation. Exhibits ES12, ES13, ES14, and ES15 summarize the results of the impact findings, followed by a discussion of implications that should be of interest to policymakers, educational institutions and employers and industry.

Exhibit ES12: Summary of Employment and Earnings Impacts

Outcome	Control	Treatment	Difference (Impact)
Employment[a]			
Earned a wage in first year after program end – all sites (n=2,168)	51.9%	62.6%	10.6^
Earned a wage in second year after program end – all sites (n=783)	52.6%	61.1%	8.5^
Earned a wage in first year after program end – MD and TX (n=1,513)	69.2%	82.1%	12.9***
Earned a wage in second year after program end – MD and TX (n=619)	65.5%	79%	13.5***
Earnings[a]			
Total earnings, four quarters after program end date – MD and TX (n=1,513)	$11,601.80	$12,897.00	$1,295.20***
Total earnings, eight quarters after program end date – MD and TX (n=619)	$21,790.30	$27,053.00	$5,262.70***
Total earnings, four quarters after program end date – CT (n=348)	$12,578.79	$14,125.19	$1,546.40
Total earnings, eight quarters after program end date – CT (n=136)	$23,523.25	$34,810.03	$11,286.78***
Total earnings, four quarters after program end date – GA (n=203)	$7,154.60	$5,783.50	-$1,371.10
Time to Employment[b]			
Average number of months to employment (n=616)	5.56	7.00	-1.45

Source: [a]UI administrative records. [b]ACE Year 1 Follow-up Survey. [c]ACE Year 2 Follow-up Survey.
Notes: ^Significance tests for employment rates across all sites using UI were not calculated due to data use restrictions, and also excludes observations with missing data. *Difference is statistically significant at the p<0.10 level. The sample sizes (n) for each outcome are listed for each row (sample sizes vary depending on the outcome indicator due to item nonresponse to the follow-up surveys). **Difference is statistically significant at the p<0.05 level. ***Difference is statistically significant at the p<0.01 level.

Exhibit ES13 summarizes the impacts related to the quality of jobs held by ACE program participants in comparison to control group participants.

Exhibit ES13: Summary of Job Quality Impacts

Outcome	Control	Treatment	Difference (Impact)
Benefits Earned From an Employer (Year 1)[a]			
Dental insurance (n=906)	15.8%	20%	4.2
Life insurance (n=906)	12.1%	16.5%	4.4
Vision insurance (n=906)	14.2%	15.3%	1.1
Short-term disability (n=906)	9.8%	13.3%	3.5*
Long-term disability (n=906)	7.4%	10.7%	3.3*
Retirement plan (n=906)	13.7%	17.6%	3.9
Benefits Earned From an Employer (Year 2)[b]			
Dental insurance (n=444)	19.5%	23.2%	3.7
Life insurance (n=444)	13.7%	18.1%	4.4
Vision insurance (n=444)	15.8%	18.1%	2.3
Short-term disability (n=444)	9.5%	16.5%	7**
Long-term disability (n=444)	9.5%	11.4%	1.9
Retirement plan (n=444)	17.9%	16.9%	-1

Outcome	Control	Treatment	Difference (Impact)
Quality Jobs (Year 1)[a]			
Works a full (35 hours or more) week at primary job (n=729)	37.3%	19.3%	-18***
Earns at least $13 an hour (n=688)	22.9%	30%	7.1***
Health insurance through employer (n=775)	18.9%	19.3%	0.4
Works a full (35 hours or more) week at primary job (n=330)	35.3%	45%	9.7*
Earns at least $13 an hour (n=318)	24.7%	26.4%	1.7
Health insurance through employer (n=322)	23.8%	27.6%	3.8

Source: [a]ACE Year 1 Follow-up Survey. [b]ACE Year 2 Follow-up Survey.
Notes: *Difference is statistically significant at the p<0.10 level. The sample sizes (n) for each outcome are listed for each row (sample sizes vary depending on the outcome indicator due to item nonresponse to the follow-up surveys). **Difference is statistically significant at the p<0.05 level. ***Difference is statistically significant at the p<0.01 level.

Exhibit ES14 summarizes the results of ACE impacts related to job credentials and career pathways.

Exhibit ES14: Summary of Credentials and Career Pathways Impacts

Outcome	Control	Treatment	Difference (Impact)
Credentials (Year 1)[a]			
Holds a vocational, technical, or professional certificate or license (n=1,049)	35.4%	53.5%	18.1***
GED, high school diploma (n=999)	88.4%	90.6%	2.2
Enrolled in other training or education program (n=1,023)	22.1%	11.5%	-10.6***
Credentials (Year 2)[b]			
Holds a vocational, technical, or professional certificate or license (n=391)	38.4%	60.2%	21.8***
GED, high school diploma (n=392)	86.2%	91.1%	4.9
Enrolled in other training or education program (n=423)	12.2%	13.7%	1.5
Career Pathways (Year 1)[a]			
Received promotion or raise (n=722)	24.5%	27.3%	2.8
Career Pathways (Year 2)[b]			
Received promotion or raise (n=234)	33.6%	44.1%	10.5*

Source: [a]ACE Year 1 Follow-up Survey. [b]ACE Year 2 Follow-up Survey.
Notes: *Difference is statistically significant at the p<0.10 level. The sample sizes (n) for each outcome are listed for each row (sample sizes vary depending on the outcome indicator due to item nonresponse to the follow-up surveys). **Difference is statistically significant at the p<0.05 level. ***Difference is statistically significant at the p<0.01 level.

Exhibit ES15 summarizes the ACE impacts related to receipt of public assistance.

Exhibit ES15: Summary of Public Assistance Impacts

Outcome	Control	Treatment	Difference (Impact)
Public Assistance (Year 1)[a]			
Receives public assistance (n=833)	33.7%	30.2%	-3.5**
Public Assistance (Year 2)[b]			
Receives public assistance (n=326)	28.6%	22.4%	-6.2

Source: [a]ACE Year 1 Follow-up Survey. [b]ACE Year 2 Follow-up Survey.
Notes: *Difference is statistically significant at the p<0.10 level. The sample sizes (n) for each outcome are listed for each row (sample sizes vary depending on the outcome indicator due to item nonresponse to the follow-up surveys). **Difference is statistically significant at the p<0.05 level. ***Difference is statistically significant at the p<0.01 level.

Implications

There are several implications to these findings:

Funding for training programs such as ACE can significantly improve employment rates and earnings for low-skilled workers. ACE provided a comprehensive set of supports and training tailored to the needs of low-skilled workers. The findings indicate that these supports can result in positive and significant gains in employment, earnings and employment-related outcomes.

The ACE model has been shown to work at multiple sites, suggesting that programs similar to ACE can be effective in a variety of institutional, cultural and economic settings. In many cases, programs operate well under a certain set of circumstances, but do not perform well in others. ACE resulted in positive employment and earnings at all but one training site. These findings show the robustness of the ACE model, and suggest that the model could be successfully implemented in other settings in the future.

Funding for training programs designed to improve career outcomes can have longer-term impacts on employment outcomes, resulting in positive benefits years after the training ends. ACE was designed as a career pathways program intended to start low-skilled workers on a career path with the potential to lead to additional credentials, raises and promotions. Many of the findings suggest that ACE was successful in not only moving participants into entry-level jobs, but also moving them up a career ladder. Measures of employment-related outcomes at two years after the training often showed larger gains than those at one year, suggesting that participating in ACE and ACE-like training programs pays longer-term dividends after the participant leaves the program.

Wraparound services designed to address barriers can improve credential attainment and employment outcomes for low-skilled workers. ACE staff noted that support services designed to address the barriers that often prevent low-skilled workers from completing training programs were an essential component of ACE. These staff impressions were reinforced by impact findings. ACE has a significant and positive impact on the likelihood of receiving a credential, indicating that a large portion of the participants

completed the training and were much more likely to have marketable skills than the control group.

Ongoing employment and job placement support after the training program ends can be essential to achieving positive employment outcomes among low-skilled workers. ACE staff noted the importance of transition and tracking support for ACE participants. Recognizing the importance of these supports, program leadership added job developers to the staff to fulfill the role of employer engagement, job placement, and tracking support more adequately. The importance of this role is borne out by the evidence from the impact study. Sites that ended their program early and did not develop as robust of a job development support system as other sites (such as Atlanta), did not see significant employment and earnings gains from ACE. Other sites that did devote significant resources to transition, tracking and job development, on the other hand, saw significant improvement in employment-related outcomes among the ACE treatment group in comparison to the control group.

Attention should be given to selecting training programs and credentials that match employer needs. LMI factored in to the selection of each of the ACE training programs. However, some ACE training programs were more successful than others were. Interviews with ACE program leadership indicated that whether a training program succeeds or fails can often depend on unforeseen changes to the labor market and information from employers that could be used to better tailor the training to employer needs.

Frequent communication and clear delineation of responsibilities can foster a stronger WIB-community college partnership. The ACE model called for collaboration between the WIBs and community colleges, but it did not stipulate what the partnership should look like. The lack of clarity and program evolution created challenges for ACE partners that came into the partnership with different operational experiences and cultural norms. Successful partnerships at ACE sites were created when partners established well-defined roles and responsibilities; assembled the right mix of staff; and co-located staff from partnering organizations while maintaining frequent communication. Lessons from what works in ACE partnerships will be especially important with the passage of the Workforce Innovation and Opportunity Act (WIOA), and as states develop plans to better align programs that provide occupational and adult education services, and engage community colleges and career and technical schools as active partners in this process.

Integrating job placement and employer engagement in the initial stages of implementation can improve job placement. Program staff that engaged employers during the planning phases were able to get buy-in for the program and therefore establish trust with these employer partners. These partners were therefore familiar with the program and training content and were more likely to agree to formal internship/job placement agreements and to hire ACE graduates. Hiring a job developer was an essential and much needed addition to the ACE staff. Staff implementing workforce development training programs should aim to hire both a career navigator to guide and coach participants along their chosen career pathway, and a job developer to work on getting participants placed in employment.

A more thorough and intensive recruitment process can yield quality participants and improve retention. ACE sites faced challenges in recruitment and intake with participants'

inability to pass eligibility requirements, hidden costs of the requirements for certain industries and participants dropping out before randomization. Sites that were able to retain well-prepared, quality participants developed lengthier, more thorough orientation processes that involved two- to three-day sections of interviews/speed dating and program information sessions. Staff felt that participants that emerged from these multi-day sessions were more likely to succeed in the program and complete the training. If adopted by other programs, orientation processes such as the "vestibule" in Baltimore County, may help in ensuring that the programs enroll participants who are ready to embark on a career pathway.

To minimize the cost per student and thus maximize the number of students trained with a given amount of funding, sites could implement larger class sizes and provide a smaller number of individual curricula. The information on ACE expenditures by site indicates that the resources required to implement a class do not change proportionately with the number of students in the class, thus offering larger class sizes can be economically more efficient (reflecting economies of scale). Additionally, the number of different types of programs offered may also influence the cost per student, as curriculum development, additional instructors, and additional materials and equipment are needed as new classes are added.

Facility and equipment expenditures were not often accounted for in estimating costs. Since facilities (classrooms) and equipment (computers) are typically shared with other non-program functions, they are often not included when estimating program cost. Since these expenditures are necessary for program implementation, they should be included in determining costs. Costs for these items, if they are shared, can be estimated based on the proportion of time they are used for the individual program.

Further Research

The ACE evaluation study findings suggest potential subjects for further research. Below, we provide a set of research questions that the ACE evaluation results indicate would yield valuable information, but were beyond the scope of the ACE evaluation.

How much co-teaching/contextualized learning is needed to achieve positive employment-related outcomes among low-skilled workers? Sites point to the fact that ACE is expensive to implement, especially the co-teaching component. Staff hypothesize that the program would achieve similar participant outcomes if co-teaching were offered 50% to 75% of the time rather than all the time. Further research could examine the degree to which varying the amount of co-teaching effects student outcomes. Results of this research would allow training programs to more efficiently allocate resources for co-teaching and ensure that students are receiving adequate contextualized learning components.

Do employment and earnings benefits from programs such as ACE persist over longer periods of time (such as three, four, or five years after training completion)? The ACE findings suggest that ACE and similar programs may result in employment-related benefits that persist for years after the training program ends. Further research could examine whether ACE participants continue to receive benefits from their participation in ACE. Outcomes to examine over a longer time period could include earnings, promotions, benefits from an employer and additional training and credentials.

1. Introduction

Low-skilled job seekers in today's workforce often find it challenging to access the occupational training and supports they need to build a career pathway and succeed. The availability of programs that address students' basic skills needs within occupational programs is limited; those with low basic skills often do not qualify for occupational training programs; and regulations and performance measures within the public workforce system often emphasize placement of individuals into high-skilled jobs that are beyond the reach of the low-skilled workforce. Additionally, support services and resources available to help low-skilled individuals are fragmented among agencies within and outside of the workforce development system.[10]

The Accelerating Connections to Employment (ACE) initiative sought to address these challenges. The ACE program combined education and training services within the workforce system to help low-skilled individuals build their career paths. ACE was implemented from 2012 to 2016 by a consortium of nine Workforce Investment Boards (WIBs) and 10 community colleges across four states: Connecticut, Georgia, Maryland and Texas. The initiative was funded by a nearly $12 million Workforce Innovation Fund (WIF) grant from the U.S. Department of Labor, Employment and Training Administration (USDOL/ETA) to the Baltimore County Department of Economic and Workforce Development (DEWD). The ACE program enrolled 1,258 low-skilled job seekers over four years and 77% completed the program, surpassing the program goal. Consortium partners offered occupational training based on local labor market demands – and all training focused on at least one high-growth health care occupation.

ICF, the independent third-party evaluator for the ACE program, completed a randomized controlled trial to study the initiative's impact on several outcomes, including annual earnings, employment status, receipt of a training-related credential and persistence toward a defined career track. ICF also conducted an implementation study to measure fidelity to the model and to identify promising practices. This final report for the ACE initiative provides DEWD, the nine ACE partner communities and USDOL/ETA with information on whether ACE was successful in meeting its goals and objectives.

The report begins with a program overview, including a brief literature review on career pathways, workforce development and similar programs; a description of ACE and the evolution of the ACE model; a description of how the initiative was planned and organized within the context of fidelity to the model; a description of the ACE participants by site, summarizing their demographic and socioeconomic characteristics; key research questions; and a timeline for the ACE intervention and evaluation.

The report then presents the evaluation design and methodology, and outcome, implementation and cost study findings. A concluding section summarizes the impact, implementation and cost study findings; suggests the implications of those findings; and proposes next steps for further research. The appendices to this report contain information on ACE site profiles; the data

[10] Accelerating Connections to Employment (ACE). *Grant Submission (2012)*. Baltimore County Department of Economic Development, Division of Workforce Development.

collection instruments/protocol; a crosswalk of research questions, measures, and data sources; and further information and data on the outcomes, implementation and cost study findings.

2. Program Description/Overview

As the economy continues to grow and shift from an industrial one to a knowledge-based one, individuals without postsecondary education or training will find it increasingly difficult to move beyond subsistence-level jobs.[11] Workers with little education and few skills can rarely work their way out of low-wage, dead-end jobs on their own; and some job-connected education or training allows for an advance to jobs that pay higher wages.[12] Moreover, not only are these low-skilled individuals unable to compete for in-demand occupations, but the adult education and workforce development systems that should prepare them for jobs are often ill-equipped to help.[13] Conventional adult education programs administer basic skills courses to students before allowing them to enter higher-level classes. This approach, however, can be problematic because students often do not return for more education after completing short-term training. For example, in Washington State only 30% of a cohort of students who started in adult basic education (ABE) earned at least one college credit in five years and the comparable rate for students who started in an English as a Second Language (ESL) program was only 7%.[14] As a result, there is growing support for creating a system of career pathways, which combines basic skills programming with technical instruction and other support services, to help low-skilled individuals navigate transitions in the educational pipeline.[15]

2.1 Rationale/Evidence Behind the ACE Model

The ACE model, based in part on Washington State's Integrated Basic Education and Skills Training (I-BEST) model, is an innovative program composed of interventions that enhance how community colleges and WIBs help low-skilled workers obtain training and employment. ACE includes a number of components that evidence has shown to be effective, such as dual instructors and contextualized learning. This section describes the rationale and evidence behind the ACE model and how its components have been effective in helping low-skilled workers obtain credentials and sustainable employment.

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[11] Jenkins, D. (2006) ("Jenkins, 2016"). *Career Pathways: Aligning Public Resources to Support Individual and Regional Economic Advancement in the Knowledge Economy*. Barrington, RI: Workforce Strategy Center, p. 1. Available online at http://www.zsr.org/sites/default/files/documents/WSC_pathways8.17.06.pdf.

[12] Poppe, N., Strawn, J., & Martinson, K. (2003). *Whose Job Is It? Creating Opportunities for Advancement* in "*Workforce Intermediaries in the 21st Century*" (Robert P. Giloth (ed.) Temple University Press, 2003). Center for Law and Social Policy, p. 12. Available online at http://www.clasp.org/resources-and-publications/files/0132.pdf.

[13] Center for Law and Social Policy (CLASP). (2016). *Funding Career Pathways and Career Pathway Bridges: A Federal Policy Toolkit for States* (Revised Edition). Available online at http://www.clasp.org/resources-and-publications/publication-1/Career-Pathways-Funding-Toolkit-2015-8.pdf.

[14] Prince, D. & Jenkins, D. (2005). *Building Pathways to Success for Low-Skill Adult Students: Lessons for Community College Policy and Practice from a Statewide Longitudinal Tracking Study*. CCRC Research Brief No. 25. New York, NY: Columbia University, Teachers College, Community College Research Center, p. 13. Available online at http://ccrc.tc.columbia.edu/publications/low-skill-adults-policy.html.

[15] *ABE Career Connections: A Manual for Integrating Adult Basic Education into Career Pathways*. MPR Associates Inc. (2011), pp. 1-2. Available online at https://lincs.ed.gov/publications/pdf/CareerPathwaysToolkit2011.pdf.

2.1.1 Integrated Basic Education and Skills Training (I-BEST)

Multiple models focus on postsecondary occupational education and training. One promising model is Washington's I-BEST program, which integrates basic skills instruction with college-level career-technical skills in specific industries.[16] I-BEST was created to increase the rate at which students advance to and succeed in college-level courses by integrating basic skills instruction with college-level career-technical skills.[17] The I-BEST model also creates a career pathway for students where a sequence of courses leads to a postsecondary credential and to employment.[18] The program has expanded rapidly in recent years, from five colleges in the 2004-05 academic year to all 34 community and technical colleges in the Washington State system.[19]

A 2009 study used propensity score matching techniques to match 896 I-BEST students with a pool of 1,356 non-I-BEST students who enrolled in at least one workforce course in the 2006-07 academic year (the first year the program moved beyond the pilot phase and was in full operation).[20] The authors found that:

- Ninety-six percent of students in the I-BEST group earned college credit by the end of the study period, compared to 67% of the comparison group (effect size: .90).[21]
- The mean number of credits earned by the I-BEST students was 52, compared to 34 credits earned on average in the comparison group.[22]
- Seventy-eight percent of I-BEST students persisted into the second academic year (2007-08), compared to 61% of students in the comparison group (effect size: .50).[23]
- Sixty-two percent of I-BEST students achieved a gain in skills, as measured by the Comprehensive Adult Student Assessment Systems (CASAS) test, compared to 45% of the comparison group (effect size: .42).[24]

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[16] Wachen, J., Jenkins, D., & Von Noy, M. (2010). *How I-Best Works: Findings from a Field Study of Washington State's Integrated Basic Education and Skills Training Program*. New York: Community College Research Center (CCRC), Teachers College, Columbia University, p. 2. Available online at http://ccrc.tc.columbia.edu/media/k2/attachments/how-i-best-works-findings.pdf.

[17] Jenkins, D., Zeidenberg, M., & Kienzl, G.S. (2009). *Educational Outcomes of I-BEST, Washington State Community and Technical College System's Integrated Basic Education and Skills Training Program: Findings from a Multivariate Analysis* (CCRC Working Paper No. 16). New York: Community College Research Center, Teachers College, Columbia University, p. 2. Available online at http://ccrc.tc.columbia.edu/media/k2/attachments/educational-outcomes-of-i-best.pdf.

[18] Wachen et al., p. 5.

[19] Bloomer, T. (2008). *Education + Work Skills = Jobs*. Literacy Update. New York: Literacy Assistance Center. Retrieved from http://www.lacnyc.org/resources/publications/update/Update2008-9/Oct08Rev.pdf. Cited in Jenkins et al., p. 6.

[20] Jenkins et al., p. 10.

[21] Id., p. 3. Effect size indices were calculated by ICF using the Cox Index formula. See also, Sanchez-Meca, J., Marin-Martinez, F., & Chacon-Moscoso, S. (2003). "Effect-Size Indices for Dichotomized Outcomes in Meta-Analysis." PSYCHOLOGICAL METHODS, Vol. 8, No. 4. Available online at http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.468.3058&rep=rep1&type=pdf.

[22] Jenkins et al., p. 3. Effect size could not be calculated from the information provided in the report.

[23] Ibid.

[24] Ibid.

- Fifty-four percent of I-BEST students earned a degree or certificate by the end of the two-year observation period, compared to 18% of comparison students (effect size: 1.02).[25]

A later study by Zeidenberg et al., expanded the study to two cohorts (2006-07 and 2007-08), which expanded the sample to 1,390 I-BEST students. The authors' findings corroborated earlier positive findings and, in addition, they found that students who attended colleges with I-BEST programs were more likely to earn a certificate within three years and earn college credits, relative to students who were not exposed to I-BEST.[26] However, the authors also found no relationship between enrollment in I-BEST and wage changes or hours worked after leaving the program. The authors surmised that since the most recent recession hit as these cohorts of students were entering the workforce, this finding may be largely the result of exogenous factors rather than due to the training itself.

Given that the ACE intervention has the same pedigree as Washington's I-BEST model, we have high expectations for the effectiveness of this initiative. The proposed core research design is a randomized controlled trial (RCT), which is more rigorous than previous quasi-experimental studies on the I-BEST initiative. The RCT study—which is experimental—is more rigorous because it eliminates selection bias and through randomization, treatment and control groups can be expected to be balanced on both observable characteristics (e.g., previous wages) and unobservable characteristics (e.g., motivation). The proposed study also expands the knowledge base of ACE by including an implementation study to determine whether adherence to the ACE model is associated with stronger outcomes, a cost study to determine the most effective investments for the price, and case studies to delve into how, and potentially why, ACE is working.

2.1.2 Contextualized Learning

Based on a review of the research, the ACE initiative pursues contextualized learning as the underpinning of the project, focusing on training and education. During our research review, contextualized learning frequently appears as a best practice. Experimental research that relies on random control trials is uncommon due to questions regarding the appropriateness of withholding services to this population. However, the Department of Health and Human Services is funding a career pathways research portfolio. The Innovative Strategies for Increasing Self-Sufficiency project is evaluating the effectiveness of nine career pathways programs using an experimental design.[27] Jobs for the Future in its "Breaking Through" (BT)

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[25] Id., p. 13.

[26] Zeidenberg, M., Cho, S., & Jenkins, D. (2010). *Washington State's Integrated Basic Education and Skills Training Program (I-BEST): New Evidence of Effectiveness*. (CCRC Working Paper No. 20). New York: NY, Community College Research Center, Teachers College, Columbia University, p. 2. Available online at http://ccrc.tc.columbia.edu/publications/i-best-new-evidence.html.

[27] Martinson, K. & Gardiner, K. (2014). *Improving the Economic Prospects of Low-Income Individuals through Career Pathways Programs: The Pathways for Advancing Careers and Education Evaluation.* OPRE REP. 2014-17, Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Available online at http://www.acf.hhs.gov/sites/default/files/opre/pace_policy_brief_8_21_2015_b508.pdf.

initiative has had appropriately rigorous evaluations conducted by the Office of Community College Research and Leadership.[28] The BT initiative espouses four high-leverage strategies:

1. Accelerated learning: Students learn material faster when it is contextualized in terms of how they will apply it in their jobs and daily lives.
2. Comprehensive supports: Social support services are crucial to helping students overcome non-academic barriers to completion that may be related to work or family.
3. Labor market payoffs: Course content teaches skills that local employers need now.
4. Aligning programs for low-skilled adults: Clear pathways from college into careers help students navigate their own process and stay motivated. The BT initiative links college programs with community-based programs to achieve this.[29]

In the *Final Report of the Charles Stewart Mott Breaking Through Initiative*, Bragg and Barnett evaluated the initiative against three areas: Process evaluation, institutional change and student participation and outcomes. Bragg and Barnett used a mixed method evaluation design that included:

> "(1) document review by the evaluators, self-assessments and surveys completed by program leaders, (2) site visits to understand how the programs facilitate or impede student participation and outcomes, including examining how low-skilled adults participate and persist in sequential curriculum (career pathway) programs, and (3) tracking of quantitative student outcomes. With respect to the BT program, the evaluation took an especially close look at emerging models and how the models align with the four high-leverage strategies [...]"[30]

Students at the leadership colleges have a similar profile to ACE participants. From the evaluation, three models stood out—Developmental Bridge Model, Professional Technical Bridge Model, Career Pathway Model—all of which include contextualized learning.

Of the four high-leverage strategies that are part of BT, ACE implemented comprehensive supports through our training and supportive services activities, aligning all programs with the local labor market, and adapting the BT approach rather than replicating it.

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[28] Bragg, D. & Barnett, E. (2008). *Final Report of the Charles Stewart Mott Breaking Through Initiative*. Champaign, IL: University of Illinois, Office of Community College Research and Leadership. Available online at http://occrl.illinois.edu/docs/librariesprovider4/breaking-through/final-report-breaking-through.pdf. Bragg, D., Baker, E., & Puryear, M. (2010). *2010 Follow-up of Community College of Denver FastStart program*. Champaign, IL: University of Illinois, Office of Community College Research and Leadership. Available online at http://files.eric.ed.gov/fulltext/ED521421.pdf.

[29] Jobs for the Future. (2010). *The Breaking through Practice Guide*. National Council for Workforce Education, p. IV. Available online at http://www.jff.org/sites/default/files/publications/BT_Documentation_June7.pdf.

[30] Bragg, D. & Barnett, E. (2008). *Final Report of the Charles Stewart Mott Breaking Through Initiative*. Champaign, IL: University of Illinois, Office of Community College Research and Leadership, p. 5. Available online at http://occrl.illinois.edu/docs/librariesprovider4/breaking-through/final-report-breaking-through.pdf.

2.1.3 Career Pathways Initiatives

The Washington State I-BEST model is one of several career pathways initiated by individual states. Career pathways are a connected set of education and training programs and support services that allow individuals to secure employment in a specific occupational sector and advance over time.[31] Stephens (2009) outlined career pathways efforts in Arkansas, Kentucky, Oregon, Washington, and Wisconsin.[32] States reported on a range of performance metrics, though the author does not mention the conduct of rigorous research on the effectiveness of these programs. For example:

- In 2006-07, Arkansas enrolled 3,750 students in its Career Pathways Initiative Act program, and awarded 921 certificates/degrees.
- In 2007-08, Kentucky had a fall-to-fall retention rate of 76.7% in its career pathways program.
- As of 2009, Oregon had added more than 130 Career Pathways Certificates by 11 colleges.[33]

Stephens concludes that based on the experiences of the outcome data reported by the five states in her study, the following key outcome measures should be considered:

- Enrollment and retention of students;
- Completion rates and the number and type of certificates or degrees attained;
- Transition rates from basic skills to progressively higher levels of coursework;
- Employment outcomes, including wages, benefits, retention, upgrades in pay and promotions; and
- Whether graduates secure jobs related to their field of study.[34]

In 2003, Public Private Ventures launched the Sectoral Employment Impact study. This RCT included three organizations in Milwaukee, Boston, and New York City.[35] These three programs provided industry-specific training programs that helped unemployed and under-skilled workers find employment and connected participants with employers looking to fill vacancies. Although these programs did not engage community colleges to provide training, the target populations

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[31] Jenkins, D. (2006). *Career Pathways: Aligning Public Resources to Support Individual and Regional Economic Advancement in the Knowledge Economy*. Barrington, RI: Workforce Strategy Center, p. 6. Available online at http://www.zsr.org/sites/default/files/documents/WSC_pathways8.17.06.pdf.

[32] Stephens, R.P. (2009). *Charting a Path: An Exploration of the Statewide Career Pathway Efforts in Arkansas, Kentucky, Oregon, Washington, and Wisconsin*. Seattle, WA: Seattle Jobs Initiative. Available online at http://www.workingpoorfamilies.org/pdfs/Career_Pathways_Report.pdf.

[33] Stephens, R.P. (2009). *Charting a Path: An Exploration of the Statewide Career Pathway Efforts in Arkansas, Kentucky, Oregon, Washington, and Wisconsin*. Seattle, WA: Seattle Jobs Initiative, pp. 23-5. Available online at http://www.workingpoorfamilies.org/pdfs/Career_Pathways_Report.pdf.

[34] Stephens, R.P. (2009). *Charting a Path: An Exploration of the Statewide Career Pathway Efforts in Arkansas, Kentucky, Oregon, Washington, and Wisconsin*. Seattle, WA: Seattle Jobs Initiative, p. 27. Available online at http://www.workingpoorfamilies.org/pdfs/Career_Pathways_Report.pdf.

[35] Clymer, C., Conway, M., Freely, J., Maguire, S., & Schwartz, D. (2010). *Tuning In to Local Labor Markets: Findings From the Sectoral Employment Impact Study*. Philadelphia, PA: Public Private Ventures. Executive Summary, p. ii. Available online at http://www.issuelab.org/resource/tuning_in_to_local_labor_markets_findings_from_the_sectoral_employment_impact_study.

and sectoral focus are congruent with the ACE initiative. The study's authors found that participants in sector-focused programs earned significantly more than control group members (+$4,509), were significantly more likely to work more months during the follow-up period (+1.3 months), and were more likely to work at a job paying at least $13 an hour (+8%).[36] After a 24-30 month follow-up period, the study's authors were able to obtain a 79% retention rate in the study, with 7% differential attrition.[37] These attrition rates are within the boundaries of reasonable attrition set by the What Works Clearinghouse™.[38]

2.2 ACE Model

ACE is a four-state, nine-WIB initiative to expand and improve skill-building opportunities and outcomes for a priority population with the workforce system. Exhibit 2.1 shows the sites and partners that were involved in the ACE project and their roles and responsibilities. The initiative targets low-skilled job seekers, including individuals with limited English proficiency and individuals with low reading, writing and math skills.

The ACE initiative has two major innovative strategies. The first is to introduce or scale-up programs in the nine partner communities modeled on Washington State's highly regarded I-BEST program. This project builds on Maryland's experience implementing an I-BEST-like program at six community colleges, and on Austin Community College's experience with a similar model. The sites were brought together by a shared interest in innovative education and employment strategies, and through partnerships with the Annie E. Casey Foundation and the Maryland Workforce Corporation.

These accelerated, integrated "ACE programs" incorporate basic skills, occupational skills and job readiness training; supportive services; an optional internship or clinical placements; job placement support; and long-term career navigation. Each ACE program is aimed at preparing job seekers for high-demand occupations that offer a career pathway.

WIBs along with their partner community colleges participated in ACE to implement education and career training programs with the following elements:

- Labor Market Demand: Targeting occupations and sectors with strong employer demand that offer realistic and navigable career pathways for adults with lower skills.
- Community Engagement: Actively engaging employers, industry associations, and WIBs to determine labor market demand, understand skill requirements for entry-level positions, and make connections that will help program completers find jobs.

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[36] Clymer, C., Conway, M., Freely, J., Maguire, S., & Schwartz, D. (2010). *Tuning In to Local Labor Markets: Findings From the Sectoral Employment Impact Study*. Philadelphia, PA: Public Private Ventures, p. 11. Available online at http://www.issuelab.org/resource/tuning_in_to_local_labor_markets_findings_from_the_sectoral_employment_impact_study.

[37] Clymer, C., Conway, M., Freely, J., Maguire, S., & Schwartz, D. (2010). *Tuning In to Local Labor Markets: Findings From the Sectoral Employment Impact Study*. Philadelphia, PA: Public Private Ventures, p. 66. Available online at http://www.issuelab.org/resource/tuning_in_to_local_labor_markets_findings_from_the_sectoral_employment_impact_study.

[38] For more information, see *Procedures and Standards Handbook, Version 3.0.* What Works Clearinghouse – Institute of Education Sciences (IES), U.S. Department of Education, pp. 12-3. Available online at https://ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc_procedures_v3_0_standards_handbook.pdf.

- Credentials: Leading to a credential valued by employers, whether the program is offered for credit or as a non-credit program.
- Learning Assessment: Providing pre-testing and post-testing using the Test of Adult Basic Education (TABE) or the Comprehensive Adult Student Assessment System (CASAS).
- Outcomes: Incorporating a well-defined intake process, including recruitment, screening and orientation to increase the likelihood that selected students will be a good match for the program and the targeted career pathway.
- Integrated Teaching: Integrating occupational and basic skills curricula so that students build their basic and occupational skills simultaneously, and incorporate co-teaching by basic skills or ESL and an occupational skills instructor for at least 50% of the occupational training hours of the program.
- Student Success: Offering student support services, including individual coaching throughout the program, assistance in planning and navigating transitions to further education and employment, and academic support for students who face challenges mastering program content.
- Transition: Offering employment-related services (in-house or through partnerships, particularly with community-based organizations and local One-Stop offices) to increase students' likelihood of moving into relevant jobs or advancing along career pathways.
- Campus Involvement: Resulting from a rigorous planning process involving adult basic education/ESL faculty, occupational skills faculty (credit and non-credit), and staff from a variety of student support and administrative divisions, and information technology staff. These various divisions should together map out educational pathways and supports for students during and after ACE.
- Tracking: Including a strong data tracking component, using a common system developed in collaboration with other participating ACE WIBs and community colleges, to capture students' educational and employment gains through pre- and post-tests.

Exhibit 2.1: ACE Site Partners, Roles and Responsibilities

Partners	Roles and Responsibilities
Baltimore County Department of Economic and Workforce Development (BCDEWD)	Grant recipient, overall grant management and oversight, interface with USDOL, federal reporting, management of Baltimore County activities and capturing best practices
Local WIBs Anne Arundel Workforce Development Corporation (Anne Arundel County, MD) Atlanta Workforce Development Agency (Atlanta, GA) Baltimore County Department of Economic and Workforce Development (Baltimore County, MD) Mayor's Office of Employment Development (Baltimore City, MD) Montgomery County Department of Economic Development, Division of Workforce Services (Montgomery County, MD) Prince George's County Economic Development Corporation (Prince George's County, MD) Upper Shore WIB (Caroline, Dorchester, Kent, Queen Anne's and Talbot Counties, MD) Workforce Alliance (New Haven, CT)	Student recruitment, employer recruitment, eligible trainee recruitment, post-employment retention services for both employers and newly employed ACE trained participants and capturing best practices

Partners	Roles and Responsibilities
Workforce Solutions – Capital Area Workforce Board (Austin, TX)	
Community Colleges Anne Arundel Community College (Anne Arundel County, MD) Atlanta Technical College (Atlanta, GA) Austin Community College (Austin, TX) Baltimore City Community College (Baltimore City, MD) Chesapeake College (Upper Shore, MD) Community College of Baltimore County (Baltimore County, MD) Gateway Community College (New Haven, CT) Georgia Piedmont Technical College (Atlanta, GA) Montgomery College (Montgomery County, MD) Prince George's Community College (Prince George's County, MD)	Student recruitment, faculty recruitment and professional development, curriculum development, instruction and capturing best practices
Employers Atlanta Medical Center (Atlanta, GA) Bradford Hills Health Care Center (Bradford, CT) Choice Health Care Network (Atlanta, GA) Good Samaritan Hospital (Baltimore, MD) Johns Hopkins Medicine (Baltimore, MD) Mary Wade Home (New Haven, CT) Masonicare (Wellington, CT) Mercy Medical Center (Baltimore, MD) Saint David's Institute for Learning (Austin, TX) Seton Healthcare (Austin, TX) Yale – New Haven Hospital (New Haven, CT)	Provide input on occupations and skills, advise on curriculum and project design, create internships, interview candidates for appropriate job opportunities, engage new employers, and provide ongoing feedback
ICF	Independent third-party evaluator
Annie E. Casey Foundation	Philanthropic support, technical assistance
Economic Mobility Corporation	Technical assistance

We prepared three logic models for the ACE project: (1) a top-line logic model, which is presented in Exhibit 2.2; (2) a measurement model that further specifies the measures that fall under each category of the top-line logic model, which is presented in Appendix 2.1; and (3) an analysis model that further delineates the line logic between steps in the logic model, which is presented in Appendix 2.2.

The top-line logic model shown in Exhibit 2.2 has the following components:

- Inputs: This column displays the four major partner types in the ACE National Evaluation: WIBs, community colleges, employers, and other partners. Each partner brings to the table a set of processes and services that must be reconciled and coordinated to deliver the full ACE model.
- Activities: The 10 core ACE components were broadly categorized under the headings of planning, intake, training, support services, and transition and tracking. These categories present a temporal and logical sequence of a customer's involvement in the ACE program.
- Outputs: These represent the immediate results of each step in the planning, intake, training, support services, and transition and tracking processes. Outputs are sometimes referred to as short-term outcomes.

- Outcomes: These outcomes are hypothesized benefits from the ACE training. Benefits are hypothesized to accrue at both the systems level (i.e., to WIBs, community colleges, and partners in terms of more efficient service delivery mechanisms) and at the individual level (i.e., to individual customers).
- Impacts: These are the hypothesized long-term impacts of ACE participation. Relative to the control group, we expect that ACE participants will attain credentials, enter and retain employment, and advance along career pathways at a higher rate than the control group.

While the top-line model provides a useful and easy-to-understand delineation of the ACE model, it is not particularly helpful for understanding what measures need to be administered to establish causal flows in the model. The measurement model (Appendix 2.1) provides the requisite level of detail needed to begin work on instrumentation for this evaluation.

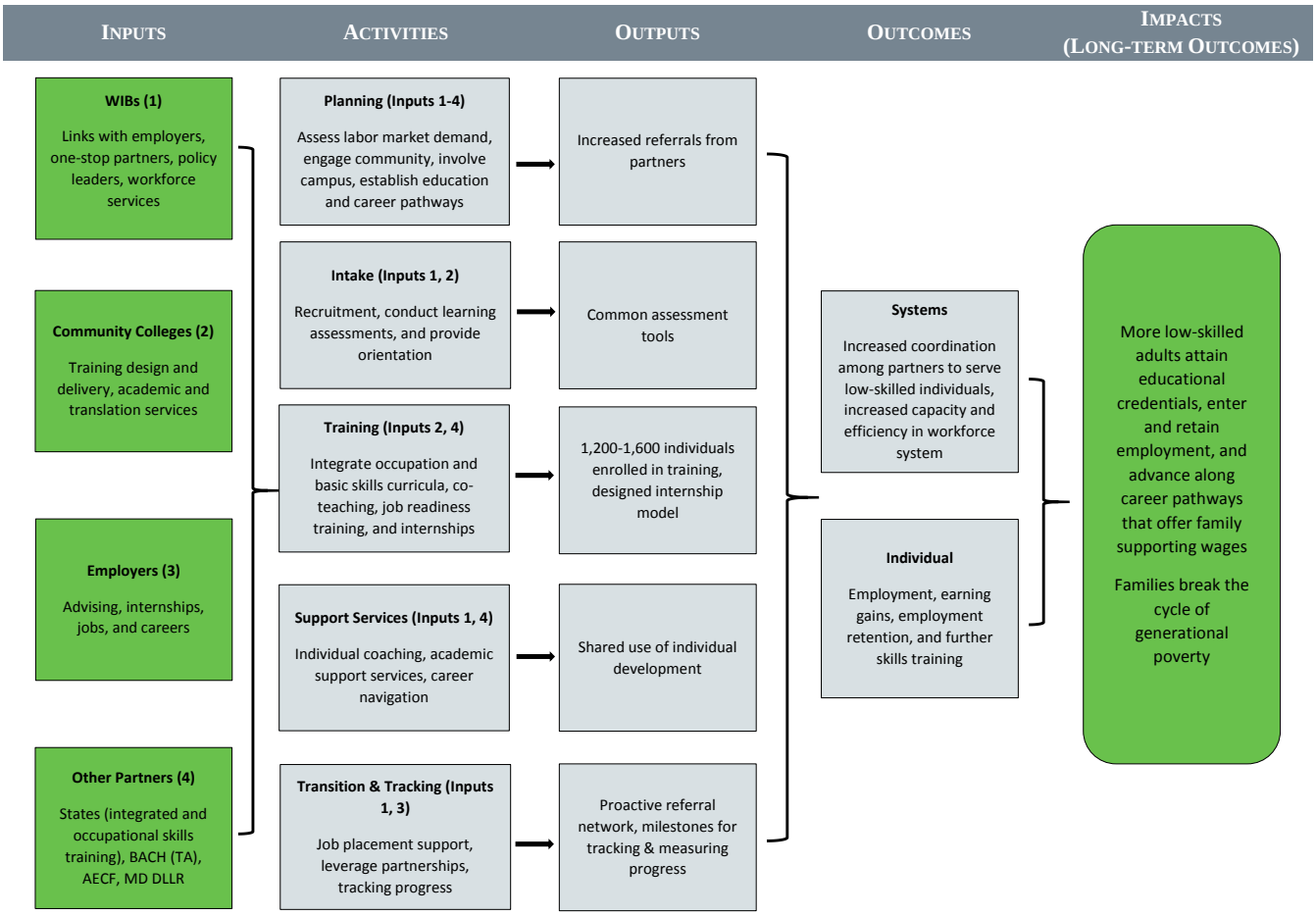
While the measurement model does not provide an exhaustive list of metrics needed in the study, it does provide the domains of metrics that are needed. For example, WIB inputs include (a) intake processes, which will be operationalized using a checklist of activities that WIBs usually undertake when customers come into a One-Stop center (e.g., initial orientation, career interest assessment, skills assessment, one-on-one counseling), (b) career navigator experience, which is measured by the number of years in the workforce development field, and amount of time working for the WIB, and (c) services offered, which comprised another checklist of services available through the One-Stop center. The latter category is especially important for establishing the counterfactual and understanding the treatment contrast, as control group participants will have access to other services provided by the WIB.

Broadly, the main impact domains include (a) the attainment of credentials; (b) employment, which will be measured in terms of earnings, employment rates and retention, the amount of time needed to secure employment and the receipt of benefits; (c) career pathways, which will be measured via promotions and amount of time spent on a specific pathway; and (d) other outcomes, including economic security and the receipt of public assistance.

The analysis model provides a broader focus than the measurement model, but specifies both the focused logical flows (denoted by blue block arrows) and broad causal flows (denoted by black arrows) between steps in the logic model. The analysis model provides the main domains of study (the components of each are specified in the measurement model) and focuses on how relationships between these domains are conceptualized. For example, it was anticipated that system-level outcomes would mostly be the result of more efficient intake and assessment processes, while the instruction would provide the direct flow to our main outcomes of interest: employment and earnings (and by extension, family stability). While this model may seem simplistic, it provides a broad roadmap for analysts in the development and refinement of our analyses.

All three logic models have specific value to this evaluation. We view the top-line logic model as an excellent communication tool, and the measurement model as an effective evaluation planning tool. The analysis model served as our primary tool for organizing the analysis plans and directing the main tasks in the analysis.

Exhibit 2.2: ACE Top-Line Logic Model



2.3 Site Descriptions

Exhibit 2.3 shows the training programs that each ACE site offered, along with the each sites total enrollment, number of program completers, and completion rate. Of the nine ACE sites, all but one provided multiple training programs. Montgomery County only offered one ACE program in certified nursing assistant (C.N.A.) training. The majority of ACE sites met their completion rate goal of 75%, which ranged from 93% for Montgomery County to 67% for the Upper Shore.

Exhibit 2.3: ACE Site Critical Indicators (Total as of April 30, 2016)

ACE Site	Training Program	Total Enrollment	# Program Completers	Completion Rate
Anne Arundel Co., MD	▪ Dental Assisting ▪ A+ ▪ Dealer ▪ Bus Driver ▪ C.N.A./G.N.A. ▪ Commercial Driver's License 3 (CDL 3)	159	109	69%

ACE Site	Training Program	Total Enrollment	# Program Completers	Completion Rate
Atlanta, GA*	▪ Welding ▪ Drafter's Assistant ▪ Pharmacy Tech ▪ Medical Billing ▪ Warehouse/Forklift	128	87	68%
Austin, TX	▪ Administrative Assistant ▪ C.N.A. + Acute Care Skills ▪ Apartment Maintenance	120	90	75%
Baltimore City, MD	▪ Multi-skilled Medical Tech ▪ Medical Billing Specialist ▪ Pharmacy Tech ▪ Dietary Aide ▪ C.N.A. ▪ CNC Manufacturing ▪ Warehouse Logistics	192	145	76%
Baltimore Co., MD	▪ Dental Assistant ▪ Utility Installer ▪ Logistics ▪ Construction ▪ Certified Apartment Maintenance Technician (CAMT) ▪ Medical Office Support ▪ C.N.A./G.N.A.	238	202	85%
Montgomery Co., MD	▪ C.N.A.	96	89	93%
New Haven, CT	▪ Patient Care Technician ▪ Prof. Food and Beverage Server ▪ Community Health Worker ▪ Small Engine Repair & Tech ▪ IT Help Desk Trainee	190	141	74%
Prince George's., MD	▪ C.N.A. ▪ Security Officer ▪ Medical Office Assistant	105	88	84%
Upper Shore, MD*	▪ C.N.A. ▪ Culinary Arts	30	20	67%

* Sites did not offer training for the entire duration of the grant. The Atlanta site offered training through November 30, 2014, and the Upper Shore site offered training through August 31, 2014.

The target populations across the nine ACE sites were similar. All sites initially targeted segments of the population that were most likely to be low-skilled workers. Exhibit 2.4 shows the primary population segments that each ACE site targeted.

Exhibit 2.4: Target Population by Site

Site Name	Target Population
Anne Arundel, MD	▪ Temporary Assistance for Needy Families (TANF) ▪ Housing Authority ▪ Emergency Unemployment Compensation recipients ▪ Low-income people
Atlanta, GA	▪ TANF ▪ Housing Authority ▪ Older youth
Austin, TX	▪ TANF ▪ Older youth ▪ Aging out of foster care
Baltimore City, MD	▪ ABE/General Educational Development (GED) student ▪ One-Stop participants ▪ Baltimore City workforce partners
Baltimore County, MD	▪ Current GED students ▪ Partial completers of GED test ▪ Developmental Education ▪ Workforce Center referrals/ dislocated workers/ second career ▪ Frontline workers from hospitals/ underemployed
Montgomery County, MD	▪ Immigrant ▪ Refugees ▪ TANF ▪ Disconnected youth – from LAYC (Workforce Investment Act [WIA] youth vendor)
New Haven, CT	▪ TANF ▪ Limited English speaking ▪ Older youth
Prince George, MD	▪ TANF ▪ Youth aging out of foster care ▪ Immigrants ▪ ABE participants
Upper Shore, MD	▪ Immigrants ▪ Those lacking a high school diploma/GED ▪ TANF ▪ Homeless individuals

2.3.1 Population/Labor Market Characteristics of ACE Communities

To better understand the participants in the ACE site locations, we examined the demographic and labor market characteristics of those locations from 2011 to 2015. Although all of the locations noted an increase in overall population from 2011 to 2015, Austin, TX, had the largest total population increase (13.4%) while Upper Shore, MD, had the smallest increase (0.6%). Austin also had the largest increase among whites (70.5% to 77.9%), while New Haven, CT, had the largest decrease of whites (48.6% to 45.2%). All of the sites showed an increase in the Asian population, with Austin, TX, and Montgomery County, MD, demonstrating the largest increase (6.9% to 8.0% and 15.2% to 16.3%, respectively). The African-American and American Indian/Alaska Native populations remained steady from 2011 to 2015 across the nine locations.

From 2011 to 2015, all of the locations showed an increase in graduate school educational attainment, with Atlanta, GA, having the largest increase (18.3% to 20.6%). Seven of the nine locations showed a decrease or stayed the same from 2011 to 2015 for the population with less than a ninth-grade education. Two sites, Prince George's County and Upper Shore, MD, showed a small increase among their population with less than a ninth-grade education.

Median household incomes increased across all nine locations from 2011 to 2015. Montgomery County, MD, had the highest median household income in 2011 and 2015 ($94,358 and $99,435+, respectively). Austin, TX, had the largest percentage increase in median household income (13.9%), and the largest percentage increase in median earnings income (7.4%). While median household income increased across all nine locations, there were some differences in median earnings for workers. Prince George's County, MD, showed a small decrease in median earnings for workers from 2011 to 2015 ($38,439 to $37,843). The civilian labor force increased in numbers in six out of the nine locations, with Austin, TX, showing the largest increase (13.2%) from 2011 to 2015. The labor force participation rate remained relatively stable across the nine locations from 2011 to 2015; Prince George's County, MD, showed the largest drop from 74.1% to 72.1%. Similarly, the unemployment rate was relatively unchanged in most of the locations, although Austin, TX, demonstrated the largest decrease from 7.0% to 5.9%. Anne Arundel County, MD, and Austin, TX, had the lowest unemployment rate in 2015 across the nine locations. Appendix 2.3 shows the population characteristics of the city or county that each ACE site is located.

2.3.2 Demographic Characteristics of ACE Participants

While the previous section focused on the general population characteristics of the ACE communities, this section focuses on the demographics of ACE site participants. ACE site participants were primarily black or African-American (ranging from 36.1% in Austin, TX, to 96.1% in Atlanta, GA), between the ages of 21 to 40 years old, female (all sites reported a majority of females), had less than a high school diploma to some college or an associate's degree, and were unmarried (with the exception of Montgomery County, MD, where 53.1% of participants were married). Exhibit 2.5 shows the demographic characteristics of ACE participants at each site.

Exhibit 2.5: Demographic Characteristics Among ACE Participants by Site

	Atlanta, GA	Austin, TX	New Haven, CT	Anne Arundel Co., MD	Baltimore Co., MD	Baltimore City, MD	Montgomery Co., MD	Prince George's Co., MD	Upper Shore, MD
DEMOGRAPHIC CHARACTERISTICS									
White	1.5%	53.9%	17.2%	19.3%	15.8%	3.0%	10.7%	5.7%	32.1%
Black or African-American	96.1%	36.1%	54.6%	74.0%	72.7%	88.2%	65.0%	79.8%	64.3%
Hispanic or Latino (of any race)	1.5%	40.1%	22.4%	4.8%	4.3%	1.8%	11.9%	13.5%	1.7%
AGE									
16 to 20 years	16.3%	4.4%	9.8%	6.3%	6.8%	6.5%	2.3%	4.2%	13.3%
21 to 25 years	22.7%	10.6%	13.8%	17.5%	11.8%	15.1%	7.3%	17.1%	21.7%
26 to 30 years	19.7%	18.9%	19.5%	22.7%	25.8%	22.9%	12.4%	16.6%	25.0%
31 to 35 years	12.3%	13.3%	14.9%	13.8%	13.8%	12.8%	17.0%	8.3%	16.7%
36 to 40 years	10.3%	15.6%	10.1%	15.2%	12.0%	11.9%	20.3%	9.3%	11.7%
Over 40	18.7%	37.2%	31.9%	24.5%	29.8%	30.8%	40.7%	44.5%	11.6%
GENDER									
Female	54.2%	83.9%	67.0%	74.4%	51.9%	72.6%	92.1%	88.6%	80.0%
Male	45.8%	16.1%	33.1%	25.7%	48.1%	27.4%	7.9%	11.4%	20.0%
EDUCATIONAL ATTAINMENT									
Less than high school	57.6%	25.0%	4.6%	7.8%	8.0%	12.7%	48.6%	10.9%	16.7%
High school diploma or GED	29.6%	42.8%	47.1%	67.7%	45.4%	55.8%	40/1%	46.1%	53.3%
Some college or associate's degree	10.3%	29.4%	41.1%	21.2%	39.4%	26.6%	9.0%	35.8%	30.0%
Bachelor's degree or higher	2.5%	2.8%	7.2%	3.4%	7.3%	5.0%	2.3%	7.3%	0%
MARITAL STATUS									
Married	7.1%	29.1%	20.5%	17.3%	17.2%	22.1%	53.1%	23.3%	5.5%
Not married	92.9%	70.9%	79.5%	82.7%	82.8%	77.9%	47.0%	76.7%	94.6%

Source: U.S. Census, American Community Survey, 2015.

2.4 Key Research Questions

ICF gathered information from a variety of sources to compile this report, including surveys of randomized study participants (both treatment and control group members), unemployment insurance (UI) data, interviews with site staff and employer partners, student focus groups, and administrative enrollment and tracking records collected through the Effort to Outcomes (ETO®) database. Throughout the report, this information is used to address the key research questions presented in Exhibit 2.6.

Exhibit 2.6: ACE Research Questions by Study

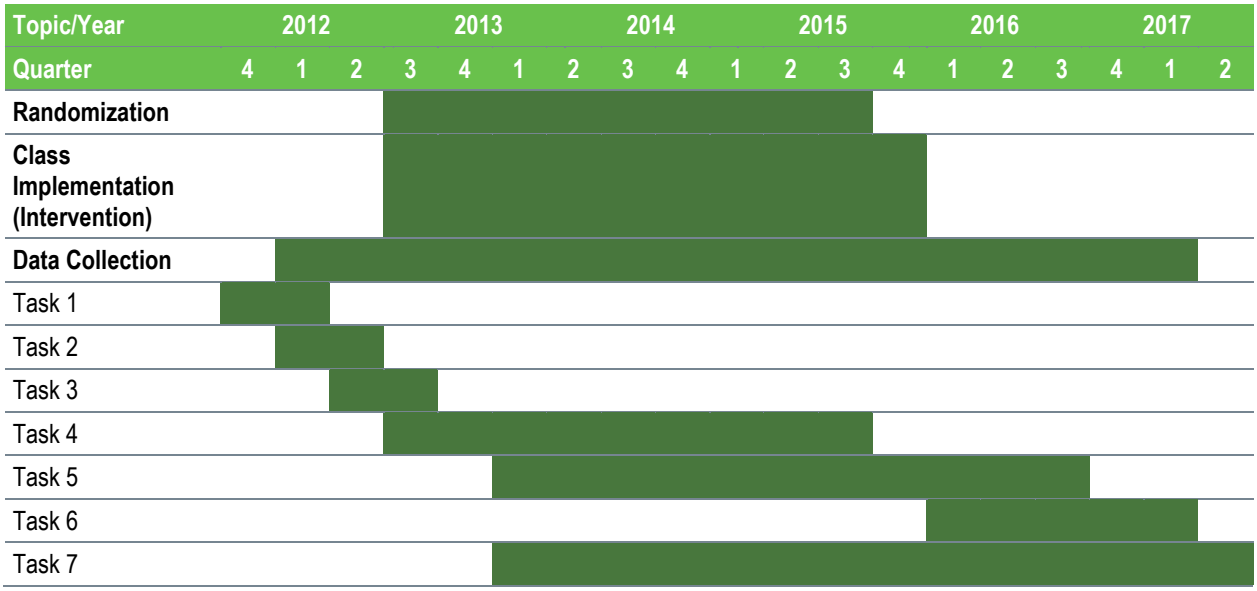
Research Question	Outcome Study	Implementation Study	Cost Study
Does the ACE program have an effect on credential attainment?	✓		
Does the ACE program have an effect on employment rates and retention?	✓		
Does the ACE program have an effect on earnings?	✓		
Does the ACE program have a positive or negative effect on the amount of time needed to secure employment, as measured as the time elapsed between training completion and the first job placement?	✓		
Does the ACE program have an effect on the likelihood that one will receive a high-quality job, defined as a job that is at least 35 hours a week, offering more than $13/hour, with access to benefits, such as health insurance and paid leave?	✓		
Does the ACE program have an effect on reliance on TANF and other public benefits?	✓		
Does the ACE program have an effect on career pathways?	✓		
Do ACE program impacts vary by participant characteristics (e.g., age, race and gender), prior work experience, income or occupational focus?	✓		
What are the critical components for implementation at each site over time?		✓	
How was fidelity of implementation and intervention assessed over time?		✓	
What services were provided (e.g., training, education, employment, supportive) to the control group (i.e., what is "business as usual")?		✓	
What were the successes and challenges to implementation?		✓	
What is the total cost of the program, by labor, equipment, and supplies?			✓
What is the cost of the program for each site and per participant?			✓
How does each component of the program contribute to the overall cost, using the "ingredients approach"?			✓

2.5 Timeline for Intervention and Evaluation

Exhibit 2.7 presents a top-line overview of the ACE evaluation timeline. The ACE intervention rolled out in the late summer and fall of 2013, with instruction beginning at the end of August or early September (depending on the community college's schedule). Subsequent cohorts began enrollment in Spring 2014, Fall 2014, and Spring 2015. Data collection began in 2013 and evaluation activities continued through the end of 2016. The evaluation plan stages included:

- Task 1: Kickoff Meetings/Initial Evaluation Design Plan
- Task 2: Develop Evaluation Material/Procedures for Institutional Review Board (IRB) Approval
- Task 3: Evaluation Implementation/Staff Training/Final Evaluation Design Plan
- Task 4: Cohort 1 – Recruitment/Baseline Data Collection
- Task 5: Cohort 1 – Follow-up Data Collection
- Task 6: Post-Instruction Follow-Up Data Collection/Analysis
- Task 7: Final Deliverables

Exhibit 2.7: Timeline of ACE Evaluation Plan: December 1, 2012 – April 30, 2017[39]



[39] Stages: Task 1: Kickoff Meetings/Initial Evaluation Design Plan; Task 2: Develop Evaluation Material/Procedures for IRB Approval; Task 3: Evaluation Implementation / Staff Training / Final Evaluation Design Plan; Task 4: Cohort 1 – Recruitment / Baseline Data Collection; Task 5: Cohort 1 – Follow-up Data Collection; Task 6: Post-Instruction Follow-up Data Collection / Analysis; Task 7: Final Deliverables; Cohort 2 – 5: Recruitment and Data Collection.

3. Evaluation Design and Methodology

ICF designed the ACE evaluation to provide rigorous evidence of the impact of ACE program interventions on employment outcomes, and to add context to these results by tracking the implementation of the ACE program and the first-hand experiences of staff and study participants. This approach provides evidence of the impact of the ACE program at the participating sites with a high degree of confidence, coupled with detailed contextual information designed to shed light on how the ACE program works at the local level and how it might be implemented in new settings.

The outcomes associated with ACE program interventions were evaluated using a random assignment design, an approach that, when properly monitored for potential sources of bias, such as study attrition, provides a high degree of confidence in the results.[40] The program evaluation was conducted at nine sites, each offering unique programs to and low-skilled workers in different geographic locations. The diversity of the sites, in both geographic location and in institutional characteristics, is expected to lead to a high degree of external validity because the findings are expected to be applicable to diverse settings and locations. This approach produces findings that are applicable to a wide variety of settings beyond the sites that participated.

To add context to the results, ICF collected a rich set of information drawn from staff and study participants as part of an ongoing implementation study. The results of this study serve to track the implementation of ACE; assess fidelity to the program model and identify necessary adaptations; improve interpretation of the outcomes findings; and facilitate translating the results of this research into practice.

The sections below describe the evaluation design. First, we describe the overall approach ICF took to the mixed methods study design. This section includes descriptions of quantitative and qualitative measures, and the approaches ICF used to integrate these diverse sources of information. Next, we describe the control group, showing the services and experiences of those who participated as the comparison in this study and their representation of "business-as-usual" (BAU) services. Finally, we conclude this section with a description of the economic conditions experienced by the sites and participants during the study period, which helps place the findings in context.

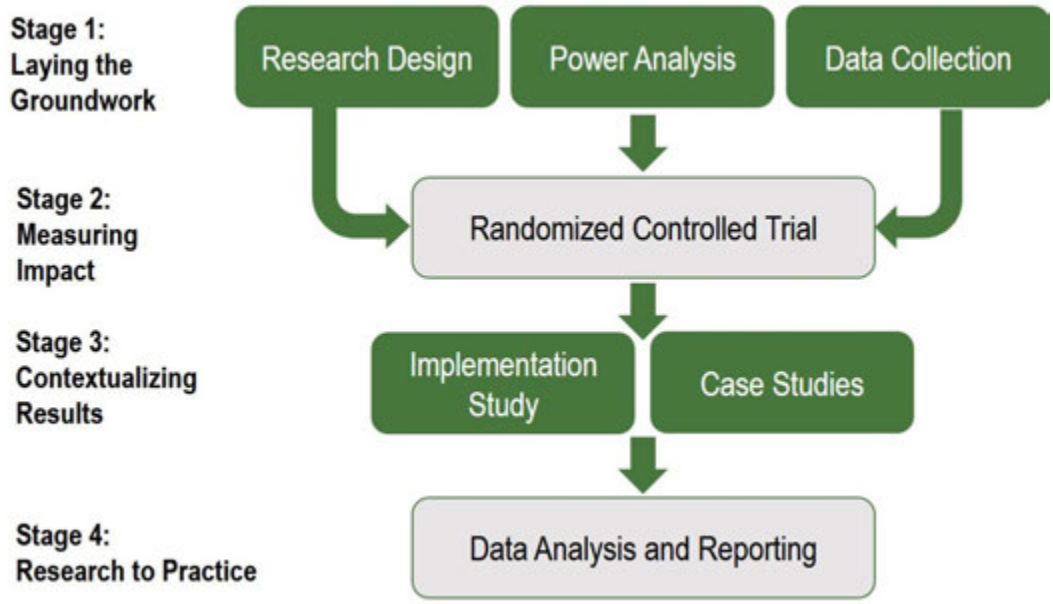
3.1 Mixed Methods Design and Data Sources

The ACE program evaluation includes an implementation study that drew from qualitative information collected through interviews, focus groups, and open-ended survey questions; and an outcomes study that drew from quantitative measures of employment outcomes. These components of the analysis were designed to complement one another.

[40] According to the standards developed by the What Works Clearinghouse See *Procedures and Standards Handbook, Version 3.0.* What Works Clearinghouse – Institute of Education Sciences (IES), U.S. Department of Education, pp. 9-10. Available online at https://ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc_procedures_v3_0_standards_handbook.pdf.

The evaluation framework in Exhibit 3.1 shows the components of the evaluation and the approach ICF followed to integrate measures of impact with the ongoing implementation study. In Stage 1 of the evaluation, ICF finalized the research design and developed data collection instruments and procedures. In Stage 2, the program evaluation began with the implementation of the randomized controlled trial. In Stage 3, ICF collected ongoing qualitative information to inform both the implementation study and a series of case studies designed to address areas of interest to ICF and the ACE program leadership. In the fourth and final stage, qualitative and quantitative information are combined to show both the impact of the ACE program interventions and provided contextual information.

Exhibit 3.1: ACE Evaluation Framework



Below, we describe the quantitative and qualitative data sources and collection procedures as planned and implemented throughout the program evaluation.

The **outcomes analysis** measures the impact of ACE on employment-related outcomes by comparing randomly selected treatment group to control group members. Three data sources provide the quantitative measures necessary to conduct the outcomes analysis. These data sources are: intake and tracking data collected by ACE site staff; data from the multi-modal follow-up survey; and UI data collected from state agencies in Maryland, Georgia, Texas, and Connecticut.

The **implementation study** tracks the evolution of the ACE program at each site and assesses fidelity to the program model. Implementing the ACE program involves teams of staff members at multiple sites. These teams, the roles of individual team members, and the process of implementing ACE were expected to evolve over time. Qualitative information used to track and analyze the implementation of ACE program interventions were collected from staff interviews and student focus groups; intake and tracking data collected by ACE site staff and recorded in the ETO database; and survey items included on the ACE follow-up survey.

Exhibit 3.2 describes the data sources used to conduct the outcomes analysis and implementation study.

Exhibit 3.2: Data Sources

Data Source	Description
Student intake and tracking database (ETO)	During the eligibility phase (after recruitment and prior to randomization), ACE site staff began to collect intake data for each potential ACE participant. Site staff created an entry in an online database created and maintained by Social Solutions Efforts to Outcomes database software for each ACE participant prior to randomization. Intake information collected by ACE site staff at the recruitment phase included demographics (age, gender, race, ethnicity, marital status); standardized test scores (TABE or CASAS reading and math grade level scores); and employment status and wages. Tracking information included course completion, attendance and receipt of support services.
Follow-up survey data	ACE participants received a multi-modal survey. Study participants were contacted first by email and invited to complete the survey online. If the participant did not complete the survey online, they were then sent a paper survey by mail. If the participant did not respond to the email or mail survey, he or she received a follow-up call and was given the opportunity to complete the survey by phone.[41] All ACE study participants received the Year 1 Follow-up Survey one year after randomization into the treatment or control group. Due to the time restrictions of the study, the Year 2 Follow-up survey was sent two years after randomization of cohorts enrolled from August 2013 to July 2014.
UI records	To measure employment and wage outcomes, quarterly wage records were collected from the state agencies in Maryland, Georgia, Connecticut, and Texas that oversee UI. The wage data collected from these state agencies include records for each individual showing the total wages he or she received by quarter. To match the data, ICF provided each state UI agency with a list of names and Social Security numbers of the ACE study participants randomized into the treatment and control groups in the state. If a quarterly wage record is not returned for an ACE study participant (i.e., the state UI agency has no record of wages for that individual in that quarter), the individual was not employed in the state during that quarter.
Staff interviews and student focus groups	To measure and track implementation, ACE frontline staff members and program leadership participated in annual study interviews, and selected students from each of the ACE sites who participated in focus groups. Evaluators used the following procedures to analyze interview and focus group transcripts: 1) Site visit protocols tailored to each interviewee were developed and revised each year. The protocols included questions designed to probe for open-ended reflections on the successes, challenges, and lessons learned. The protocols were composed of both general questions and specific probes, and were revised each year to address new topics and unforeseen challenges. 2) Evaluators took notes, recorded conversations, and completed site visit debriefs immediately after each site visit to summarize key takeaways. 3) Recordings were transcribed and imported to NVivo qualitative analysis software. Codes were developed to identify and compare common themes.[42] Each coder completed a training and practiced using these codes on a common set of practice transcripts. At the end of the training, codes from each coder were compared to ensure agreement.

[41] See Appendix 3.1 for a summary of survey response rates.
[42] Appendix 3.2 presents the list of codes evaluators used to analyze interview and focus group transcripts.

3.2 Economic Conditions During the Study Period

As mentioned earlier, LMI analysis that incorporated the study of past employment trends and projected trends was utilized by the ACE sites to determine which programs to offer. The objective was to offer programs that train for occupations that were in high demand locally and that offered a sustainable wage and long-term employment prospects. Each site committed to offering programs in health care-related occupations, but was also able to choose other programs that provided good opportunities in its local labor market.

Here we examine labor market information for industries and occupation for the City or County that each ACE site represents for the years 2011-2015, encompassing the period of planning and implementation. Regarding total employment, Austin had the most robust job growth over this period, growing employment by 14%. The only other site to experience a high growth rate in employment over the 2011-2015 time period was Atlanta, at 8%. All other sites except New Haven experienced employment growth between 2% and 4% during this time; New Haven's growth was stagnant.

Industry sector growth among the cities and counties where ACE sites operated varied considerably over the 2011-2015 time period. Health care, a sector of focus for the ACE program, experienced strong growth in Atlanta and Austin and low-to-moderate growth in all other sites. Austin saw strong growth in all industries over the time period, particularly information technology, professional services, and transportation and warehousing. Other areas of strong growth among the ACE sites were professional services in Atlanta; arts, entertainment, and recreation and accommodations and food services in Anne Arundel County, Baltimore County, Prince Georges County, and the Upper Shore; and transportation, warehousing, and utilities in Montgomery County. Appendix 3.3 shows the data for the employment trends by industry for each ACE site, comparing 2011 and 2015.

Next, we examine employment trends by occupation for each ACE site between 2011 and 2015. Consistent with growth in the health care industry, there was strong growth in health care occupations in all sites. Other areas of strong growth include office and administrative support occupations in Atlanta, IT-related occupations in Austin, construction occupations in New Haven, food preparation in Anne Arundel County and Baltimore County, sales occupations in Baltimore City, transportation occupations in Montgomery County, building and grounds maintenance in Prince George's County, and protective service occupations in the Upper Shore. Appendix 3.4 shows employment trends by occupation for each ACE site, comparing 2011 and 2015.

Finally, we examine the employment trends for occupations that matched each ACE program at each site. The occupations are based on the standard occupation classification system from USDOL. Each ACE program was matched to the most relevant occupation and the employment trends in those occupations are shown for the metropolitan areas of which each site is a part.

All occupations of training in all ACE sites grew over the 2012-2016 time period. Among the six occupations that the Anne Arundel site provided training for, growth between 2012 and 2016 for each relevant occupation ranged from just 0.4% for bus drivers to 8.9% for dental hygienists. Among Atlanta's five occupations of training, growth ranged from 2.9% for the warehouse/forklift

program to 12.2% for pharmacy tech. Austin experienced the strongest growth among all sites, ranging from 9.4% for administrative assistant to 11.5% for nursing assistants. Baltimore City showed varying growth among the occupations that matched its programs, ranging from 1.9% for warehouse logistics to 14.8% for the dietary aid program. Adjacent Baltimore County also showed varying growth, ranging from 1.9% for logistics to 20.3% for construction (the highest growth rate of any occupation among the nine sites). Montgomery County only trained for one occupation, nursing assistants, which grew by 6.4%. New Haven trained for five occupations, which grew between 4.2% for small engine mechanics and 10.4% for patient technicians. Among Prince George's County's three occupations of training, growth ranged from 5.8% for the security officers program to 9.7% for medical office assistant, in each matching occupation. Finally, the Upper Shore trained for two occupations, both of which experienced moderate growth between 2012 and 2016; C.N.A. grew by 7.6% and culinary arts grew by 10.6%. Appendix 3.5 shows the data for the employment trends by occupations that matched each ACE program at each site.

4. Outcomes/Impact Study

Do the ACE program interventions have an impact on employment and employment-related outcomes? This section addresses this overarching research question using multiple measures to estimate the impact of ACE on job attainment, wages, job quality, and employment-related measures, such as credential attainment. Surveys of study participants, administrative (UI) data, and administrative intake and tracking data were combined and analyzed. Below, we describe the research questions, quantitative data sources, analytic methods and results.

4.1 Research Questions

The research questions that will be addressed in this section are organized into eight domains. These research questions are designed to capture the expected outcomes of the ACE program intervention. The domains relate to both job attainment and progression along a career pathway. Exhibit 4.1, below, lists the domains and research questions (overarching research questions are followed by outcome-specific questions with indented bullets).

Exhibit 4.1: Domains and Research Questions

Domain	Research Questions
Employment Rates and Retention	▪ Does the ACE program have an effect on employment rates and retention? – Do ACE participants have higher or lower employment rates than participants in the control group? – Do ACE participants have longer or shorter periods of continuous employment than the control group?
Earnings	▪ Does the ACE program have an effect on earnings? – Do ACE participants have higher or lower annual earnings at each follow-up time period than control group participants? – Do ACE participants have higher or lower hourly earnings at each follow-up time period than control group participants? – Do ACE participants have higher or lower rates of receiving benefits (e.g., health, life insurance, retirement) at each follow-up time period than control group participants?

Domain	Research Questions
Credentials	▪ Does the ACE program have an effect on credential attainment? – Do ACE participants have higher or lower rates of credential attainment (GED, occupational credentials, postsecondary awards) relative to the control group? ▪ Do ACE participants enroll in work-related education or training at a higher or lower rate than the control group following their completion of the ACE program?
Time Needed to Secure Employment	▪ Does the ACE program have a positive or negative effect on the amount of time needed to secure employment, measured as the number of months study participants needed to find a job?
Quality of Employment	▪ Does the ACE program have an effect on the likelihood that one will receive a high-quality job, defined as a job that is at least 35 hours a week, offering more than $13/hour, with access to benefits, such as health insurance and paid leave?
Public Benefits	▪ Does the ACE program have an effect on reliance on TANF and other public benefits?
Career Pathways	▪ Does the ACE program have an effect on career pathways? – Are ACE participants promoted at higher or lower rates than their counterparts in the control group? – Do ACE participants have a better or worse chance of remaining on the same career pathway at 12 and 24 months following training?
Subgroup Analyses	▪ Do ACE program impacts vary by training site or occupational focus?

4.2 RCT Design

Study participants were recruited by either the community college, the One-Stop center, or both. Although these high-level steps to recruit, establish eligibility, and randomize students were completed by all sites, the procedures differed slightly depending on the site and the training program. Below, we provide a summary of the recruitment and randomization process. See Appendix 4.1 for detailed process flow charts used by each of the sites to recruit and randomize participants.

Step 1: Recruitment. Participants were recruited by either the One-Stop centers, the community college, or both, depending on the site. WIBs and community colleges indicated that it took roughly two months of lead-time to recruit a sufficient number of participants for the study.

Step 2: Information sessions, orientation, skills and eligibility assessments. Recruited customers were then presented with information about the ACE program and other services available to them through the WIB and community college, and underwent assessments to determine their eligibility for ACE. All sites followed the same basic eligibility criteria; the eligibility process sought to assess whether: (a) customers possess basic skills to benefit from training, (b) customers have basic language proficiency to participate in training, and (c) customers have no other significant factors that would affect the potential benefits of training. Some programs, however, required additional eligibility screening, such as background checks and immunization records, to determine eligibility to gain employment in a specific field of training. Appendix 4.1 provides separate process flow charts for each site that indicate the eligibility criteria used to identify eligible applicants prior to randomization.

At some sites, information sessions and orientation occurred before testing for eligibility, and at other sites eligibility was determined prior to orientation. At orientation, customers received a

description of the study and the randomization process. This notification was critical to ensure customers had a clear understanding of what alternatives were available to them if they are not randomly assigned to the ACE intervention.

If the customer decides to move forward, they met with a career counselor who offered to do a skills assessment (CASAS or TABE), assessed career interests, and identified needs for training. Based on the results of the skills assessments, the WIB staff member assessed a customer's eligibility for training. The ACE model is designed to serve low-skilled workers, so each site established cut scores on their CASAS or TABE assessments (minimum and maximum), tailored to each training program. These cut points were not standardized across sites, since the ACE model calls for the tailoring of training programs and target populations to local conditions.

Eligibility criteria for customers included (a) possessing basic skills to benefit from training, (b) having basic language proficiency to participate in training, and (c) lacking other significant factors that would affect the potential benefits of training. Moreover, customers were expected to have a genuine interest in pursuing a specific ACE-sponsored training program.

According to the Jobs for Veterans Act of 2002, One-Stop customers who are eligible for Priority of Service cannot be randomized into a study treatment or control group because they must by law be offered the opportunity to receive the ACE training.[43] Therefore, prior to randomization, customers who were identified by ACE staff as eligible for Priority of Service were removed from randomization lists and automatically enrolled in the ACE training program. To clarify these rules and procedures, ICF developed and distributed a practice brief to all ACE sites, and participated in a conference call with site staff to address questions.[44]

Any veterans automatically enrolled were not considered part of the core impact study; however, veterans were offered the opportunity to participate in data collection and receive the requisite incentives for participation.

Step 3: Customer asked for consent to participate in ACE evaluation. In order to participate in the study, customers were asked to provide their written consent. ICF developed consent forms and received approval from our internal IRB as well as approval from all community colleges that had IRBs. We also shared our IRB application with community colleges, complete with consent forms, data collection instruments, outreach material, language to use when communicating the results of the randomization to customers, and a protocol for handling adverse reactions to control group assignment. If a customer did not consent to be in the study, he or she was not eligible to receive ACE services. However, customers who did not consent to participate in the ACE study were still able to take advantage of a range of BAU services available through each WIB.

Step 4: Random assignment. If a customer was determined to be eligible for the ACE program and consented to participate in the study, but was not eligible for Priority of Service, he or she

[43] Jobs for Veterans Act, 38 U.S.C. § 4215(2)(a). Available online at https://www.gpo.gov/fdsys/pkg/BILLS-107hr4015enr/pdf/BILLS-107hr4015enr.pdf.

[44] See Appendix 4.2 for a decision tree ICF developed based on Priority of Service rules. ICF distributed this decision tree to ACE staff to clarify the rules and procedures for randomization and compliance with Priority of Service.

was included in a list provided to ICF for randomization. ICF then assigned each participant a random number (generated using the Stata statistical software package). These random numbers were then used to sort and assign customers to the treatment (ACE training) or control (BAU) groups.

To maximize the completeness and quality of student intake data at each site and the integrity of the random assignment process, ACE program leadership held monthly all-hands calls with site staff and ICF. These calls provided an opportunity to review the data (compiled by ACE program leadership into monthly "Dashboard" summaries) and to address any questions or concerns.

From August 2013 to July 2015, 2,168 participants were recruited, identified as eligible for participation in the study, and randomly assigned to the treatment or control groups. A total of 83 veterans were identified as eligible for Priority of Service and were offered the opportunity to participate in the ACE training without random assignment.

4.3 Description of the Counterfactual (Control Group) Condition

To serve as a valid comparison for the outcomes study, ICF designed the control group condition to approximate the conditions typical WIB customers would experience in the absence of the ACE program intervention. Control group participants were restricted from enrolling in any ACE program funded by the WIF grant. The control group was not restricted from enrolling in any non-ACE program.

Immediately after the randomization process, eligible participants were randomly split into a treatment and control group, where the treatment group would begin to receive ACE services while the control group received what constitutes as "BAU" from the WIB. Control group members had access to alternative services at the WIB but generally were required to navigate through these options on their own, as would any non-ACE WIB customer.

In contrast to the treatment group, the control group did not have a career navigator to help guide them if they decide to sign up for a training course and they may not receive help finding a job from a dedicated job developer. Exhibit 4.2 provides a comparison between the treatment model and control BAU.

Exhibit 4.2: Comparing ACE Treatment and Control BAU Models

Program Element	ACE Study	
	ACE Treatment Model	Control BAU
Integrated basic skills and vocational training	Yes	May access GED or adult education programs May access alternative training programs
Co-teaching	Yes	No
Career Navigator	Yes	No
Job developer	Yes	May receive job placement help at the WIB
Supportive services	Yes[45]	Yes[46]

After randomization, the WIBs informed the ACE control group of the randomization results either in person or via phone. The WIB then provided control group members the same materials and other guidance that would typically be provided to WIB customers. These materials varied by site due to differences in the services offered at each WIB. Post-randomization, WIBs report sharing a variety of existing WIB resources with the ACE control group, including information about WIB centers, Workforce Investment Act (WIA) funding, Supplemental Nutrition Assistance Programs (SNAPs), local training options and services, informational handouts, one-on-one consultations, programs for non-custodial parents, and job development assistance.

WIBs at Austin, Baltimore City, Baltimore County, Prince George's County, Montgomery County, and New Haven used specific procedures to direct the ACE control group. The WIBs at Austin, Baltimore County, and Prince George's County provided handouts and other resources identifying services available to the general public to the ACE control group. Austin provided a universal application for services to ACE control group members who can complete the application to access other services and meet with an eligibility specialist. In New Haven, information on the ACE control group was forwarded to managers at the WIBs and ACE control group members were assigned to case managers.

Specific programs, resources, and services mentioned by sites included the Rapid Employment Model, Workforce and Education Readiness Continuum of the City of Austin, Choices (a TANF employment and training program), Maryland Educational Opportunity Center, Train Baltimore, and the Maryland Workforce Exchange.

In some cases, WIBs take a greater role in managing the intake and randomization process and, as a consequence, may have more formal contact with the control group at the time of randomization. The variation between colleges and WIBs pre- and post-randomization procedures is partially attributed to the differing structures of roles and responsibilities among ACE program management teams.

[45] Includes intensive support services at the community colleges and the WIB; also includes referrals to social services.
[46] Includes support services at the WIB and referrals to social services.

4.4 Data Sources

Data for the outcomes study were drawn from three data sources:

Study Participant Follow-up Surveys: Follow-up surveys, collected one year and two years after random assignment, provide information necessary to evaluate the impact of ACE on the other outcome domains, including student employment status, credential attainment, receipt of public assistance, and length of time needed to find employment (see Appendix 4.20 and Appendix 4.21 for the treatment and control group follow-up survey questions).

Unemployment Insurance (UI) Records: UI records provided by state administrative agencies are used to assess the impact of ACE on the primary outcomes of interest: employment and earnings.

Student Intake and Tracking Database (ETO): Data compiled in the ETO database include measures collected at the time of recruitment for all ACE study participants. These measures are used to describe the study population and assess baseline equivalence between the treatment and control groups (see Appendix 4.19 for the forms used to collect data in ETO during the intake process).

Appendix 4.3 shows the research questions for the outcomes/impact study and the data sources used to address the question. Readers should note that due to the limitations of these data sources, there are two outcomes that we were not able to address using the sources. Below, we list these outcomes and provide an explanation for their omission:

- Cumulative College Credits: College credit information was not available as part of the administrative records collected by the sites. Although we do not have information on college credits earned by the treatment or control groups, it is likely that ACE did not have a significant short-term impact on college credits (i.e., an impact that would be detectable within the timeframe and scope of the study).
- Career Retention: The state agencies that collect employment and earnings records for the administration of UI also collect records that indicate the industry classification of employers. However, these agencies were prohibited from providing this information to ICF as part of the ACE evaluation. Therefore, we were not able to measure the impact of ACE on the likelihood that a study participant remained in the same career pathway after completion of the training program.

4.5 Analytic Methods

Randomized controlled trials ensure that assignment to the treatment or control group is not directly related to any characteristic of the participant. However, even with the use of random assignment, differences between the treatment and control groups may still exist, due to either attrition or naturally occurring differences between the randomly assigned study groups. Therefore, ICF took steps as part of the outcomes analysis to verify that the study groups were comparable and, if necessary, adjusted comparisons to ensure that impact estimates were unbiased.

The unit of analysis for the outcome study was the study participant. In the description of these analyses, the **study sample** refers to the entire set of ACE study participants who were

randomized into either the treatment or the control group (note that this excluded veterans eligible for Priority of Service who received ACE services, because they were not randomized).

The list below summarizes the steps ICF took to check for attrition, establish baseline equivalence, and to account for potential biases caused by attrition or unbalance in estimating ACE program impacts.

1. **Check for attrition and baseline equivalence**: Prior to estimating outcomes, ICF checked for attrition (both overall and by treatment/control group) and compared treatment and control group participants to ensure balanced baseline characteristics using demographic and employment data collected during the intake process. Because outcomes measures are drawn from survey questions and administrative databases, outcomes data may be missing for different participants depending on the outcome measure. Cases with missing outcome and/or baseline data were excluded from the analyses. Therefore, prior to estimating impact estimates for each outcome measure, we calculate comparisons to establish baseline equivalence between treatment and control for only the sample of participants with non-missing outcomes and baseline data. This check ensures that treatment and control groups are comparable for the sample of participants with non-missing observations prior to the analysis of each outcome measure. Significant differences are determined using T-tests (for continuous measures), chi-squared test statistics (for discrete measures), and the standardized difference between the two groups to determine if the effect size is within acceptable limits.[47] To check for baseline equivalence, we use a set of demographic and employment-related information collected at baseline (age, standardized test scores, level of formal education, employment status at enrollment, race, ethnicity, and gender). Appendix 4.4 and Appendix 4.5 display summary statistics for the study sample for each of these measures.
2. **Calculate weights to account for changes to randomization balance**: ACE study participants were randomized prior to each cohort. During early cohorts (2013 and early 2014), sites were allowed to randomize more study participants into treatment than control due to challenges meeting the recruitment levels needed to meet enrollment goals. Later study cohorts were randomized evenly between treatment and control. To account for the changing balance over time, adjusted weights were developed for each cohort based on the balance between treatment and control. These weights are incorporated into the final outcomes analyses (multivariate regressions).
3. **Calculate the Treatment Effect**: To calculate the Treatment Effect, ICF estimated regression models for each outcome measure. For each regression, the dependent variable is the outcome of interest, and the key explanatory variable is a dummy variable indicating inclusion in the treatment group (ACE training). The weights calculated in Step 2 are included as weights in the regression model to account for differences in treatment

[47] Acceptable limits for Baseline Equivalence are defined by the What Works Clearinghouse standards found in *Procedures and Standards Handbook, Version 3.0.* What Works Clearinghouse – Institute of Education Sciences (IES). U.S. Department of Education, pp. 13-14. Available online at https://ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc_procedures_v3_0_standards_handbook.pdf.

and control balance by cohort. Additional covariates are included if the checks for baseline equivalence indicated a significant difference between the treatment and control for that measure (i.e., if the standardized mean difference between treatment and control exceeded 0.05).[48] The Treatment Effect is then calculated using regression, holding all other covariates constant and including fixed effects for each site (dummy variable indicators, excluding one site for comparison), and the statistical significance of the treatment coefficient and Hedges' G are used to determine the level of significance of the Treatment Effect. Multiple comparison issues are addressed by adjusting p-values for significant (i.e., $p<0.5$) findings within each domain using the Benjamini-Hochberg correction.[49]

Each regression analysis results in three key values used to interpret the size and significance of the Treatment Effect:

1. Coefficient (Treatment): This value shows the effect of inclusion in the treatment group as opposed to the control group, independent of any biases between those groups that may be present due to attrition from survey nonresponse (such as baseline reading scores, math scores, age).
2. P-value: This value indicates the level of statistical significance. In reporting the results, we use a threshold of $p<0.05$, meaning that a p-value below 0.05 indicates that the Treatment Effect is statistically significant (using two-tailed tests). P-values reported in findings exhibits have been corrected for biases due to multiple comparison using the Benjamini-Hochberg correction where appropriate.
3. Hedges' G: This value indicates the standardized effect size derived from the regression. Following the What Works Clearinghouse standards, a Hedges' G value of 0.25 or greater indicates a substantively important effect due to the Treatment Effect.[50]

4.6 Validity and Threats

ICF took steps to identify and address potential threats to validity through regular monitoring and communication with ACE program staff.

Attrition is a significant threat to the internal validity of an RCT. ICF took steps prior to study implementation to reduce attrition. Staff collected detailed contact information from participants, and regularly asked study participants to update their contact information using short online surveys, both during and after the training. Survey incentives were also offered to encourage participants to remain engaged with the study and provide information for both the Year 1 and Year 2 Follow-up Surveys. These efforts kept attrition to a minimum throughout the study. To

[48] See Puma, M.J., Olsen, R.B., Bell, S.H., & Price, C. (2009). *What to Do When Data are Missing in Group Randomized Controlled Trials*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, p. 7. Available online at http://files.eric.ed.gov/fulltext/ED511781.pdf.

[49] For further details, see What Works Clearinghouse: *Procedures and Standards Handbook, Version 3.0*. What Works Clearinghouse – Institute of Education Sciences (IES), U.S. Department of Education. Available online at http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v3_0_draft_standards_handbook.pdf.

[50] What Works Clearinghouse: *Procedures and Standards Handbook, Version 3.0* What Works Clearinghouse — Institute of Education Sciences (IES), U.S. Department of Education, p. 23. Available online at http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v3_0_standards_handbook.pdf.

assess the level of attrition, overall attrition and differential attrition (measures as the percentage point difference in attrition rates between the treatment and control groups) are calculated for each outcome measure to ensure that these levels are within acceptable limits prior to proceeding with each analysis.[51]

The **degree of fidelity to the random assignment procedures** is a second potential threat to validity. Prior to implementing the study, WIB staff indicated that it would be possible for a study participant to "shop" among WIBs to try to gain entry to the ACE training even if he or she was randomly assigned to the control group. To reduce this possibility, the ETO database was designed to identify any duplicate participants according to their Social Security number prior to randomization. Although the ACE program sites adhered closely to the randomization and data collection plan, there was one incident of a study participant completing the randomization process twice (this participant was randomized once into the control, and then once into the treatment group). To avoid study contamination, this individual was removed from the analysis.

Fidelity to the treatment and control conditions represents a third potential threat. The ACE program was implemented at nine separate sites, and data from the sites were pooled together for the outcomes analysis, this limits the treatment contrast if treatment group and control group conditions are not implemented with fidelity.

Finally, there are data limitations. Although state UI employment and wage records provide one of the best available measures of employment and wages, there are limitations associated this administrative data. State UI records contain all employment and wage records for individuals earning wages from employees located in the state.

There are three potential reasons why an individual would not have a quarterly wage record in the UI administrative database. First, the individual is not employed for wages during that quarter. Second, the individual may be employed and earning wages in another state during that quarter. Third, the individual may be earning income through the informal economy (i.e., wages that are not taxed because they are not reported), which is not reported to the state UI agencies. Although it is possible that UI data may miss wages for certain individuals, this does not represent a significant threat to the study findings because there is no reason to expect that treatment group members are more or less likely to fall outside of the UI agency's data coverage area than the control group.

4.7 Impact Findings

The sections below provide the results of the impact findings, addressing each of the research questions by domain. The confirmatory research questions (regarding employment rates and retention and earnings) are addressed first, followed by the results for the exploratory research questions and subgroup analyses.

The tables below show the final results for the Treatment Effect for each outcomes analysis. Attrition levels and the results of baseline equivalence tests corresponding to each outcomes analysis can be found in the appendices references below each table.

[51] Defined limits for acceptable attrition. See, *Procedures and Standards Handbook, Version 3.0.* What Works Clearinghouse – Institute of Education Sciences (IES), U.S. Department of Education, p. 12. Available online at https://ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc_procedures_v3_0_standards_handbook.pdf.

4.7.1 Employment Rates and Retention

Simple descriptive results are displayed in Exhibit 4.3 below, which shows the employment rates of treatment and control group members, aggregated according to the number of quarters before and after the end of the ACE training and divided into treatment and control percentages. Recall that treatment and control group members are randomized within each training class prior to the start of each training program. Therefore, for the control group, "Program End" refers to the end quarter of the training program the control group member would have completed had they been assigned to the treatment group. Prior to the end of the training, control and treatment group members had similar levels of employment, according to UI records.

Following the training, ACE participants were more likely to be employed than the control group.

Before presenting the results, there are two limitations of the UI data that influence the approach to the analysis. First, due to limitations in reporting procedures and data availability for research, at the time of this report the final quarter of wages available from the UI administrative data for Maryland, Texas, and Connecticut is the third quarter of 2016, and for Georgia the final quarter available is the fourth quarter of 2015. This limitation means that data were available to calculate one year (four quarters) of annual wages for all ACE programs except for those ending in 2015 quarter 4 (for which one complete year of annual earnings post-program were not available).[52] This results in the exclusion of approximately 4.8% of the study sample from the annual earnings analyses because fewer than four quarters of wage data are available for these study participants. To calculate eight quarters of wages, data were available for programs ending during the third quarter of 2014 and before (44.2% of ACE study participants).

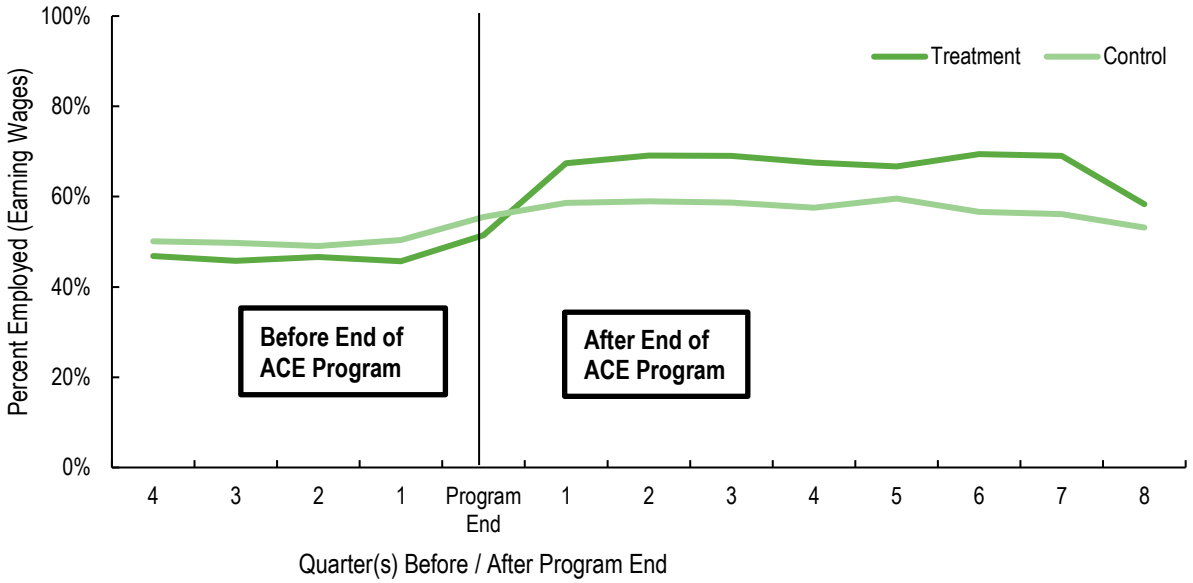
Following the training, ACE program participants had higher levels of employment on average than the treatment group. At four quarters after program end, 63% of the treatment group members were employed, compared to 52% of the control. These differences were still present eight quarters after the training program ended.

The second limitation results from restrictions placed on the UI data that state agencies were able to share with ICF. Maryland and Texas provided individual quarterly wages for each ACE study participant in those states. However, due to legal restrictions, Connecticut and Georgia were only able to provide aggregate information. Therefore, ICF was not able to combine the Maryland and Texas UI data with the Connecticut and Georgia data to conduct tests of statistical significance on the entire sample.

For this reason, Exhibit 4.3, which displays aggregate data from all four states, does not indicate the statistical significance of differences between treatment and control group employment rates.

[52] A total of 55 ACE treatment participants completed ACE training programs in 2015 quarter 4 (4.7% of the total number of treatment group participants).

Exhibit 4.3: Percentage Employed (Earning Wages) by Quarter Before/After Program End



Source: UI data collected from Maryland, Texas, Georgia, and Connecticut administrative data.
Notes: An individual is counted as "employed" if he or she earned a positive non-zero wage during the quarter. On the horizontal axis, "0" indicates the quarter that the ACE training program ended. Due to data use restrictions that prevent Georgia and Connecticut from providing individual employment records, tests of the statistical significance of the impact of ACE on employment rates are not calculated for participants in all four states combined. The percentage differences between treatment and control group study participants displayed in the figure above are meant to provide an overall descriptive summary and do not indicate a statistically significant impact of the ACE program.

Analyses based on multivariate regression results show that ACE had a positive effect on employment rates. Results of the analyses of both the UI records and the follow-up survey responses suggest that, on average, ACE has a positive impact on employment rates and retention. Exhibit 4.4 provides definitions of the measures used in the multivariate regression analyses presented in Exhibit 4.5.

Exhibit 4.4: Employment Outcomes Measures

Data Source	Outcome Measure	Description
Maryland and Texas UI Data	Earned a wage in first year after program end date	1=Study participant earned a positive wage in the first four quarters after the end of the training program 0=Study participant earned no wages in the first four quarters after the end of the training program
UI Data	Earned a wage in second year after program end date	1=Study participant earned a positive wage in the second year (quarters 5 through 8) after the end of the training program 0=Study participant earned no wages in the second year (quarters 5 through 8) after the end of the training program
Year 1 Follow-Up Survey	Holds at least one job	1=Study participant reported holding at least one job one year after randomization 0=Study participant reported holding no jobs one year after randomization
Year 2 Follow-Up Survey	Holds at least one job	1=Study participant reported holding at least one job two years after randomization 0=Study participant reported holding no jobs two years after randomization

The analyses show the percentages of study participants who received a wage during at least one of the four quarters (first year) and one of the second four quarters (second year) following the end of the ACE training program. UI data show that employment impacts are positive at both one and two years after the training. Due to the UI data use restrictions described above, the New Haven and Atlanta sites are not included in this analysis. Exhibit 4.5 below shows averages based on UI data in the first two rows, but does not provide the results of significance tests for these averages. Significance tests for Maryland and Texas UI data (states providing individual records to ICF) are reported in the third and fourth rows, and self-reported employment results from the follow-up surveys are reported in the last two rows.

Exhibit 4.5: Employment Rates at One and Two Years After ACE

	Observed Percentages			Logistic Regression		
	Control	Treatment	Difference	Logit Coefficient (Treatment)	P-value	Hedges' G
Administrative Records: All Sites (UI Data)						
Earned a wage in first year after program end (n=2,267)	51.9%	62.6%	10.6	--	--	--
Earned a wage in second year after program end (n=783)*	52.6%	61.1%	8.5	--	--	--
Administrative Records: Maryland and Texas Sites (UI Data)						
Earned a wage in first year after program end (n=1,513)	69.2%	82.1%	19.9	0.75[a]	<0.01	0.45
Earned a wage in second year after program end (n=506)*	65.5%	79%	13.5	0.74[a]	<0.01	0.45
Self-Reported Employment: Year 1 Follow-Up Survey – All Sites (All Cohorts)						
Holds at least one job (n=1,116)	72.7%	72.7%	<0.1	0.036[b]	0.79	0.02
Self-Reported Employment: Year 2 Follow-Up Survey – All Sites (August 2013 Through July 2014 Cohorts)						
Holds at least one job (n=460)*	62.6%	81.9%	19.3	1.189[b]	<0.01	0.72

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization. UI data collected from Maryland and Texas. Intake and tracking data collected by site staff and recorded in the ETO system were used to test for baseline equivalence.
Notes: Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the control group. Fixed effects for each site are included as dummy variables (estimates not shown), with Baltimore County serving as the comparison group. Additional covariates were included in the logistic regression models if the standardized mean difference between treatment and control groups in the analytic sample exceeded 0.05. Continuous covariates included in the models were grand mean centered to ease interpretation of treatment effects. [a]Covariates controlled for in the logistic regression model are: site indicators (fixed effects) [b]Covariates controlled for in the logistic regression model are: age, reading grade level, and site indicators (fixed effects) *Due to data availability at the time of this report, second year data are available only for cohorts ending on or before July 2014. See Appendix 4.6 for attrition rates for self-reported employment outcomes and Appendix 4.7 for baseline equivalence.

The analysis of employment based on self-reported follow-up survey results yielded similar findings to the UI data analyses in Year 2, but no significant difference in Year 1 employment rates between treatment and control groups. The difference between the UI results and the follow-up survey results could be explained by the timing of the survey. The Year 1 Follow-up Survey was administered one year after participants *began* the training. In contrast, the UI measure of employment at year one is measured as one year after the *program end*, rather than one year after the program began. This timing meant that ACE participants did not have much time to find a job before responding to the Year 1 Follow-up Survey, which may explain in part the lack of significant Year 1 Follow-up Survey employment results.

4.7.2 Earnings

Earnings estimates are calculated using data provided by administrative UI records maintained by state agencies. On average, ACE treatment participants in most Maryland, Texas, and Connecticut sites earned more after the ACE program end date than those assigned to the control group, both in terms of observed averages and model estimates.

On average, ACE participants in Maryland, Connecticut, and Texas earned more than the control group after the end of the training program, and these differences appear to increase over time.

Exhibit 4.6 provides a description of the measures used in the earnings and benefits analyses.

Exhibit 4.6: Earnings Outcomes Measures

Data Source	Measure	Description
UI Data	Total earnings, four quarters after program end date	Sum of total earnings of the four quarters after the quarter the training program ended (one year of earnings)
UI Data	Total earnings, eight quarters after program end date	Sum of total earnings of the eight quarters after the quarter the training program ended (two years of earnings)
Year 1 Follow-up Survey	Hourly wages	Self-reported hourly wage of primary job for study participants who indicated that they held at least one job (excludes unemployed) one year after randomization
Year 1 Follow-up Survey	Benefits received from employer	Each benefit (Dental, Life, Vision, Short-Term and Long-Term Disability and Retirement) is measured one year after randomization: 1=Study participant is employed and receives benefit from employer 0=Study participant is either employed and does not receive benefit from employer or is unemployed

Data Source	Measure	Description
Year 2 Follow-up Survey	Benefits received from employer	Each benefit (Dental, Life, Vision, Short-Term and Long-Term Disability and Retirement) is measured two years after randomization: 1=Study participant is employed and receives benefit from employer 0=Study participant is either employed and does not receive benefit from employer or is unemployed

Exhibit 4.7 displays the results of the one-year (four quarters) and two-years (eight quarters) earnings analyses and estimates of the Treatment Effect. Rows one and two show the results of the significance tests for the Maryland and Texas sites. Due to the data access limitations previously described, ICF was not able to conduct a combined test of significance using UI data for participants at all sites. To conduct earnings analyses for Connecticut and Georgia study participants, ICF provided state UI agencies with computer code to conduct the UI analyses in those states.[53] The state UI agencies then provided the output from the analyses to ICF. Due to this restriction, results are presented separately for the sites located in Georgia and Connecticut in rows three, four and five.

Although ACE generated positive employment gains at most sites, ACE program participants in Atlanta underperformed the control group in terms of earnings one year after program end. However, results for Atlanta fail to reach conventional levels of statistical significance, and it was not possible to track eight quarters of wages for Atlanta program participants due to limited data availability in Georgia.

Exhibit 4.7: Earnings After Program End Date (UI Data)

	Observed Averages			Regression Estimates (OLS)		
	Control	Treatment	Difference in Averages	OLS Coefficient (Treatment)	P value	Hedges' G
Maryland and Texas ACE Study Participants						
Total earnings, four quarters after program end date (n=1,513)	$11,601.80	$12,897.00	$1,295.20	1735.93	<0.01	0.13
Total earnings, eight quarters after program end date (n=619)	$21,790.30	$27,053.00	$5,262.70	5949.42	<0.01	0.24
New Haven ACE Study Participants						
Total earnings, four quarters after program end date (n=348)	$12,578.79	$14,125.19	$1,546.40	1946.47	0.12	0.15
Total earnings, eight quarters after program end date (n=136)	$23,523.25	$34,810.03	$11,286.78	9447.94	<0.01	0.38

[53] Computer code were provided to the states in SAS 9.4 and Stata 14 format.

	Observed Averages			Regression Estimates (OLS)		
	Control	Treatment	Difference in Averages	OLS Coefficient (Treatment)	P value	Hedges' G
Atlanta ACE Study Participants						
Total earnings, four quarters after program end date (n=203)	$7,154.60	$5,783.50	-$1,371.10	-1662.72	0.08	-0.22

Source: UI data collected from Maryland, Texas, Georgia, and Connecticut administrative records. Intake and tracking data collected by site staff and recorded in the ETO system were used to test for baseline equivalence.
Notes: Regression estimates are Ordinary Least Squares (OLS) regression coefficients and p-values (additional covariates not shown). Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the ACE control group. Fixed effects for each site are included as dummy variables (estimates not shown), with Baltimore County serving as the excluded category. Regression models include controls for prior annual earnings, calculated as the sum of earnings of the four quarters prior to enrollment in the ACE study. See Appendix 4.8 for results of baseline equivalence tests. Total earnings are calculated as the sum of the quarterly wages following the quarter in which the ACE program ended. Therefore, if a program ended in the first quarter of 2014, annual wage estimates are calculated as the sum of 2014 quarter 2, 2014 quarter 3, 2014 quarter 4, and 2015 quarter 1.

Hourly wages are calculated based on survey responses. Exhibit 4.6 shows the results of the hourly wages from survey responses for those who indicated that they held at least one job. If respondents indicate that they held more than one job, the hourly wage from their primary job is used in the calculations. To avoid presenting misleading averages, Year 2 hourly wages are not shown because only a small percentage of study participants who responded to the Year 2 Follow-up Survey (n=212, 19.5%) provided a valid hourly wage. Although the self-reported hourly wages of the treatment group exceeded that of the control group from the Year 1 Follow-up Survey, we found no significant differences using the self-reported data. This could be due to nonresponse resulting in a small sample size (see Appendix 4.9 for attrition due to nonresponse for self-reported hourly wages).

Exhibit 4.8: Earnings Outcomes: Hourly Wages, Employed Survey Respondents

	Observed Averages			Regression Estimates (OLS)		
	Control	Treatment	Difference	OLS Coefficient (Treatment)	P value	Hedges' G
Year 1 Follow Up Survey (All Cohorts)						
Hourly wages (n=420)[a]	$12.62	$13.01	$0.39	0.41	0.47	0.07

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization. Intake and tracking data collected by site staff and recorded in the ETO system were used to test for baseline equivalence.
Notes: Regression estimates are OLS regression coefficients and p-values (additional covariates not shown). Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the ACE control group. Fixed effects for each site are included as dummy variables (estimates not shown), with Baltimore County serving as the excluded category. Covariates included in the regression models are site indicators (fixed effects), age, and reading grade level scores. [a]See Appendix 4.9 for attrition rates and Appendix 4.10 for baseline equivalence. Outliers (those reporting wages above $100/hour) are excluded from these averages.

Compared to the control group, ACE participants were more likely to receive some benefits through an employer.

ACE does have a limited impact on the likelihood of receiving certain types of employment benefits, however in most cases the effect is not significantly large. Exhibit 4.9 shows the results of logistic regressions predicting the likelihood that a study participant received benefits from an employer. Two years after enrollment in the study, only employer-sponsored benefit the ACE treatment group participants were more likely to receive was short-term disability insurance, compared to the control group.[54]

Exhibit 4.9: Earnings Outcomes: Benefits Received From an Employer

	Observed Percentages			Logistic Regression		
	Control	Treatment	Difference	Logit Coefficient (Treatment)	P value	Hedges' G
Year 1 Follow Up Survey (All Cohorts)						
Dental insurance (n=906)	15.8%	20%	4.2	0.279[a]	0.11	0.17
Life insurance (n=906)	12.1%	16.5%	4.4	0.375[a]	0.05	0.23
Vision insurance (n=906)	14.2%	15.3%	1.1	0.083[a]	0.66	0.05
Short-term disability (n=906)	9.8%	13.3%	3.5	0.379[a]	0.07	0.23
Long-term disability (n=906)	7.4%	10.7%	3.3	0.422[a]	0.07	0.26
Retirement plan (n=906)	13.7%	17.6%	3.9	0.370[a]	0.05	0.22
Year 2 Follow Up Survey (August 2013 Through July 2014 Cohorts)						
Dental insurance (n=444)	19.5%	23.2%	3.7	0.155[b]	0.52	0.09
Life insurance (n=444)	13.7%	18.1%	4.4	0.315[b]	0.24	0.19
Vision insurance (n=444)	15.8%	18.1%	2.3	0.102[b]	0.69	0.06
Short-term disability (n=444)	9.5%	16.5%	7	0.663[b]	0.03	0.40
Long-term disability (n=444)	9.5%	11.4%	1.9	0.245[b]	0.45	0.15
Retirement plan (n=444)	17.9%	16.9%	-1	-0.028[b]	0.91	-0.02

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization. Intake and tracking data collected by site staff and recorded in the ETO system were used to test for baseline equivalence.

Notes: Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the control group. Fixed effects for each site are included as dummy variables (estimates not shown), with Baltimore County serving as the comparison group. Additional covariates were included in the logistic regression models if the standardized mean difference between treatment and control in the analytic sample exceeded 0.05. Continuous covariates included in the models were grand mean centered to ease interpretation of treatment effects.

[a]Covariates included in the logistic regression model are age, reading grade level score, math grade level score and site indicators.
[b]Site indicators are included as covariates in the logistic regression model.
See Appendix 4.9 for attrition rates and Appendix 4.10 for baseline equivalence for benefits outcomes.

4.7.3 Credential Attainment

ACE is expected to positively impact the attainment of credentials needed to work in a career pathway. Below, we present estimates of the impact of the ACE program on credentials, formal education, and additional training program enrollment. Exhibit 4.10 provides the definitions of

[54] The Benjamini-Hochberg Correction is not applied here because only one outcome (Short Term Disability Insurance) falls below the critical p-value of 0.05 for statistical significance.

outcomes measures used to evaluate the impact of ACE on credential attainment, and Exhibit 4.11 displays the results of the analysis.

Exhibit 4.10: Credentials Outcomes Measures

Data Source	Measure	Description
Year 1 Follow-up Survey	Holds a vocational, technical or professional certificate or license	One year after randomization: 1=Holds a vocational, technical, or professional certificate or license 0=Does not hold a vocational, technical, or professional certificate or license
	GED, high school diploma	One year after randomization: 1=Holds a GED or high school diploma 0=Does not hold a GED or high school diploma
	Enrolled in other training or education program	One year after randomization: 1=Enrolled in another training or education program 0=Not enrolled in another training or education program
Year 2 Follow-up Survey	Holds a vocational, technical or professional certificate or license	Two years after randomization: 1=Holds a vocational, technical, or professional certificate or license 0=Does not hold a vocational, technical, or professional certificate or license
	GED, high school diploma	Two years after randomization: 1=Holds a GED or high school diploma 0=Does not hold a GED or high school diploma
	Enrolled in other training or education program	Two years after randomization: 1=Enrolled in another training or education program 0=Not enrolled in another training or education program

At both one year and two years after randomization into the ACE study, treatment group members were significantly more likely to hold at least one vocational, technical, or professional certificate or license.

ACE participants are more likely to hold occupational credentials than the control group.

At both follow-ups (Year 1 and Year 2), a larger percentage of ACE treatment group participants held a high school diploma or GED than control group members. However, when we examined levels of formal education one year and two years after enrollment in the ACE study, ACE did not appear to have a significantly large impact the likelihood that a study participant holds a GED or high school diploma.

ACE treatment group members were not significantly more likely to hold a GED or higher level of formal education than the control group members were.

The same is true of enrollment in additional training programs. At one year after randomization, the control group was more likely to enroll in other training or educational programs than the treatment group. ACE participants were less likely to have enrolled in another training or education program one year after enrollment in ACE. This may reflect that, upon learning that they would not participate in ACE, control group members were likely to seek out other career

training opportunities. Two years after randomization, we find no significant difference in the likelihood that treatment and control group members were enrolled in other training programs, although larger percentages of treatment group members were enrolled in other training programs compared to control group members.

Exhibit 4.11: Credentials Outcomes

	Observed Percentages			Logistic Regression		
	Control	Treatment	Difference	Logit Coefficient (Treatment)	P value	Hedges' G
Year 1 Follow Up Survey (All Cohorts)						
Holds a vocational, technical, or professional certificate or license (n=1,049)	35.4%	53.5%	18.1	0.710[a]	<0.01	0.43
GED, high school diploma (n=999)	88.4%	90.6%	2.2	0.251[a]	0.25	0.15
Enrolled in other training or education program (n=1,023)	22.1%	11.5%	-10.6	-0.763[a]	<0.01	-0.46
Year 2 Follow Up Survey (August 2013 Through July 2014 Cohorts)						
Holds a vocational, technical, or professional certificate or license (n=391)	38.4%	60.2%	21.8	0.938[b]	<0.01	0.57
GED, high school diploma (n=392)	86.2%	91.1%	4.9	0.350[b]	0.28	0.21
Enrolled in other training or education program (n=423)	12.2%	13.7%	1.5	0.233[b]	0.44	0.14

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization. Intake and tracking data collected by site staff and recorded in the ETO system were used to test for baseline equivalence.

Notes: Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the control group. Fixed effects for each site are included as dummy variables (estimates not shown), with Baltimore County serving as the comparison group. Additional covariates were included in the logistic regression models if the standardized mean difference between treatment and control in the analytic sample exceeded 0.05. Continuous covariates included in the models were grand mean centered to ease interpretation of treatment effects.

[a]Covariates included in the logistic regression model are: age, reading grade level scores and site indicators (fixed effects).

[b]Covariates included in the logistic regression model are: age, reading grade level scores, math grade level scores and site indicators (fixed effects).

See Appendix 4.11 for attrition rates and Appendix 4.12 for baseline equivalence.

4.7.4 Time to Employment

To estimate the impact of ACE on the amount of time needed to secure employment, we compared the number of months that treatment and control group respondents indicated they needed to secure employment. To measure time needed to secure employment, we use responses to the Year 1 Follow-up Survey question: "In months, how long did it take for you to find this job?"[55]

[55] Responses to this question were collected for survey respondents who indicated that they held at least one job. If a respondent indicated that he or she held more than one job, the number of months needed to find their primary job (i.e., the job that makes up most of their working hours in a week) was used.

ACE treatment group members reported needing slightly less time, on average, to find a job than control group members did; however, this difference fails to reach standard levels of statistical significance.

When study participants with at least one job were asked to indicate the number of months it took for them to find that job, ACE participants required fewer months to find a job, on average, than the control (see Exhibit 4.12). However, this difference does not reach conventional levels of statistical significance ($p<0.05$).

Exhibit 4.12: Average Time to Employment (Months) for New Hires After ACE Study Enrollment

	Averages		Treatment Effects		T test	
	Control	Treatment	Mean Difference	Standardized Mean Difference	T Value	P value
Average number of months to employment (n=616)	7.00	5.56	-1.45	-0.09	1.13	0.26

Source: Follow-up survey of randomized ACE participants conducted one year after study enrollment responses to the question "In months, how long did it take for you to find this job?" in reference to the respondent's primary job.
Notes: Standardized mean differences are calculated as the mean difference divided by the pooled within-group standard deviation. Analysis excludes study participants who responded that they did not hold a job and those who did not respond to the question. Treatment N=341, Control N=275.

4.7.5 Quality Jobs

ACE is expected to have a positive impact on the attainment of high-quality jobs, defined as jobs that provide at least 35 hours a week of work, pay at least $13 an hour, and provide health insurance. Exhibit 4.13 describes the outcomes measures used to evaluate the impact of ACE on the job quality of ACE study participants.

Exhibit 4.13: Quality Jobs Outcomes Measures

Data Source	Measure	Description
Year 1 Follow-up Survey	Works a full (35 hours or more) week at primary job	One year after randomization: 1=Works 35 hours a week or more at primary job 0=Does not work 35 hours a week or more at primary job (i.e., unemployed or underemployed)
	Earns at least $13 an hour	One year after randomization: 1=Earns $13 an hour or more at primary job 0=Does not earn $13 an hour or more at primary job
	Health insurance through employer	One year after randomization: 1=Has health insurance through an employer 0=Does not have health insurance through an employer (i.e., does not receive health insurance from their employer or is not employed)
Year 2 Follow-up Survey	Works a full (35 hours or more) week at primary job	Two years after randomization: 1=Works 35 hours a week or more at primary job 0=Does not work 35 hours a week or more at primary job (i.e., unemployed or underemployed)
	Earns at least $13 an hour	Two years after randomization: 1=Earns $13 an hour or more at primary job

Data Source	Measure	Description
		0=Does not earn $13 an hour or more at primary job
	Health insurance through employer	Two years after randomization: 1=Has health insurance through an employer 0=Does not have health insurance through an employer (i.e., does not receive health insurance from their employer or is not employed)

Two years after randomization, ACE participants were more likely to work 35 hours a week or more than the control group.

ACE has a positive impact on employment in a full-time job. The positive impacts of ACE on full-time employment, however, appear over a two-year period. One year after beginning the training, ACE participants were actually less likely than the control group to work 35 hours a week or more. This may be explained in part by the fact that the ACE training required time to complete, and ACE participants were not able to work full time during the training.

At both one year and two years after randomization, larger percentages of ACE participants earned $13 an hour or more compared to the control group.

ACE appears to have a positive impact on the quality of jobs study participants received, as measured by the percentages who were earning at least $13 an hour in their primary job.

Two years after randomization, a larger percentage of ACE participants were receiving health care through their employer than the control group.

However, ACE does not appear to have an impact on the receipt of health insurance through an employer that is sufficiently large to reach conventional levels of significance given the data available. Exhibit 4.14 presents the results of the quality jobs outcomes estimates.

Exhibit 4.14: Quality Jobs Outcomes: Treatment Effects

	Observed Percentages			Logistic Regression		
	Control	Treatment	Difference	Logit Coefficient (Treatment)	P value	Hedges' G
Year 1 Follow Up Survey (All Cohorts)						
Works a full (35 hours or more) week at primary job (n=729)	37.3%	19.3%	-18	-0.941[a]	<0.01	-0.57
Earns at least $13 an hour (n=688)	22.9%	30%	7.1	0.493[b]	<0.01	0.30
Health insurance through employer (n=775)	18.9%	19.3%	0.4	0.006[b]	0.97	0

	Observed Percentages			Logistic Regression		
	Control	Treatment	Difference	Logit Coefficient (Treatment)	P value	Hedges' G
Year 2 Follow Up Survey (August 2013 Through July 2014 Cohorts)						
Works a full (35 hours or more) week at primary job (n=330)	35.3%	45%	9.7	0.474[c]	0.05	0.29
Earns at least $13 an hour (n=318)	24.7%	26.4%	1.7	0.340[c]	0.22	0.21
Health insurance through employer (n=322)	23.8%	27.6%	3.8	0.303[d]	0.25	0.18

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization. Intake and tracking data collected by site staff and recorded in the ETO system were used to test for baseline equivalence.
Notes: Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the control group. Fixed effects for each site are included as dummy variables (estimates not shown), with Baltimore County serving as the comparison group. Additional covariates were included in the logistic regression models if the standardized mean difference between treatment and control in the analytic sample exceeded 0.05. Continuous covariates included in the models were grand mean centered to ease interpretation of treatment effects. [a]Covariates included in the model: reading grade level, math grade level, age, gender, site indicators; [b]Covariates included in the model: reading grade level, math grade level, age, site indicators; [c]Covariates included in the model: reading grade level, math grade level, age, gender, site indicators; [d]Covariates included in the model: reading grade level, math grade level, site indicators; see Appendix 4.13 for attrition rates and Appendix 4.14 for baseline equivalence.

4.7.6 Public Assistance

The ACE program is expected to reduce the number of participants receiving public assistance (e.g., SNAP benefits, Supplemental Security Income, and/or TANF). On the follow-up surveys collected one year and two years after randomization, ACE treatment and control group members were asked: "Are you collecting any public assistance?" and prompted to indicate the type(s) of public assistance they receive (Temporary Assistance for Needy Families, Supplemental Nutrition Assistance Program, Supplemental Security Income, Transportation Assistance and/or Veterans Benefits).

ACE program participants were less likely to receive public assistance than the control group.

Exhibit 4.15 displays the results of the public assistance outcomes analyses. The logistic regression models presented below control for whether a study participant received public assistance when they were randomized in to the study (collected in the ETO system during the intake process). Although smaller percentages of ACE participants reported receiving public assistance at Year 1 and Year 2, ACE appears to have a significant ($p<0.05$) effect on receipt of public assistance one year after enrollment. It should be noted, however, that due to the timing of this report, the Year 2 survey does not include respondents who enrolled in ACE after July 2014. Therefore, the non-significant finding in Year 2 may be a result of the smaller sample size.

Exhibit 4.15: Public Assistance Outcomes: Treatment Effects

	Observed Percentages			Logistic Regression		
	Control	Treatment	Difference	Logit Coefficient (Treatment)	P value	Hedges' G
Year 1 Follow Up Survey (All Cohorts)						
Receives public assistance (n=833)	33.7%	30.2%	-3.5	-0.377[a]	0.02	-0.23
Year 2 Follow Up Survey (August 2013 Through July 2014 Cohorts)						
Receives public assistance (n=326)	28.6%	22.4%	-6.2	-0.355[b]	0.26	-0.22

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization. Intake and tracking data collected by site staff and recorded in the ETO system were used to test for baseline equivalence.
Notes: Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the control group. Fixed effects for each site are included as dummy variables (estimates not shown), with Baltimore County serving as the comparison group. Additional covariates were included in the logistic regression models if the standardized mean difference between treatment and control in the analytic sample exceeded 0.05. Continuous covariates included in the models were grand mean centered to ease interpretation of treatment effects. [a]Covariates included in the model: reading grade level, math grade level, age, public assistance received/not received at time of randomization, site indicators [b]Covariates included in the model: reading grade level, public assistance received/not received at time of randomization, site indicators. See Appendix 4.15 for attrition rates and Appendix 4.16 for baseline equivalence.

4.7.7 Career Pathways

The ACE program is designed not only to move participants into employment, but also to start participants on a career path with room for advancement. To assess ACE's impact on career pathways outcomes, we analyzed responses to follow-up survey questions that indicated whether a study participant has received a promotion or raise ("Have you received any promotions or raises since beginning this job?"). Exhibit 4.16 displays the results.

ACE program participants were on average more likely to receive a promotion or raise than the control group; however, this difference does not reach conventional levels of statistical significance.

Exhibit 4.16: Career Pathways Outcomes: Treatment Effects

	Observed Percentages			Logistic Regression		
	Control	Treatment	Difference	Logit Coefficient (Treatment)	P value	Hedges' G
Year 1 Follow Up Survey (All Cohorts)						
Received promotion or raise (n=722)	24.5%	27.3%	2.8	0.150[a]	0.39	0.09
Year 2 Follow Up Survey (August 2013 Through July 2014 Cohorts)						
Received promotion or raise (n=234)	33.6%	44.1%	10.5	0.532[b]	0.07	0.32

Source: Follow-up surveys of randomized ACE participants. Year 1 surveys were conducted one year after randomization. Year 2 surveys were conducted two years after randomization. Intake and tracking data collected by site staff and recorded in the ETO system were used to test for baseline equivalence.

Notes: Effect estimates are average treatment effects of participating in the ACE training (treatment group) versus the control group. Fixed effects for each site are included as dummy variables (estimates not shown), with Baltimore County serving as the comparison group. Additional covariates were included in the logistic regression models if the standardized mean difference between treatment and control in the analytic sample exceeded 0.05. Continuous covariates included in the models were grand mean centered to ease interpretation of treatment effects. [a]Covariates included in the model: age, site indicators; [b]Covariates included in the model: reading grade level, math grade level, employment status at time of randomization, site indicators. See Appendix 4.17 for attrition rates and Appendix 4.18 for baseline equivalence.

4.8 Subgroup Analyses

The following section provides the results of subgroup analyses, dividing the ACE participants by training site and by training program. These analyses provide averages by group, but due to small sample sizes within groups we are not able to show statistical tests comparing impacts across training site and training program. This means that these results are presented as exploratory summaries, but they should not be treated as confirmatory evidence that certain training sites or training programs performed better than others because the sample sizes do not allow for rigorous statistical comparison tests.

ACE participants at all sites for which two years of UI earnings data were available saw higher average earnings than the control group eight quarters after the program ended.

Exhibit 4.17 displays the average total earnings for each training site based on the UI data provided by the states. Differences in earnings between control and treatment groups vary significantly by site, exceeding $10,000 at New Haven and Montgomery County eight quarters after the end of the training program. The differences we see in earnings across these sites are likely due in large part to the selection of the training program and the fit between credentials and available jobs in the area.

Exhibit 4.17: Average Total Earnings by Training Site

	Average Total Earnings Four Quarters Post Program				Average Total Earnings Eight Quarters Post Program			
Site	Control	Treatment	Difference	n[a]	Control	Treatment	Difference	n[a]
Anne Arundel	$15,235.96	$15,399.61	$163.65	209	$31,534.95	$34,451.56	$2,916.61	92
Atlanta*	$7,154.60	$5,783.50	-$1,371.10	203	--	--	--	--
Austin	$12,138.03	$13,334.90	$1,196.87	180	$23,228.95	$26,885.45	$3,656.50	106
Baltimore City	$14,071.99	$13,984.95	-$87.04	320	$25,880.76	$26,170.10	$289.34	84
Baltimore County	$12,672.74	$13,606.38	$933.64	374	$24,201.25	$27,913.67	$3,712.42	128
Montgomery County	$5,210.10	$10,728.89	$5,518.79	177	$10,926.91	$25,039.23	$14,112.32	81
New Haven	$12,578.79	$14,125.19	$1,546.40	348	$23,523.25	$34,810.03	$11,286.78	136
Prince George's County	$8,446.63	$8,582.62	$135.99	193	$15,376.47	$21,134.68	$5,758.21	68
Upper Shore	$7,434.07	$12,207.03	$4,772.96	60	$18,292.13	$24,207.53	$5,915.40	60

Source: UI records, collected by state agencies in Maryland, Texas, Georgia, and Connecticut.
Notes: Analyses exclude ACE program participants who identified as veterans (and therefore were not randomized). Total earnings four quarters post-program exclude programs ending after the third quarter of 2015. Due to data availability at the time of this report,

total earnings eight quarters post-program exclude study participants enrolled in programs ending after the third quarter of 2014. [a]n=total number of valid observations included in analyses. Total number of participants served by each site may exceed the n values listed in this table due to the exclusions listed above. Eight quarters of earnings were not available for Atlanta at the time of this report. *Eight quarters of wages are not available for Atlanta because UI wage records after 2015 quarter 4 were not available from the state of Georgia.

The next set of subgroup analyses explores the differences in earnings between program completers according to the training program completed. Similar to the subgroup analyses by site, these analyses rely on UI earnings data from state agencies. However, due to the limitations on UI data availability from Georgia and Connecticut described above, the subgroup analyses by training program include only sites in Maryland and Texas.

Average earnings varied by training program, with some programs under-performing the control group and others outperforming the control group.

Exhibit 4.18 presents the earnings subgroup analyses by training program for programs conducted in Maryland and Texas. The training program subgroup analyses are presented only for Maryland and Texas sites because these states provided UI earnings data at the individual level. Due to restrictions on the use and analyses of the UI data in Georgia and Connecticut, subgroup analyses of training program in those states were not possible.

ACE participants in some programs, such as administrative assistant, apartment maintenance, Commercial Driver License (CDL), and construction, earned on average higher incomes than the control group who sought to enroll in those programs but were randomized out of the training. Treatment groups in other programs, such as casino dealer, medical billing, and medical office assistant saw inconsistent improvement compared to the control, on average, and in some cases had lower average earnings than control group members did.

It is important to keep in mind that several factors may influence the earnings performance of each training program, some of which were outside the control of the ACE staff. These include unanticipated changes to local labor markets, which influence the demand for skilled labor in certain industries; the mix of soft skills and technical skills required to be competitive in the industry; and the amount of time needed to establish a career and earn a raise in a particular industry. Where data are available, we show averages for eight quarters of wages. However, due to later program end dates for some training programs, a full eight quarters of wages were not available to report averages for some training programs.

Exhibit 4.18: Average Total Earnings by Training Program (Programs Offered at Maryland and Texas Sites)

	Average Total Earnings Four Quarters Post Program				Average Total Earnings Eight Quarters Post Program			
Training Program	Control	Treatment	Difference	n[a]	Control	Treatment	Difference	n[a]
A+	$11,761	$7,178.53	-$4,582.47	29	$23,295.70	$16,973	-$6,322.70	29
Administrative Assistant	$11,812.64	$12,895.28	$1,082.64	128	$23,107.84	$30,768.67	$7,660.83	76
Apartment Maintenance	$11,637.75	$18,070.25	$6,432.50	119	$18,500.50	$34,211	$15,710.50	23

Training Program	Average Total Earnings Four Quarters Post Program				Average Total Earnings Eight Quarters Post Program			
	Control	Treatment	Difference	n[a]	Control	Treatment	Difference	n[a]
C.N.A. or C.N.A./G.N.A.	$8,617.09	$11,167.57	$2,550.48	465	$15,880.85	$22,605.96	$6,725.11	227
Commercial Driver's License (CDL)	$13,542.08	$19,083.41	$5,541.33	51	$16,815.14	$48.868.71	$32,053.57	14
Casino Dealer	$31,227.20	$36,476.17	$5,248.97	11	$66,573.80	$61,874.83	-$4,698.98	11
Construction	$6,221	$16,849.50	$10,628.50	16	$14,117.88	$33,296.50	$19,178.62	16
Culinary	$5,888.50	$12,532.67	$6,644.17	12	$12,266	$25,189.50	$12,923.50	12
Dental Assistant	$15,129.23	$13,175.72	-$1,953.51	175	$29,276.29	$29,622.24	$345.95	59
Dietary Aide	$7,528.50	$11,300.75	$3,772.25	20	$17,543	$29,410.17	$11,867.17	20
Logistics Technician	$11,243.57	$10,838.79	-$404.78	74	$25,067.33	$27,728.70	$2,661.37	51
Multi-Skilled Medical Technician	$11,986.52	$13,928	$1,941.48	54	$29,109.43	$27,296	-$1,813.43	23
Machine Operator	$11,547.17	$12,932.60	$1,385.43	11	--	--	--	--
Medical Billing	$15,987.46	$11,580.50	-$4,406.96	75	--	--	--	--
Medical Office Assistant	$11,939.73	$9,221.55	-$2,718.18	75	--	--	--	--
Ophthalmic Medical Assistant	$15,439.91	$9,415.58	-$6,028.33	23	--	--	--	--
Pharmacy Technician	$19,189.20	$10,366.07	-$8,823.13	19	$39,015.60	$20,188.64	-$18,827	19
Security Officer	$5,987.13	$10,333.43	$4,346.30	15	--	--	--	--
Utility Installer	$19,174.40	$14,209.75	-$4,964.65	17	$42,592.60	$31,642	-$10,950.60	17
Warehouse Technician	$16,866.19	$16,919.88	$53.69	53	--	--	--	--

Source: UI records, collected by state agencies in Maryland and Texas.
Notes: Analyses exclude ACE program participants who identified as veterans (and therefore were not randomized). Total Earnings four quarters post-program exclude programs ending after the third quarter of 2015. Total earnings eight quarters post-program exclude study participants enrolled in programs ending after the third quarter of 2014.
[a] n=total number of valid observations included in analyses. Total number of participants served by each site may exceed the n values listed in this table due to the exclusions listed above.

4.9 Outcomes/Impact Study Conclusion

The Outcomes/Impact Study results indicate that ACE has a positive impact on employment, earnings, and other employment-related outcomes. The results of the Outcomes/Impact Study can be summarized as follows:

ACE has a positive impact on employment and earnings.

ACE participants were more likely to find a job and earn more than the control group. In terms of earnings, employment, and credential attainment, these positive impacts begin to appear as early as one year after the training. ACE participants in Maryland, Connecticut, and Texas earned more than the control group after the end of the training program.

The ACE program has longer-term impacts on overall earnings.

Program impacts on earnings were larger after two years as opposed to one year after program end, suggesting that the impact of the ACE program plays out over a longer time period. This suggests that ACE and similar training programs require a longer period than one year to positively impact career outcomes. This may be because training program participants require more time to establish themselves in a career pathway, earn the trust and respect of employers, and earn more income. It also suggests that ACE has durable impacts on employment outcomes that persist and continue for years beyond the training.

ACE has positive and significant impacts on occupational credentials and employment quality (number of hours worked in a week and hourly earnings).

Other impact estimates indicate that ACE was successful in meeting its goals, and some of these findings reach a statistical significance of $p<0.05$. Based on the data collected from the follow-up surveys, ACE has a significant impact on the likelihood of holding an occupational credential, of working at least 35 hours a week at a single job, of earning $13 an hour more at that job, and on reliance on public assistance.

The analyses suggest that ACE may also have a positive impact on employer benefits, promotions, and raises, but the available data do not reveal significant impact for these outcomes.

Other analyses suggest that ACE may have additional positive employment-related benefits, but do not reach statistical significance with the available data. These include impacts on the receipt of benefits from an employer, the amount of time needed to find a job, and the likelihood of receiving a promotion or raise.

5. Implementation Study

How well was the ACE model implemented? Was the model implemented as intended and with fidelity? Did sites have to make adjustments and/or modifications during implementation? This chapter addresses each of these questions. It examines the critical components of the ACE model, building on previous Annual Reports and tracks closely the evolution of the ACE model as it “matured” in response to challenges and other factors.

The ACE model evolved to address challenges and lessons learned throughout project implementation and to adhere to RCT guidelines. Recruitment and orientation strategies of ACE sites became more sophisticated as the focus during the intake phase moved from quantity to quality. The initial race to recruit and quickly enroll enough applicants to meet both treatment and control sample size quotas shifted to include orientation strategies, such as speed dating, lengthy information sessions, and, for one site, a “vestibule” process, which created a multi-day eligibility assessment to select suitable applicants. These enhanced intake methods took root as

program implementation became more refined, leading to applicants that were well suited for the training and decreases in dropout rates.

Sites also modified and adjusted model components relative to job readiness training and job placement by creating job developer roles. Initially, the career navigator performed most recruitment, intake and orientation duties in addition to offering job readiness and job placement supports. The addition of the job developer greatly relieved career navigators' workloads and allowed most career navigators to focus on coaching and guiding participants through their career pathway. The addition of job developers also boosted employer engagement. Working closely with employer partners not only secured potential employment slots for ACE graduates but also gave staff insight into labor market demands. The inclusion of job developers at sites became a positive and needed modification to the model.

One important ACE component that evolved and continues to mature at the majority of sites is the WIB-community college partnership. Required to work together under this grant, organizations came into these partnerships with different organizational norms and cultures. Although initial collaboration steps were slow as organizations determined their roles and responsibilities, partners worked hard to understand and build upon each other's expertise. As with any collaboration, the success of the partnership depended in part on its unique mix of personal relationships, personalities, communication styles and staff and leadership supports. The WIB-community college partnerships, which began through the ACE project, continue to grow as partners leverage lessons learned into other collaborative efforts.

Other adjustments made during ACE program implementation were attributable largely to external factors such as changes in local labor demand or workforce development policies. For example, the newly opened Maryland Live Casino in Anne Arundel County signaled Anne Arundel program staff to offer casino worker training. New Workforce Innovation and Opportunity Act (WIOA) regulations introduced in 2015, built on existing policies and further reinforced partnerships requirements between education, human services, and workforce partners. These external factors did not significantly affect implementation but demonstrated the flexibility of the model and program staff to adapt.

As program implementation progressed and the ACE model matured, program staff proved to be nimble – assessing needs of the participants and anticipating and solving challenges. Over the course of this several-year effort, program staff and other relevant stakeholders often reflected on lessons learned throughout their journey, picking and choosing to sustain critical components of the model and proudly telling their ACE success stories.

To assist in the improvement of the ACE model throughout implementation, various forms of technical assistance were provided by program partners. The Annie E. Casey Foundation has been integral to all aspects of the ACE Initiative, from planning through implementation. Annie E. Casey organized several meetings where they provided technical assistance on program planning and implementation, identification of roles and responsibilities, relationship building between and among sites and stakeholders, site performance goals, funding decisions, and participant recruitment, employment placement, and co-teaching. The Anne E. Casey Foundation also engaged the Economic Mobility Corporation to provide further technical

assistance to the sites throughout the planning, recruitment, and implementation phases, including an employer engagement training in October 2014.

Jobs for the Future, the national technical assistance provider to WIF grantees, also provided implementation assistance to Baltimore County, including presenting at a meeting of all partner sites.

The National Association of Workforce Development Professionals (NAWDP) was also retained by Baltimore County to provide support and individual training to the career navigators. NAWDP technical assistance has included online tools and a job development training that ACE leadership convened in Baltimore in September 2013.

As the third-party evaluator, ICF provided technical assistance on evaluation processes and procedures throughout the design and implementation phases of ACE. ICF conducted general descriptive presentations for all ACE sites in Baltimore, MD (February 2013), Seattle, WA (April 2013), and Cambridge, MD (March 2014). These presentations allowed sites to ask questions and begin the planning process for the RCT. ICF staff also conducted full-day, on-site trainings for each of the nine ACE sites. These trainings involved several hours of presentations about the RCT and its procedures; a check-up on the latest plans for recruitment and training programs; and a working session to tailor the RCT design for the site's intake process.

The evaluation findings presented below cover the challenges, lessons learned and implementation stories over the four-year (2012-2016) evaluation period. Analyses presented in this chapter are a result of the qualitative analysis of multiple data sources described below. The section first lists the research questions that guided the analysis, the data sources used to answer the questions and a description of the analysis performed. Finally, implementations findings are presented within each component of the ACE model.

5.1 Research Questions

The implementation study research questions, shown in Exhibit 5.1, are focused on gaining an understanding about the critical components of ACE, how sites implemented these components, changes that were made along the way, the successes they experienced and barriers they faced during implementation.

Exhibit 5.1: Implementation Study Research Questions

Domain	Research Questions
Critical Components of ACE and Program Implementation Over Time	▪ Who are the community partners? What were the key vehicles of coordination? How long and at what level did the engagement continue? ▪ How did WIBs and their partners involve employers in program design and implementation? ▪ What are the initial target populations for each targeted occupation? What are the criteria for participation (e.g., availability, interest, scores)? ▪ What are the processes for recruitment, screening, and intake? How have these processes changed over time? ▪ What is the overall service delivery model for integrated teaching, including format and dosage of academic and basic skills components, as well as occupational skills components? ▪ What is the overall service delivery model for employment services for the treatment group? ▪ What participant supports were provided to the treatment group? ▪ What contextual factors in the community impacted how the program was designed? Implemented? ▪ What technical assistance was delivered? ▪ When did planning for grant sustainability begin? Did sustainability planning result in any changes to the program?
Fidelity of Implementation	▪ How closely did the program, as designed, replicate the major and ancillary components of the ACE program as defined on the fidelity rubric? ▪ How closely did the program, as implemented, replicate the major and ancillary components of the ACE program as defined on the fidelity rubric? ▪ Did sites implement the ACE model with fidelity? What aspects of the model were not followed most often? ▪ What exogenous factors hindered fidelity of the intervention? ▪ Does program staff feel that fidelity to the model/intervention is important? What are the critical elements of the model, and what components can be adapted without affecting results?
Establishment of Treatment Contrast	▪ What services were provided (e.g., training, education, employment, supportive) to the control group (i.e., what is Business as Usual)? ▪ How closely does the array of services provided via a WIB's BAU align to the implementation fidelity rubric of ACE?
Challenges and Successes to Implementation	▪ What (if any) were the challenges in conducting the labor market analysis and selecting occupations for targeting? ▪ What (if any) were the challenges in engaging employers and industry? ▪ Were the sites able to recruit their target populations as intended? ▪ Were adjustments made to the design and delivery of services based on the characteristics of the population recruited (e.g., people with dependents, working adults)? ▪ What were the successes and challenges in service coordination? ▪ Where were the gaps in support service provision? ▪ Were participating employers satisfied with the quality of the training participants received? ▪ What additional resources not anticipated in the program design and budget were necessary to run the project? ▪ Did sites meet their goals in terms of recruitment, enrollment, completion, credentials, job placement, and employment retention? If not, what were the main challenges? ▪ Were there shifts in the contextual environment of the program over the study period that may have influenced the way the program was implemented?

5.2 Data Sources, Collection and Analyses

The implementation study relied on primary data collected through interviews, focus groups, and meetings. Data from the follow-up survey of treatment group participants were also analyzed for implementation findings.

Site Visit Observations and Structured Interviews/Focus Groups. ICF staff observed ACE program/classes once a year from 2013 to 2015. During the two-day site visit, ICF staff observed the program, sat in on one class, and interviewed staff, participants, and partners as necessary to inform the implementation study and assess successes and challenges. Site visit, interview and focus group protocols were developed and cognitively tested to capture information across sites consistently (see Appendix 5.3 for site visit protocols). For special policy briefs and case studies, in-depth data was collected on specific topics that shed light on program implementation.

Study Participant Surveys. A section of our baseline and follow-up surveys was dedicated to capturing qualitative data on other services received and feedback on the programs from study participants. ICF received a total of 1,212 surveys (691 from ACE participants and 521 from the control group) from the first follow-up survey, collected one year after randomization, and 487 surveys (280 from ACE participants and 207 from the Control Group) from the second follow-up survey, collected two years after randomization (see Appendix 3.1 for survey response rates, and Appendix 4.2 for survey instruments).

Quantitative Data. Data on enrollment, completion and employment rates were drawn from program dashboards and analyzed with qualitative data to understand better implementation findings around recruitment, training, support services, job placement, and employment.

Analyses. The evaluation team analyzed staff interviews, student focus groups and other qualitative data, by identifying insights, trends, and themes using a codebook based on the ACE logic model. The coding was done using qualitative analysis software (Nvivo) and was geared toward:

- Staff identification of the critical elements of the ACE program and their hypothesized reasons for why those elements are successful.
- Staff identification of the critical challenges encountered during initial program implementation.

ICF also measured implementation fidelity by developing an implementation fidelity rubric. The rubric was developed according to the following steps:

- Step 1: Specification of the Intervention Model and identification of the major components.
- Step 2: Development of valid and reliable measures of fidelity: The 10 components of the ACE model were operationalized into measures that could be applied consistently and transparently to all study locations. This involved “unpacking” each of the 10 components into ancillary components.
- Step 3: Identification of a scoring rubric for fidelity: Implementation fidelity assesses how well the model was implemented as intended. Developing thresholds for each component served as a measure to score each components individually.

Together these analyses are meant to provide insight on how the ACE intervention worked and under what conditions – information that will be valuable, practical, and actionable for practitioners.

5.3 Critical Components of ACE and Program Implementation Over Time

The critical components of ACE, as listed in the logic model, are organized under five key program activities: Planning, Intake, Training, Support Services, Transition, and Tracking.

Planning Components

- Labor Market Demand: Targeting occupations and sectors with strong employer demand that offer realistic and navigable career pathways for adults with lower skills.
- Community Engagement: Actively engaging employers, industry associations, and WIBs to determine labor market demand, understand skill requirements for entry-level positions and make connections that will help program completers find jobs.

Intake Components

- Learning Assessment: Providing pre-testing and post-testing using the Test of Adult Basic Education (TABE) or Comprehensive Adult Student Assessment System (CASAS).
- Outcomes: Incorporating a well-defined intake process, including recruitment, screening and orientation to increase the likelihood that selected students will be a good match for the program and the targeted career pathway.

Training Components

- Credentials: Leading to a credential valued by employers, whether the program is offered for credit or as a non-credit program.
- Integrated Teaching: Integrating occupational and basic skills curricula so that students build their basic and occupational skills simultaneously, and incorporate co-teaching by basic skills or ESL and an occupational skills instructor for at least 50% of the occupational training hours of the program.

Support Services

- Student Success: Offering student support services, including individual coaching throughout the program, assistance in planning and navigating transitions to further education and employment, and academic support for students who face challenges mastering program content.
- Campus Involvement: Resulting from a rigorous planning process involving adult basic education/ESL faculty, occupational skills faculty (credit and non-credit), and staff from a variety of student support and administrative divisions, and information technology staff. These various divisions should together map out educational pathways and supports for students during and after ACE.

Transition and Tracking

- Transition: Offering employment-related services (in-house or through partnerships, particularly with community-based organizations and local One-Stop offices) to increase students' likelihood of moving into relevant jobs or advancing along career pathways.

- Tracking: Including a strong data tracking component, using a common system developed in collaboration with other participating ACE WIBs and community colleges, to capture students' educational and employment gains through pre- and post-tests.

This section takes a deeper dive into how these model components were implemented, how they evolved over time and the lessons learned following implementation.

5.3.1 Planning

During the planning phase, ACE sites were required to design their programs with their partners (WIB and community colleges), use LMI to guide their programming choices and also engage and solicit employer feedback on program pathways. Some ACE sites struggled with making their partnerships work and until the addition of the job developer position, sites had limited resources and personnel to dedicate efforts toward employer engagement. The findings for this phase seek to answer the following questions: *Who were the community partners? What were the key vehicles of coordination? How long and at what level did the engagement continue?*

Conducting the Labor Market Analysis and Selecting Target Occupations

Colleges faced multiple challenges in matching their target population to in-demand jobs. When they initially started, many colleges found that potential students did not want to complete training offered in high-demand areas. They also found that some students lacked the basic skills needed to perform successfully in a course and get a subsequent job. In order for a program to be successful, the colleges needed to understand the target population, the labor market for a particular location, and the student desires for a particular area of study.

In order to be successful, colleges needed to be willing to adapt the program to entice new employers.

The colleges had to diversify their programs to meet employer and student demand. For example, one college originally focused on the medical field and the restaurant business. However, to meet both employer and student demand to effectively place students in jobs, they shifted the focus to IT help desk, small engine repair, and community health worker.

New Haven had a unique situation in that it had a large ex-offender population. The site recognized that this population would not be able to get into certain jobs and wanted to ensure that the ACE program could meet the needs of all potential students. The site added a greater variety of programs and training, such as CDL, so that students with criminal records could obtain certain jobs.

Program location was a strong factor for courses and training offered.

Anne Arundel Community College operates in an affluent area, but it had trouble with entry-level courses. Many potential students had been exposed to college-level classes, so it was challenging to have students engaged in entry-level training. Initially, the college offered training in casino dealing and dental assisting, but had to cancel those classes because of low

registration. After six months of trying different trainings, they found success with the C.N.A./ G.N.A. program and with CDL.

Understanding the target population allowed for greater program success.

Understanding the target population was crucial to the courses and training offered. At the Austin site, they initially wanted to go with high-growth, high-demand, and high-wage or medium-wage occupations. However, they were unable to recruit potential students for their program. They learned that many individuals do not want to go through training; they a wanted a job right away. After describing its “disastrous” administrative assistant in C.N.A. training, the Austin site had success with its apartment maintenance training, saying it was because it was a specific certification (as opposed to general certification for the administrative assistant course) and they were trained in eight weeks.

The Montgomery County site staff lamented that they were not serving those who needed basic skills training. They realized that the training they offered through ACE required a higher level and math and reading comprehension. They would have preferred to serve people that were more in need, but they also had to help people who were ready for those classes and could get average wage in a high-wage area.

Similarly, the Prince George’s County career navigator noted that they faced both unskilled individuals who might also have barriers (lack of basic education) that were not outlined as part of the ACE program. For example, they found that the medical field was in dire need of people to be trained; they were trying to figure out how to train people in the medical field for entry-level work. They started the program at a high level and found that they did not have the proper curriculum for the target population. Looking back, they would have started with home health aide training which would have allowed for more entry-level work.

There was a disconnect between community employment demands and student aspirations.

In general, staff in many of the sites noted that there was disconnect between the market-led data and what the students were interested in for employment. For example, there was no problem filling a C.N.A. position, but it was difficult to fill jobs that students did not want, such as bank teller. One community college staff member wished they spent more time in the community prior to beginning the program to find out what the needs were and what the type of jobs participants wanted.

Medical billing proved to be a challenge to employ students. One college mentioned they did two trainings in medical billing. After unsuccessfully trying to place students in medical billing positions, they realized the market was not there for medical billers. This was a lesson learned for a newer job developer who wishes they stood up to the associate director to ensure that they focused on courses and training based on market demand.

Some programs tried to do too much at the same time and had difficulty getting the program to run.

New Haven staff mentioned that they were simultaneously recruiting while determining the programs to offer, hiring staff and getting business buy-in on board. They also had staff changes during this time and had trouble finding participants for the classes they were offering.

The WIB-Community College Partnership

Central to the ACE model, the collaborative relationship between WIBs and community colleges as envisioned would leverage the strengths of both organizations to provide participants with a combination of training, job development, and wraparound support services to encourage success in the classroom and on the job market. In practice, the level of collaboration and strength of this relationship varied between sites and evolved over the course of implementation.

The collaborative relationship between the WIB and community college was new to many sites, and while not without challenges, often increased organizations' understandings of one another and brought the two partners closer together.

Despite many challenges, the extent of collaboration required for ACE often brought the partners closer together or increased their understanding and appreciation for one another's work. The Anne Arundel WIB staff used to think of the community college solely as a vendor, but developed a stronger relationship with them and now considers the college a partner.

Austin staff found that while there were strong personalities on the team, there was also respect built on the existing good relationship between the partners. The Austin team regularly met to discuss and provide input on issues. These meetings minimized tension by reminding all team members that they shared the same goal – for each student to succeed.

Baltimore City partners now have a stronger relationship because of ACE; they benefited from each other's expertise, and have stronger communication than before. The experience on ACE has led Baltimore City's WIB and community college to collaborate on other projects, including an adult basic skills boot camp. Montgomery County staff reported a more tenuous relationship and a difficult adjustment learning to work together. New Haven partners, who reported a history of strong relationships, noted that ACE was straining. A Prince George's County staff member noted that the WIB and community college tried to work together for years, but that ACE represented one of the best examples of collaboration between the two sites.

Program management and division of labor in practice varied among sites.

While WIBs and community colleges were expected to collaborate as part of the model, often one entity assumed a greater leadership role in managing ACE implementation than the other. In some cases, the grant agreements were made with the WIB solely, whereas in other cases

agreements were in place with both the WIB and the community college. However, this did not necessarily mean that the entity with the agreement led implementation.

At Baltimore County, the program was largely led by the community college, which voiced frustration with the level of resources and support coming from the WIB. Montgomery County Community College staff described the difficulties of having funding go through one partner, stating that whoever handles the money feels in charge, which leads to conflict over roles and responsibilities and decision-making. At several sites, community college staff reported taking on unfunded responsibilities and bringing in college-funded resources to fill in gaps (e.g., Baltimore City, Baltimore County, and Montgomery County).

Two sites bridged the gap between the WIB and community college by positioning a staff member as a liaison between the partners. New Haven hired a new program coordinator, employed by the WIB, who had previously worked with and now resides at the community college. She has proved to be a valuable conduit between the partners because she has an understanding of both organizational cultures. Montgomery County has a community college staff member who works with the WIB to coordinate items like supplies and testing, and forward any information necessary to the WIB to make decisions.

As with any collaboration, success often depended upon the unique mix of personal relationships, personalities and communication styles and levels.

With any partnership, the mix of personalities and communication and leadership styles influenced the collaboration's success. ACE partners variably described their relationships as workable, tolerating each other, or as very strong. Some teams met weekly or monthly (e.g., Austin, Baltimore City, and Baltimore County) whereas others reported not meeting for months at a time (e.g., Montgomery County, Prince George's County).

The partnership between community colleges and WIBs was a requirement of the grant and these partners came together to implement the program because they shared a common goal – the success of their student. Developing successful WDB-community college partnerships took time, commitment and patience as the organizations worked through their challenges, which included unclear role delineation, limited resources and overworked staff, and organizational and cultural differences.

> "*Getting the USDOL-funded staff, and the college-funded staff working together as one toward the same target. Not throwing the ball over the wall for somebody else to do something and throwing it back over the wall for somebody else to do something, and then the blame game about what did or didn't happen. Explicitly, I think previous editions of DOL-funded work in communities like ours bred a vendor relationship to training organization rather than a partner relationship. And then when things didn't go according to plans, finger pointing. This joint planning that we've been engaged in sense my best finish and when ACE came on has been extremely healthy, I think.*"
>
> *– Community College of Baltimore County Staff*

The challenges to the WIB-Community College partnerships are described below.

For many sites, the distribution of roles and responsibilities between WIB and community college partners was unclear at the outset.

While sites generally began with the expectation that the division of labor between the WIB and community college would follow their individual areas of expertise (i.e., labor market and job development versus training respectively), many experienced confusion or disagreement over who would take on responsibilities that did not fall within traditional domains such as assessment or recruitment.

At Anne Arundel, partners expressed frustration and each felt that they should have had more responsibility. Staff stated that in the confusion, some responsibilities fell through the cracks. The situation was complicated by staff and leadership changes midway through the grant, demonstrating the importance of staff continuity.

Austin staff felt unclear at first about the role of the career navigator, who ended up assuming a host of responsibilities. Montgomery County also reported confusion over roles, with the community college stepping in to fill gaps. New Haven also described early confusion over roles and a lack of understanding of each other's tasks, however, over time, they developed a stronger understanding and more defined roles. Several sites had complex supervisory arrangements, particularly for WIBs run by an independent operator (e.g., Austin and New Haven). Front line staff sometimes reported to multiple supervisors and managers who had varying degrees of understanding of ACE, the day-to-day activities of the program, and the needs of the ACE population. These complex arrangements sometimes created confusion for staff, forcing them to juggle multiple relationships and straddle conflicting organizational cultures and goals.

Organizational differences posed challenges, particularly regarding culture, priorities, goals, and infrastructure.

Each WIB and community college brought its own unique culture, priorities, goals, infrastructure, norms and histories to the partnership. These differences presented challenges for collaboration between the two organizations.

> "*This is a very, very labor-intensive model. You know it takes a village, I know it clearly takes avillage. But do all the villagers have to be involvedall the time?*"
>
> *– Career Navigator*

Anne Arundel staff found that the WIB faced competing goals from the county and state that could result in ACE goals coming second. They also noted that each organization brought its own biases. The community college was better versed in student academic barriers, whereas the WIB was more informed about LMI. This led to disagreement over issues like selection or feasibility of course offerings. For example, a course that may have been in-demand locally may not have been ideal for students with great academic barriers.

Austin pointed to the impact of resistance to change and organizational siloes. Within the community college, getting access to the best adult basic education meant: working within the department's schedule requirements and rules, condensing class duration, offering classes at times that were not ideal for some ACE students, and not offering innovative training programs like those in IT because of restrictive program schedules. Austin Community College staff also found that while traditionally the college did not have an employment goal, the ACE project had encouraged them to be more student-focused.

Baltimore City staff pointed to an attitude shift for both organizations as a result of ACE, encouraging them to work in concert rather than through back-and-forth interactions. For example, the community college integrated more job readiness into classes, and the WIB learned more about the credentials students had to attain. However, learning to understand each other's expertise was a challenge.

At times, intra-organizational conflict and turf issues were barriers. In having WIBs on board the ACE project, it was assumed that the ACE team would be able to leverage the WIB's existing employer contacts but this was not always the case. At Baltimore County, ACE staff was met with reluctance from the One-Stop center when they sought to use their contacts and obtain job referrals.

Montgomery County staff found that the two partners differed in how business is done, and that they each had to learn each other's styles and expertise areas. WIB staff felt the community college was more invested in seeing this particular model work. The WIB also described resistance from the community college to providing schedule time for workshops, while community college staff felt more familiar with the needs of this particular population of students than the WIB.

Prince George's community college staff found the WIB to be less familiar with the ACE student population than the college. According to the WIB, instructors did not fully understand the program and its purpose, and the community college was used to being able to offer courses on a schedule that often did not work with ACE students and the upfront assessment and recruiting needed for ACE.

Organizations also varied in agility. At Baltimore City, the community college could adapt more easily than a city- or state-level department. At New Haven, the WIB could hire staff more easily than the community college because it lacked unions and does not have a requirement to pay union wages. However, while easier to hire, WIB staff were unable to make certain decisions within the context of the community college.

Although the WDB-community colleges partnerships had a rocky start, "their concern for the student on both sides remain[ed] a central mission common purpose" that led them to mesh together toward a healthy relationship.

Employer Engagement in Program Design and Implementation

Staff members frequently mentioned the importance of involving employers in the planning phase. As staff members pointed out, involving employers early in the planning stages was essential to ensuring a successful training program with high job placement rates. Employer partnerships took time to develop, but staff members noted that the benefits were significant. During program implementation, engaging employers in the actual training, specifically by inviting employers to speak to classes, was helpful for students and for improving program design. In order to effectively engage and develop relationships with employers, job developers needed to recognize: (1) the industry in which the program is offered, and (2) the specific needs of the employer within the industry. Job developers noted that they faced challenges in establishing the relationships needed with employers because the program did not always align with the employer needs. For example, one job developer found that engaging the employer

was more about quantity than quality. A relationship with an employer was strengthened when multiple positions could be filled (e.g., apartment maintenance) as opposed to just one or two (e.g., dental assistant).

Engaging employers in planning processes helped sites assess labor market demand.

Staff members noted that assessing labor market demand should involve talking with employers in advance to better gauge potential demand for ACE graduates. During ICF's site visits, staff noted that early employer engagement helped with both determining what training programs to offer as well as how many students to enroll in each program.

Staff at Anne Arundel Community College, for example, noted that, given the chance to pick training classes again, they would have preferred to hold a focus group with employers to determine growth industries and in-demand skills. Anne Arundel staff members also noted that engaging employers would have helped them determine occupational requirements and assess the feasibility of offering trainings for competitive jobs. For example, Anne Arundel considered a cyber-security training program, but found, through conversations with potential employers, that it would not be feasible to provide the necessary training given the skill and education levels of incoming ACE students.

The Prince George's County site determined through communication with the Maryland Board of Nursing that C.N.A. program graduates needed to pass a drug test, tuberculosis (TB) test, and background check, and thus, Prince George's County included these tests as part of the intake process for their C.N.A. training. Staff at Prince George's County, however, noted that the costs of these tests were higher than anticipated, and that these sort of upfront costs should be more carefully considered during early planning stages.

Tailoring curricula design, vocational, and essential skills instruction to employer needs ensured that ACE program graduates were better prepared to find a job and advance their career.

Employers' feedback also strengthened the curriculum planning and design process. Staff members noted that given the chance to design a new curriculum, they would involve employers more closely in the planning stages. One staff member mentioned that ACE could borrow from similar "customized training" workforce programs, in which employers share their workforce needs with the local WIB and also offer to pay for some of the training.

> "*One of the things I wanted in this model was the employer to be more active in not just placement, but the designing of the curriculum. I really still believe that we need more employer input on curriculum design and that way we got a person who's being trained to work with this company to do the skill that this employer needs* […]."
>
> *– Career Navigator*

The Baltimore City site found that engaging hospitals and other potential employers for their C.N.A. program graduates helped determine how many students to recruit and train based on positions available. Similar to Baltimore City, staff members at the Baltimore County site also mentioned that developing employer partnerships before the training began was essential to

tailor training programs to employer needs and to ensure that employers understand that ACE graduates receive essential skills training in addition to vocational skills.

Staff at the New Haven site also highlighted the importance of engaging employers in the planning stages, in addition to leveraging labor market information (LMI), to design successful training programs that are tailored to the demands of the labor market.

Programs invited employers to speak to training classes, which helped students get a better sense of what their future careers could be like and led to improvements in program design.

Several program staff members mentioned inviting employers to class to speak to their students, which benefited students as well as the program. One program had employers speak to students about what employer expectations would be when students were seeking employment. Another program had employer speakers whose presentations to students would "offer them a realistic pathway" in the career the students were pursuing. Another program's employers shared information about hiring practices and stories about their personal journeys in the field. All of this information helped keep the employment focus of ACE in students' minds and gave them a better idea of what future employment and career expectations are.

Programs also shared stories of employer-suggested improvements to program design. In Baltimore City, Johns Hopkins Medicine worked with the ACE program to make improvements to their pharmacy technician training. Baltimore City took their first pharmacy technician class to Hopkins so they could be assessed, and Hopkins thought the students could be more versed in pharmacy terminology. Even though not all of the program's students could be employed at Hopkins, it helped provide guidance on how to improve the terminology component of the program so that all of the ACE participants would meet the standard of a leader in the field.

In New Haven, employers were helpful by providing guidance on the food and beverage programs. Employers provided feedback to the ACE program about components that should be added to the training, such as knowledge of wine varieties or different serving styles. Food and beverage employers also came to speak to students, as did employers in several other New Haven programs. New Haven made an effort to respond to the employer feedback by adjusting programs, acknowledging that these changes would help students find employment in the field.

ACE sites reported that the internships provided students with valuable employment experience.

ACE sites realized that internships could be an important piece of the training, particularly in the medical field. Baltimore City noted that its medical billing and coding employers wanted candidates with experience in a hospital doing that sort of work; Baltimore County also found that the medical field is competitive and employers were looking for more experienced applicants. Participating in internships helped students gain experience, and several sites said that students were hired by their internship sites. Baltimore City developed an internship program for their medical billing and coding students and have had students hired full-time by the internship site. The Baltimore County site found that a few dental practices were willing to let

their students participate in internships, and noted that certain employers were understanding about the goals of the ACE program and knew that experience would be required to be hired in the medical field.

Working with employers to set up these internships was important but potentially challenging. One site tried to set up contracts with businesses to host interns, yet had some businesses back out of their agreements. Another site mentioned that because employers had not heard any feedback about the program, they became hesitant to agree to internships. Several sites addressed these challenges by working closely with employers. The site that had businesses back out of agreements still brings agreements to employers and tries to get them to sign right away to make the process more formal. To follow up, the site quickly sent students to interview, intentionally not letting too much time go by between the agreement and placements. This method has been successful because it has built relationships with employers and it has also made employers feel a stronger commitment to the program. One site dealt with employer skepticism about hosting interns by developing internship guidelines so that if students were not meeting the terms of their internship the program could intervene. New Haven had a well-developed internship process to engage employers, including a one-page agreement with businesses, insurance through the community college, and an employer evaluation after internships are completed.

The ACE sites worked hard to establish themselves in their communities and provide employment opportunities for students. Given the level of competition for jobs, the ACE sites faced a number of challenges, including the unwillingness of employers to partner with ACE sites due to among other factors, the lack of hands-on job experience for the students and the reliance of gauging the needs of employers and aligning those needs with the training offered at the college.

The challenges to employer engagement are described below.

Job developers experienced variation in the level of employer engagement in the job placement process.

> *"Our first strategy was to actually set up contracts and we actually had businesses back out last minute. Then we had programs that were supposed to finish let's say March and instead July because we didn't have a placements."*
>
> *– Job Developer*

In some cases the ease of placing students varied from industry to industry or employer to employer. Even if there was an agreement in place, some employers backed out of it. Employers in the medical field, including large hospitals and smaller dental practices, seemed to be especially difficult with to forge partnerships. New Haven hospital signed off that they would partner with the college to help with training and job placement. However, they also committed to other partners and it became increasingly more difficult to establish an exclusive partnership with them.

Baltimore City had more success placing students in small pharmacy programs, as opposed to large ones, because large pharmacies experience more competition for their available jobs. In New Haven, placing the small engine repair students was challenging because many of the

shops are small and the owners are worried about students making mistakes – any mistakes would come out of the owner's pocket.

Prince George's County faced an issue with a health care partner around transportation for employees. The partner required that employees have cars to provide transportation for patients to doctor's appointments. Therefore, while the job may have provided entry-level skills to employees, many did not make enough money to purchase and/or insure a car.

The needs of the employers extended beyond the specific training or program. The reputation of a job placement candidate could either build or compromise the relationship established between the college and the employer.

5.3.2 Intake

During intake, ACE sites recruited and oriented all ACE applicants and then, on-boarded participants who were randomized into the treatment group. Intake strategies were modified as the program matured to include customized processes that effectively assessed the "readiness" of an applicant to enroll into a training program. Partners worked together internally and externally with program stakeholders to recruit their target population and decrease dropout rates. ACE sites fared well in terms of the goals set for this program. Collectively, sites met their targets for enrollment and program completion. The grant target enrollment for the ACE program, among all sites combined, was 1,281 participants and the revised target enrollment that was agreed upon by all sites was 1,252, while ACE had actual enrollment of 1,258 participants. The program completion target was 75% while ACE had an actual program completion rate of 77%. ACE sites had to overcome many of the challenges that threatened to hinder recruitment, completion and employment outcomes, to achieve program goals.

Eligibility Determination and Recruitment

The ACE intake process includes recruitment, orientation, a testing period, and an eligibility process. Staff employed a variety of creative strategies for recruitment, including reaching out to community partners like housing authorities, churches and retailers – and were also dependent on referrals from former students as a strong recruitment tool. Over time, some programs learned that recruitment strategies could be improved by coordinating efforts between the college and WIB. Orientation strategies varied by site and often included lengthy information sessions as well as one-on-one meetings and interviews. Several programs enhanced their initial orientation processes by making changes to ensure that the students randomized into the program were a better fit.

> **Staff employed a variety of creative strategies for recruitment, including reaching out to community partners like housing authorities, churches, and retailers.**

A number of sites utilized community partnerships to help recruit ACE candidates. For example, in 2014, Baltimore City's community partner, the Baltimore Housing Authority, had two large recruitment efforts for the ACE program that identified a number of potential candidates. Other successful recruitment partners for that site included churches and the International Rescue

Committee. The career navigator at Montgomery County also connected with community partners ranging from churches to retailers to get information about the program out.

Referrals from former students were a strong recruitment tool for several sites.

Referrals were also a strong recruitment tool in Montgomery County. According to Montgomery County's career navigator, referrals from previous ACE participants rapidly spread information about the program, especially if a treatment participant was experiencing positive outcomes. The same is true for Baltimore County where referrals seem to have bridged the gap between the program and the community and established trust and program credibility.

Although recruitment was challenging for many, sites indicated that the use of fliers, radio advertisements, word of mouth, and reaching out to community partners proved to be the most successful modes to recruit participants.

The New Haven site invested some funds in marketing and branding the ACE program. With catch phrases like "Connect to college, connect to a career," they appealed to applicants who would be more interested in a career pathway than attending college. According to New Haven, presenting the ACE model this way made it very attractive to potential students, such as SNAP clients.

These recruiting strategies seem to help immensely if there was an ample pool of potential applicants to target. ACE sites continued to be innovative in their recruitment strategies. Sites learned that the more people who walked through their door, the higher the likelihood of getting suitable eligible ACE study candidates through the orientation and assessment phase and into the eligibility process.

For some programs, recruitment strategies improved when the college and WIB worked together.

Part of the challenge of recruitment for ACE, at least initially, seemed to stem from defining the role of the WIBs and colleges in the process. At one point, Montgomery County had two separate recruitment events – one run by the college and one run by the career navigator – which was confusing to prospective students. Programs noted improvements in recruiting when the partners coordinated their efforts, as one individual put it: "It became everybody's responsibility to recruit."

New Haven experienced a shift in roles, with the college eventually assisting the WIB with recruitment, acknowledging that they could potentially recruit internally from current students. Though initially New Haven planned for recruitment to be the WIB's responsibility, the college ended up doing some independent recruitment and also gave WIB staff access to college classes and instructors so the WIB could recruit from the college as well.

In Prince George's County, the WIB had initial challenges with recruitment but they worked with the college to improve the process. The college became engaged in recruitment, for instance by

advertising the training classes in their course catalog and on a college marquee, after which the WIB found recruitment to be easier.

Anne Arundel community college staff noted that while recruitment was the WIB's responsibility "on paper," in reality, recruitment was "everybody's piece." The Anne Arundel site had difficulty early on with defining recruitment roles, so they changed their processes as they went along. The site ended up with a recruitment strategy that was working toward the end of the grant period. Ultimately, the Anne Arundel site hired a recruitment coordinator, which helped take the pressure off grant staff because previously, during recruitment times, there had been an "all hands on deck" approach and staff had to stop their other activities to go out and market the program in the community.

Orientation activities varied by site and often included lengthy information sessions as well as one-on-one meetings and interviews.

Orientations varied across ACE sites and often involved lengthy informational sessions as ACE staff sought to explain what the ACE program is and what it is not. After orientation, sites engaged in an eligibility process, where certain factors, such as lack of documentation and failed assessments, could hinder or halt applicants' passage through intake to randomization.

The career navigator at Baltimore City held a three-hour orientation workshop to discuss their training program, its requirements, qualifications, and also administered the TABE test in math and reading comprehension. During this time, the career navigator also shared factors applicants should consider with being a student, including planning, the time they need to study, dealing with any barriers they may have, such as childcare and transportation, lateness, and respect for instructors. After the workshops, applicants were directed to an online career assessment tool. The career navigator started gathering the required documentation and referred applicants to the community college. The program coordinator at the community college then conducted 15-minute interviews and then referred them to the drug screening and the background checks and any immunization records that they have to obtain based on their chosen career. The applicant's chosen career also dictated if he or she would participate in a second orientation. Once all required documentation was submitted, applicants signed the consent form and were placed into the pool to be randomized into the study.

Baltimore County focused on assessing applicants to make sure they were at the right place in their lives to enter training. They took people through a multi-day eligibility process and orientation, called a "vestibule," prior to being selected or randomized into the program. Through interviewing and one-on-one conversations, ACE staff determined if an applicant was ready to be enrolled. In addition, applicants had to show a high level of commitment by attending the vestibule. According to Baltimore County, this upfront screening decreased their dropout rates because they were more likely to retain applicants who know what the ACE training entails.

Orientation at the New Haven site resembled the processes in Baltimore City. In New Haven students went through a two-and-a-half hour workshop to hear about the program, take the CASAS, the initial math and reading assessment, and provide the needed documentation and verifications, background checks, and drug screening. In addition to these steps, the New Haven site also had one-on-one follow-up meetings to evaluate applicants further, prior to

randomization. New Haven looked for ways to enhance the orientation process for applicants and began offering remote orientations, bringing the paperwork and administering testing at community locations. New Haven also introduced an "appointment sheet," which is an individualized timeline for participants so that they knew what to expect in the months or weeks before classes started, in response to the realization that they were losing students between orientation and randomization.

The Montgomery County site's career navigator and job developer explained the study's purpose and lottery during a three-hour orientation workshop with applicants. Due to the time taken up by constant recruiting, the career navigator did not formally schedule one-on-one meetings with applicants during orientation but informed them of her office hours. During her office hours, when applicants arrive, she told them more about the program and discussed job search, resumes, and other alternatives they could pursue if they were not randomized into the ACE program.

In Prince George's, people who submitted the initial referral interest form were invited to an ACE orientation and given a presentation on all aspects of ACE, and often compared it to the WIA funded trainings so that participants knew what their options were should they not meet the eligibility requirements or be randomized into the control group. During these informational sessions, the career navigator also encouraged ACE applicants to register in the Maryland Workforce Exchange, the online workforce data system, and to make an initial visit to their One-Stop center.

Improvements to orientation processes typically involved ensuring prospective students were a good fit for the program.

As the ACE project progressed, sites adapted their orientation processes so they were better able to determine if potential students would be a good fit in the program. One program operating a food and beverage training realized that on busy nights at restaurants, staff would have to deal with managers who are giving instructions very quickly, with no time for polite "softening" of requests. Some individuals could not work well in that situation, so the program started asking questions in orientation about how applicants respond to authority figures and how well they work on teams.

A program shared how in its first two cohorts, during the interview process, it did not focus heavily on the applicant's desire to work. The program found that individuals would finish the training and not want to work, so they changed the interview process to make it more employment-focused. The change helped program staff determine who was a good fit and help potential students decide if the training was what they wanted to pursue.

The challenges in meeting recruitment, enrollment, completion, credentials, job placement, employment, and retention goals are described below.

Recruitment was an all-consuming activity for some ACE sites and finding applicants who met the educational requirements was particularly difficult for the most affluent sites.

For some sites, getting an influx of potential applicants took time and coordination from the partners. Recruitment was particularly challenging for the Montgomery County site. Despite the promise of a free program, there was a deficit of interested applicants. The site had to widen its pool to be able to meet numbers and randomization ratios, and look outside its initial ESL target population. The Anne Arundel site also faced recruitment issues and expressed that the challenge in most cases was finding suitable candidates for the program who were "either not succeeding in school for whatever reasons or not succeeding on the job for whatever reasons." In recruiting, due to a perception of changing guidelines and shifting understandings of guidelines, Anne Arundel had to change its targeting from people with job barriers to people with educational barriers. Finding people with educational barriers in Anne Arundel was a struggle
(due to the high educational level found in the county) and when it did eventually find those people, the barriers were so strong that they really needed long-term training to get ahead.

Determining eligibility was an arduous task for ACE sites.

Following recruitment, the ACE sites had the arduous task of determining eligibility for their cohorts prior to randomization. ACE applicants had to demonstrate first a deficiency in basic skills. Additional criteria included selective service participation, work eligibility, veteran status, and training-related eligibility (e.g., criminal history). Although ACE sites strived to target and attract applicants with this mix of characteristics, the sites lost many potential clients during the eligibility process due to a number of factors: (1) lack of required documentation, (2) failing required assessment, and (3) lack of commitment. Due to these and other personnel barriers, Baltimore City, for example, estimated that they could lose up to 80% of those who initially apply to an ACE program. The situation was similar in the Prince George's site where it received 300 to 400 applicants for a class of 26.

ACE sites lost a majority of applicants during the intake process due to the applicant's inability to produce the required documentation and verification.

As part of the eligibility process, ACE applicants needed to submit a set of required information, including state-issued identification, birth certificates, shot records and other medical testing. Gathering these documents from an entire cohort prior to randomization took a considerable amount of time. In Baltimore City, ACE lost applicants because they did not have driver's licenses or their IDs had been ceased by law enforcement. Most of the time they do not have the funds to request replacement documents either. In order to avoid a paper chase, some career navigators established stricter guidelines. In Austin, the difficulty in fulfilling the documentation requirements for entire cohort in a timely manner for their C.N.A. program (including MMR and TB shots), resulted in the site dropping the program.

Unfortunately, sites lost many applicants at the testing phase of the intake process because they were unable to pass the testing requirements. In Baltimore City, staff found that a majority of applicants were still testing below sixth-grade mathematics. People did come to the ACE program with barriers but tested at the 12th-grade level. Some ACE staff had their doubts about the assessments (and capping it off on the lower end) being a fair indication of an

applicant's abilities, considering the fact that people may be bad test takers. For instance in New Haven, some applicants came in with very poor scores and went on to do well in the programs.

5.3.3 Training

ACE is a workforce development program with an innovative training component-integrated curriculum and co-teaching. The training component formed one of the most important parts of the model (next to the employment components) and was greatly influenced by activities in the planning stages. The curriculum offered which was designed with feedback from industry partners and employers had to lead to a career pathway. The mode of delivery by co-instructors was to ensure that the vocational content was augmented by the basic literacy and numeracy instruction to help increase student success in the program.

Service Delivery Model for Integrated Teaching

Co-teaching and the integrated curricula require careful planning. Community college administrators and instructors have extensive experience with single-instructor classes, but many have little experience with co-teaching. Instructors noted that working together to establish a well-integrated curriculum requires careful planning, leadership, and communication with potential employers of ACE graduates.

The teachers give real world examples of why soft skills are important and what might cause one to be fired from the job. For example, instructors at Austin note that students are required to dress appropriately for the worksite in class, and the teachers model the same behavior and dress.

Co-teaching appears to be working well, and co-teachers are learning how to work together. Typically, one teacher tends to serve as a tutor and address individual student challenges. Vocational and basic skills seem to be well integrated – for example, at Austin, students were given electrical problems and used math skills to solve them. Several sites did note, however, that having a basic skills instructor in the classroom for 100% of the content instruction time might be too much if the model were to continue.

Staff at multiple sites, such as New Haven and Baltimore County, mentioned that trust and respect between teachers and students are essential, particularly when working with students who are not accustomed to a college academic setting. Students at all sites felt that they could trust and be supported by their instructors and other staff members with whom they had been in contact.

> **The integrated curriculum and approach to co-teaching evolved as instructors and staff learn more about student needs.**

As essential skills instructors gain experience with students, they are learning that some skills are needed more than others are. For example, resume writing, job searching, and email etiquette were noted as essential skills that needed more attention than originally anticipated in Baltimore County.

Language and other essential skills were key for C.N.A. students at Montgomery County. To better integrate curriculum design, Anne Arundel hired an instructional specialist to work with instructors on the integrated curriculum model, which has helped establish continuity between class curricula.

Co-teachers learned to work together to address student needs. However, some classes lent themselves more readily to co-teaching than others did.

Staff at Baltimore City Community College (BCCC) noted that co-teachers could help identify problems quickly, such as learning disabilities or difficult concepts, and work one-on-one with students to address problems. Typically, the Prince George's site used what they called a "lead-student" co-teaching model, where the technical instructor would lead the class and the basic skills instructor would jump in and add basic skills information. However, if a student need arose, such as a struggling English language learner in the class, the basic skills instructor became more dedicated to watching and helping that student.

At some sites, students were not clear about what co-teaching was or what its participation meant. When students at BCCC were asked if they had co-teaching they said no. They went on to explain that, typically they do not have two teachers in the classroom, although two instructors were in the classroom at the time of the class observation. At Prince George's, there were complaints that the co-teacher was not as engaged with the class and was not "really teaching."

In some training environments that are more focused on practical skills needed for the job, such as the CDL program at Anne Arundel and the combat classes for security officers at Prince George's, it can be difficult for the basic skills instructor to find a place. At Prince George's Community College, there was no training on co-teaching; instructors were just told the ACE class would have an extra teacher.

Adequate planning time for co-teachers led to more successful co-teaching relationships, but sometimes it was not possible to set aside the requisite time for planning.

In the beginning, programs did not always realize they had to be explicit with the co-teachers about the role of each teacher and the way the class would function. One site shared that one of its teachers came to the first day of class and was confused to see another teacher already sitting in the back of the room; in another instance the basic skills teacher did a "pre-class" to familiarize students with the text book, and when the content instructor saw students were familiar with the text book the content teacher thought that another teacher was teaching his or her class.

Sites noted the importance of a good co-teaching relationship, but also that they did not always have enough time to prepare their instructors adequately, especially when they had only one or two months to set up a program. In some cases, instructors were not able to meet beforehand because they were still working at their current full-time jobs, and when this happened one site said that the basic skills teacher ended up being less engaged in the class. Prince George's

County expressed frustration with the tight timeline for teacher preparation, and added that in some cases it was challenging to get the instructor pairs they wanted because of changing program start dates. The Prince George's site also had issues with part-time adjunct faculty, who in some cases left in the middle of a course cycle for reasons unrelated to the class itself.

Several instructors found that co-teaching could be a challenge. For example, one instructor expressed frustration with planning a curriculum with a co-teacher. That instructor noted that the co-teaching relationship improved, however, when the two instructors planned a clear list of responsibilities, including which instructor was responsible for each subject and activity. The Anne Arundel site, recognizing the importance of a carefully planned integrated curriculum, hired an instructional specialist to help develop curricula.

The ideal co-teaching relationship was described as "like marriage," or "like Mom and Dad" – teamwork between co-teachers was seen as critical, as was having teachers who are easy to work with and can be flexible. Planning sessions seemed to help facilitate this relationship, such as when teachers were given the opportunity to sit down together and work through the syllabus. One site did a co-teaching orientation with both teachers together, and the teachers were required to develop a joint co-teaching plan. The site had a challenging experience with a married couple co-teaching pair who were in conflict and would publish two separate lesson plans – but after staff had them create lesson plans together, the experience improved. In this site's experience, co-teacher preparation also helped students understand that they had two teachers who respect each other's expertise.

Job Readiness and Job Development Services

Staff and students cite employment and job placement services as essential.

A relatively new addition to the ACE model, the role of the job developer evolved from the apparent need to assist the career navigator (a core component of the ACE model, is responsible for recruiting, onboarding, job readiness training and job placement, etc.). In performing the array of duties assigned. Many of the ACE job developers we spoke with were recent hires still adapting and working to build the job development capacity of their programs. The position title varied by site, but for this discussion will be referred to as "job developer."

Several sites felt the job developer should have been in place from the outset. Many sites regret not having employer commitments early on.

At Anne Arundel, the job developer worked to engage employers early, identify employment opportunities, connect students with employers, and connect them with jobs. In addition, other responsibilities included assisting with recruitment, marketing, intake, job readiness, job searching, and job placement. Originally, it was thought that the job developer would make connections to employers, provide students with a lead, and set up the meeting. However, some sites felt that it eventually involved more "handholding," in the words of one interviewee, including driving students to their interview appointments.

Austin's job developer began working with students in the second week of class, and thereafter worked with students for an hour each week in the classroom on job readiness. The job

developer helped students set up their Work in Texas profiles (a comprehensive online job search resource and matching system developed and maintained by the Texas Workforce Commission and the state workforce network, Texas Workforce Solution), as well as helping with resumes, job search techniques, identifying job leads, and addressing barriers to employment. Austin's career navigator also assisted with job development and job readiness. The Austin WIB's business services staff assisted with inviting employers to job fairs.

The job developer at Baltimore City helped with resumes, job applications, interviewing, soft skills, removing barriers, and assisting with transportation. The job developer helped students with job interview skills, make decisions about jobs that are feasible to get to each day, and how to juggle household duties with work. In addition, the job developer held workshops on job readiness, brought in guests speakers to meet with students, conducted site visits and tours with employers, gave individual coaching to students, engaged employees, and hosted weekly job clubs. The job developer encouraged students to not quit and had a goal to get everyone placed and employed, including providing services to those that dropped the class.

Baltimore County had a team of three job developers to handle their large program caseload. The team adopted an "all hands" approach to managing their duties, with some task specialization. One job developer worked with the career navigator to provide students a weekly class on job searching and job readiness, including topics like resumes writing, typing, and using Microsoft Word. One job developer was dedicated to employer engagement by informing the employer community about the program, and making job offers happen. Another job developer focused on addressing barriers, classroom policies, and enforcement, which is somewhat different that the typical duties of other sites' job developers.

All team members were involved with intake, job readiness, and recruitment. The team was nimble and adaptive, and it discussed possibilities for shifting who teaches the job readiness class to be the same person that works with them later in the process. They worked to include job developers earlier in the class to build comfort and rapport with students. They taught students about difficult workplace scenarios, communication with coworkers and supervisors, workplace harassment, diversity, soft skills, work dress codes, and punctuality. If needed, they would drive students to interviews, meet with them one-on-one to prepare, check in with them after they had found a job, and made sure that students that could find a job, knew they were not forgotten. The team indicated that they were getting better with completion rates than at the college as a whole, naming the role of support and building confidence as a factor. They also indicated a desire to get more assistance from existing relationships at the college and WIB.

Montgomery County had originally intended for the career navigator to take on the role of job development and assumed that the WIB's business contacts would be the link to employment. Job Development was an unanticipated service. The Student Services Coordinator, took on employment connections early on, but when the job developer was brought on board, these responsibilities were renegotiated. The Student Services Coordinator role changed to help with some of the support services and job readiness skills; including, resumes, job applications, computer skills, getting to know the students, and identifying and addressing barriers. With the new job developer on board, the career navigator was able to conduct workshops and other supportive services while the job developer engaged employers and worked with students.

New Haven also had a team structure for its job development due to its large caseload. Under the leadership of a new program coordinator, the career navigator, internship coordinator, and a job developer worked to fulfill these duties. The internship coordinator focused on placing students into internships and worked with program planning, curriculum, and class schedules. The job developer took the lead on employer outreach and engagement, as well as career navigation workshops on job readiness. The team worked with program coordinators and instructors to help make good matches for students. Each team member worked with students indivually. The team was increasingly making use of social media, such as creating a program LinkedIn page for job searching, employer engagement, and connecting students. Relationships and communication were important. Through one-on-one meetings, job developers could gauge student interest and discuss issues such as whether getting to the job is feasible each day. Another technique used was job shadowing, which allowed students to get a better sense for the type of work for which they were being trained.

The job developer at Prince George's County originally joined the team part time, although a request was made to increase the portion of time spent on ACE. The job developer worked with the career navigator, and took on more job development responsibilities and getting to know the students better.

Across the sites, the emerging focus of the job developer was on forging relationships with employers. The addition of the job developers also provided sites with greater capacity to engage with employers from the planning stages through transition. For example, the Austin and Anne Arundel County job developers worked to set up employer partnerships during the planning stages, and Anne Arundel worked to secure commitments from employers for student placements.

Strong Employment and Wage Outcomes Indicate Success in Job Development Efforts

ACE programs point to a number of successes regarding job development. Many sites have strong employment numbers. ACE participants were obtaining higher paying jobs that enable them to care for themselves and their families while feeling a greater sense of self-worth. Families show great pride for their loved ones at ACE graduations.

Hiring a job developer required additional resources but to program staff, it was a common best practice they wish they had implemented earlier.

Having the job developer in place at the outset of the program emerged as a common best practice that sites wished they had followed sooner. Including the role of job developer early allows him or her to form relationships both with employers and with students. In addition, sites note that for job development to be successful, sufficient resources are needed to complete the work including hiring a job developer, providing transportation for students to get to interviews, and hosting speed interviews or job clubs.

According to one site, it is critical to consider labor supply in addition to labor demand, by assessing how many other training programs exist in the community and how many individuals in the community already possess the necessary job skills for an occupation. Job developers must also keep up on employment projects to avoid flooding the market.

Job developers found that one poorly selected job candidate can sour an employer relationship, thus it is important to consider fit and readiness before recommending a student to an employer. Job developers need to set clear expectations for students and staff about what happens after the program ends, particularly in terms of how often to stay in touch and job searching activities.

5.3.4 Employer Satisfaction with Quality of Training

Overall, employers were highly satisfied with the quality of training among ACE participants and would often hire students from multiple cohorts for available positions. Focus groups with ACE staff noted the importance of real work experiences for improving the readiness of students for future jobs. These experiences allow students to practice the skills they learn in class in a setting that may be similar to what they might experience once they become employed.

Employers provided positive feedback on ACE graduates, with some reporting that ACE participants were better prepared than the average job candidate was.

At Baltimore County, an employer closely aligned with the college decided to employ ACE graduates and was very pleased with the program, particularly with the prescreening element. However, if students did not find jobs relatively soon after completing their programs, they could forget what they learned. For example, employers complained that ACE graduates from the Austin site had forgotten necessary skills by the time they began their jobs. Even so, the Austin career navigator noted that if there was an issue with a graduate, it was more about the person's skills as opposed to concern about "these people are bad." Employers felt comfortable referring the former students back to the program to either gain or refresh their skills.

Employers interviewed reported high satisfaction with ACE graduates.

Employers provided very positive feedback on ACE graduates. Some noted that ACE participants were better prepared and perform better than the average job candidate performs. Many intended to continue to seek out ACE graduates as employees.

"I think the fact that some of our employers have hired multiple people says that the employers were satisfied with what we were sending them."
– Baltimore City WIB Staff

Among occupations, Certification Nursing Assistant graduates were among the easiest to place if they obtain their certifications. In addition, the apartment industry was very interested in related ACE-related trainings.

Job developers established positive relationships with employers.

Job developers for the ACE programs made a point to reach out to employers and forge strong relationships. In addition to placing students with these employers, the relationships have extended where employers made referrals to additional employers if their needs had been met. For example, a job developer from Baltimore County noted there was a situation where an employment connection did not work. However, because of their relationship, the job developer was able to discuss the employer's needs further and referred two other candidates who fit the

specific needs of the employer. The job developer told the employer that they wanted to work for them, so they could focus on other things to run their business.

Retention rates among ACE graduates increased substantially.

Employers noted that adding life skills and incorporating real world experiences increased the retention rates of ACE graduates significantly. For example, one employer noted that he/she did not fire anyone in 2015, after having to fire graduates in the previous year. The higher retention rates may have been due to the addition of life skills (e.g., attitude about work) with real world experiences (e.g., touring an interactive lab setting).

The Anne Arundel site noted that its dental students were often hired by the same dental practice with at least one hire per cohort. The students were either retained by that dental practice or they moved on to another practice once gaining paid experience. Once hired, dental students were paid by their employer for more education in dental hygiene.

5.3.5 Participant Support Services

The ACE target population consisted of low-skill individuals. These individuals faced complex challenges that may have prevented them from successfully completing the training, earn certifications, and start their careers. Many of these individuals were not able to succeed in academics or other job training programs because of these barriers. Studies show that, along with work experience, education, and training, a range of supports and services are needed, such as childcare and transportation, to enable disadvantaged individuals to participate in job training (USDOL, What Works in Job Training (2014). ACE is unique in that it offers wraparound services tailored to the needs of its target population, including the addition of a career navigator as a core component of the model.

During focus group discussions, almost all students said they were appreciative of the support services. The services were seen as essential to addressing barriers that prevent students from attending and participating in class and finding a job. Students were most satisfied with support services that focused on personal issues and life stressors, as well as academic support.

As programs grew and evolved, the role of the career navigator shifted. Sites hired job developers to assist with heavy workloads.

The career navigator is a core component of the ACE model. As originally envisioned, the ACE career navigator was to be involved in all aspects of the program and would hold myriad responsibilities, including: recruiting customers, assessing their skills, connecting them to training, providing support services, managing the execution of evaluation procedures, collecting and entering student data into ETO, connecting customers with employer partners, and providing employment assistance. In practice, career navigators perform many of these tasks, yet as programs have grown and evolved during this most recent year of implementation, the role of career navigator has shifted and additional staff – particularly Job Support services, particularly transportation assistance, played an important role in ensuring that students could attend class and complete the training.

At Baltimore County, the career navigator was responsible for marketing, recruitment, intake, ETO data entry, gathering eligibility documentation, meeting with students, linking to support services, resume assistance, mock interviewing, and handling communications for the program. Often, the career navigator was the first person students met and staff felt it was a critical role. Employer engagement was a smaller role for the career navigator at Baltimore County. Rather, the career navigator did everything that could be done before a student left the classroom to prepare for employment, such as developing individualized employment plans and ensuring a smooth handoff to the job developer.

Baltimore County had some initial challenges, including ambiguity, lack of guidance, and few standards for the position of career navigator. The career navigator was housed at the college rather than at the WIB, that meant learning to communicate and have trust with college staff.

The Montgomery County career navigator position was developed through formally outlined roles and responsibilities, which included outreach and intake. The career navigator conducted workshops on job searching and resumes, sent out reminder emails about support services, and also had a day available to meet one-on-one with students. Students at Montgomery County expressed gratitude for the various types of assistance and support they had received from their career navigator.

The role of New Haven's career navigator evolved since the beginning of the program. The career navigator focused on recruitment, enrollment, intake, ETO data entry, addressing barriers, mentoring, and providing students with support services. Previously, the career navigator had also worked with job readiness training and workshops. However, New Haven has had since expanded its team to also include a job developer and internship coordinator. Together, these three staff members worked together to offer ACE students career navigation, job readiness, and job development services. The career navigator was an employee of the One-Stop operator, not the WIB, although the position reported informally to several WIB staff. While being new to workforce development, interviewed staff praised the career navigator's performance under pressure and growth.

> *"I don't think there'd be a career consultant under WIA left, if they all were required to do what the career navigator does."*
>
> *– WIB Staff*

The career navigator at Prince George's County did recruitment, enrollment, intake, addresses barriers, offers services and referrals, held job clubs, and gave information sessions on ACE and other WIA training opportunities. The career navigator acted as a case manager and job developer, and offered workshops on resume writing, interviewing, and job searching. Originally, the career navigator held this role, but the job developer was added to help with the workload. The WIB business representative was assigned part time to the program and focused on job readiness and placement. The career navigator worked with students weekly in class, and worked with them both individually and in groups on resumes and interviewing. At the time of our site visit, the career navigator had left for another position. The time-limited nature of positions is an important limitation of grant-funded programs that impacts staff continuity.

During program implementation, ACE sites experienced a variety of challenges in support services delivering that they tried to address. They faced challenges in coordinating services among staff addressing barriers to employment and offering job placement services. Although sites worked through some of these challenges as their programs matured, they also identified gaps in services that they were unable to fill due to resource constraints.

We highlight below the gaps and challenges in providing support services.

Program staff felt stipends improved program attendance.

Students attending classes as part of ACE responded well to stipends, which helped with transportation and attending class. One Austin WIB staff member mentioned that the county provided small stipends while students were in class and it had kept them engaged in the program. Called the Rapid Employment Model, individuals had to meet income criteria and many were ex-offenders, but they received $50 per week for perfect class attendance. Only a few sites offered student stipends, and program staff felt that if this gap in services had been fulfilled, it would have made a difference in program attendance.

Staff felt wraparound support services should have been included as part of ACE program services.

> *"For whatever the occupation is that you're training them, and that the individuals are working with face barriers. It really is a good investment then to build in money to address those barriers and address – because those are the reasons people are going to drop out. And that's kind of a lose-lose proposition for everybody."*
>
> *– WIB Staff*

Many of the colleges mentioned that they needed a social worker or someone with a similar background to help students with multiple barriers, such as childcare, transportation, food stamps, and general counseling. Students faced multiple barriers and often ended up leaving school because they could not financially continue or did not have a supportive individual pushing them to continue with their education. Baltimore City mentioned that students were overwhelmed by life issues, so attending classes was not one of the top priorities. Several staff mentioned how childcare continued to come up as a barrier and if childcare was included as part of the support services offered, they could have served a more disadvantaged population. However, this was not a resource that ACE provided, so it affected some of the types of populations the programs hoped to serve.

Tutoring was identified as a resource that helped students navigate the program and its requisites.

Implementing tutoring as part of ACE programming helped identify students that were struggling with understanding basic information or had trouble with classes because of a language barrier. Montgomery County had students that reported language as a big barrier to program success. They regretfully did not include tutors in their program, but they believe if they did, it would have

made a big difference for students who did not do well in the program and students who felt intimidated by a language barrier and did not succeed. Other colleges did offer tutoring, which helped them recognize students who struggled to meet prerequisites to getting to the main program. However, one program noted that students would drop out before seeking tutoring. A stronger emphasis on tutoring could help address why the students were struggling academically and identify ways to help them succeed.

5.3.6 Adaptive Program Design and Support Services

Although sites adhered to the major components of the ACE model, they felt "flexibility and openness [was] key." Making adjustments to address a gap or challenge made the programs more responsive to the needs of the population they served. Adjustments were made to job readiness services to make participants more marketable and employment barriers were removed to make them more employable and accessible.

Sites adapted their job readiness services to address participants' skills and knowledge gaps.

Baltimore County and Baltimore City adapted to the challenges of the student population and the needs of employers to improve employment outcomes. Sites learned to incorporate job readiness training to address specific skills and knowledge gaps, such as Digital Literacy training and additional ESL instruction.

Evidence suggests that for lower-skilled individuals with high barriers to employment, such as the majority of ACE participants, job readiness services are critical to achieving positive employment outcomes. According to USDOL, lower-skilled individuals and those with multiple barriers to employment benefit from coordinated strategies across systems, and flexible, innovative training strategies that integrate the education, training, and support services they need to prepare for and succeed in the workplace (USDOL, What works in Job Training (2014).

At Baltimore County, staff provided a number of job readiness services to students, including 20 hours of job readiness training, 20 hours of financial literacy training, and 20 hours of computer literacy training. The job readiness services included assistance with resume writing, workplace professionalism, workplace communication, and diversity guidance. Job readiness assistance took the form of both formal classroom training as well as one-on-one support provided by ACE staff.

Baltimore City also noted that they had to adapt job readiness training to the challenges faced by the student population to ensure it was successful. One of the most successful adopted strategies for the implementation of ACE in Baltimore City included the introduction of a student coach. This student coach provided administrative support, English language services, arranged background checks, facilitated communication between instructors, students, tutors, and provided tutoring to students.

Sites shepherded participants through the program, removing barriers, such as transportation and other personal life stressors.

Transportation was a significant cost for members of the population that ACE targeted, and during focus groups many students mentioned that without transportation support, they would not have been able to participate in ACE. Typically, transportation support came in the form of vouchers for bus tickets or money to help pay for gas. Students at Baltimore County mentioned that gas cards would have been particularly helpful, but they were not then provided at that site (students received bus tickets instead). Prince George's County offered a stipend for transportation, which participants said made a major difference in their ability to attend training. Students were also very grateful for the shuttle service offered by New Haven. Often, program staff would take it upon themselves to transport participants to and from job interviews. Among the most important services were those related to helping participants find a job. Sites got better at providing employment and job placement-related services, and participants cited these services as essential when compared to other wraparound services.

Other wraparound services that sites offered to participants to address barriers when "life happened" included help with utility bills, childcare costs, and others such as driver's license renewals. Program staff also helped participants fill their Career Development Assessment, which enabled them to get training dollars from American Job Centers.

> *"We had sort of a 'slush' fund that we had running from foundations to help with unexpected needs like housing deposits, and car repairs, and things like that. Childcare deposits. And we use that to keep these participants in class."*
>
> *– WIB Staff*

ACE worked hard to remove barriers to employment and offer support services to participants so that they could gain and retain employment. All these services came at a cost and in the next section, we discuss how program staff described the additional resources they needed to run the program effectively.

Other factors that may have affected program design were contextual. One noticeable contextual factor was the establishment of businesses within the proximity of ACE sites. In Anne Arundel, the introduction of the Maryland Live Casino in that county spurred the Anne Arundel site to be nimble, shift focus, and offer casino training to fill the the labor demand arising from the casino. However, other local training facilities also worked to fill the demand for casino workers; therefore, the Anne Arundel site had to eventually cancel its offering as a result. If there was a need in local labor market, ACE sites were flexible enough to respond.

During the implementation of the ACE model (2012-2016), new rules were established under WIOA in 2015 to which WIBs and other workforce development partners had to adhere. New WIOA regulations built on existing policies and further reinforced partnerships requirements between the education (DOL), human services (HHS) and workforce partners (DOL). None of the new WIOA policies had hindering effects in the implementation of the ACE model, but rather, partners transferred effective lessons learned into the new rules.

5.3.7 ACE Budget and Additional Resources

According to ACE staff, the ACE model in particular, required a significant amount of time and resources, much more than originally anticipated.

Extra staff was the primary resource that sites needed; Sites reported leveraging staff resources outside the ACE budget.

While sites mentioned some program budget and design modifications that would have been helpful, such as building in an internship component (particularly a funded one), the major helpful modifications to the ACE program were the addition of more staff and advanced planning for job developers to be engaged with the project from the beginning.

One issue frequently brought up by the sites was that the career navigators were expected to do too much. One person thought the career navigator job role was so broad that "there should have been three staff members upfront." Another individual noted that the overwhelming workload for the career navigator became apparent within the first couple of months of the grant. Montgomery County also expressed that the career navigator had too many responsibilities, saying the role almost requires a team of people. Prince George's County felt that it just did not have enough money for staffing in their budget generally.

Sites adapted to the staffing challenge in various ways; one program director was able to bring other staff onto the project part-time to fill in gaps, but wished there had been more room in the budget to hire staff who could do "deeper level" work with students. One site hired instructional specialists to handle the basic skills curriculum, hire instructors, and do more of the classroom-level pieces because it was too much for grant staff to deal with. Anne Arundel hired a part-time administrator who took some of the workload from the career navigator. Multiple staff members at Montgomery County mentioned that it would have been helpful to them to hire an administrative assistant for tasks like data entry. In New Haven, the addition of a project coordinator helped the other grant staff balance their workload, and one staff member called the coordinator role "essential."

Anne Arundel, Austin, Baltimore City, and Montgomery County all specifically mentioned that they wished they had budgeted for the job developer to join the grant team from the beginning of the grant. One site expressed that the job developers joined too late and were not part of "the core team." Others said that the job developers could have helped with a variety of tasks had they been brought on earlier – including working with employers from the beginning, helping the career navigator and recruiting. Baltimore County saw a spike in placement numbers after having the job developer on the job for just 10 months because they had an extra pair of hands to dedicate time to job placement. Additional staff of course means additional cost and in many cases, staff time was not built into the initial ACE budget. ACE partners such as Anne Arundel had to absorb the additional costs by paying out of pocket for staff time and other resources.

The high cost of training an ACE participant is exacerbated by hidden costs throughout the program.

ACE site staff argue that the actual cost exceeds the amount provided solely by the grant funding if you are to run a successful program. As one staff member in Prince George's County noted, "The cost of this model is so much more than a regular open enrollment referral of a WIA funded person" and is therefore not as attractive to sustain at that institution.

> *"Probably the only drawback to trying to duplicate the model is the cost."*
>
> *– WIB Staff*

What came as a surprise to ACE staff were the hidden costs that ACE sites have had to absorb. These hidden costs include pre-eligibility costs such as fees for drug test and background test and other costs that are incurred after training, including costs associated with organizing job fairs and paying for certifications and licensing fees. In Prince George's County, the WIB had to pay out of pocket for nursing assistant certification exams for participants who failed the exam initially and also covering the costs for remedial classes for those who did not take their certification on time so needed to be "re- trained" before retaking the exam.

Funding Time Period may have been too short.

Many ACE staff mentioned that they wished they had a longer funding period to reap their "aha!" moments and fully take advantage of their lessons learned. According to Baltimore City, a longer funding period would have also given them the opportunity to space the time between recruitment and classes.

A true indication of the output of these additional costs and efforts into training and supporting ACE applicants is the level of employer satisfaction with ACE graduates. The next section describes the employer perception of ACE graduates and the quality of the training programs.

5.4 Assess Fidelity of Implementation and Intervention Over Time

Implementation fidelity measures the extent to which an approach or intervention was defined, designed, or implemented as intended.[56] To assess whether an intervention has been implemented with fidelity, that intervention must first be defined and a clear description should be developed of what the intervention would look like if implemented as expected.[57] In an implementation study, the development and execution of an implementation fidelity rubric can show a program valuable information on why and how their intervention works. The rubric offers a tool to measure systematically implementation fidelity: allowing a program to confirm intervention delivery, support replicability and scale-up, and if ongoing, a chance to make enhancements.[58]

To harness similar information on the ACE model, an implementation fidelity rubric was developed to measure retrospectively the fidelity of ACE program implementation and to measure how well ACE sites implemented the model at each site. While a fidelity rubric can

[56] Coleman, M.R., & Shah-Coltrane, S. (2010). U-STARS~PLUS Professional Development Kit. Reston, VA: Council for Exceptional Children. Lane, K.L., Bocian, K.M., MacMillan, D.L., & Gresham, F.M. (2004). Treatment Integrity: An essential –but often forgotten-component of school based interventions. Preventing School Failure. Gresham, F.M (2004). Current status and future direction of school-based behavior interventions. SCHOOL PSYCHOLOGY REVIEW.
[57] Century, J., Rudnick, M., & Freeman, C. (2010). *A framework for measuring fidelity of implementation: A foundation for shared language and accumulation of knowledge*. AMERICAN JOURNAL OF EVALUATION, May 11, 2010.
[58] Fixsen, D.L., Blasé, K., Horner, R., & Sugai, G. (2009). Developing the capacity for scaling up the effective use of evidence-based programs in state departments of education. Concept Paper, University of North Carolina-Chapel Hill, University of Oregon, University of Connecticut.

serve multiple purposes, the ACE rubric was developed to assess site staff activities within each phase of ACE implementation to show what implementation looks like at each step. Fidelity data collected would also document program strengths and needs and offer guidance for other workforce development programs seeking to implement similar initiatives.

The first step of developing the ACE rubric was to define the model components that would be measured. Using the ACE Measurement Logic Model as the guiding framework, the major components of the rubric were identified as:

- Planning
- Intake
- Training
- Support Services
- Transition and Tracking

These key components are activities and inputs that are under the direct control of the ACE sites and are considered essential for implementing the ACE model. Ancillary components stemming from each major component were defined as indicators. For example, one of the major activities and components of the ACE model is the integrated training curriculum (the integration of occupational and basic skills). Ancillary components identified under this component were student perception of how well the training content was integrated and how well the vocational and basic skills instructor worked together in the classroom. Indicators were identified for each major and ancillary component (see Appendix 5.1 for a sample of the Implementation Rubric Worksheet). These major and ancillary components serve as anchors for the model to ensure integrity. They do not, however, prescribe how the goals of the program should be reached – allowing each site some flexibility in execution and to account for site-specific circumstances. Implementing with fidelity and flexibility gives implementers ownership to adapt the program to fit their context, to be innovative, and to integrate their program into their organization. Studies suggest that allowing for flexibility with fidelity is critical when programs are brought to scale across multiple context and sites.[59]

For the next step in the rubric development, fidelity was measured separately for each key component and associated indicators. Measuring fidelity involved specifying a threshold for determining whether, for the entire sample, the components where implemented with fidelity. If fidelity measure is greater than or equal to the prescribed threshold, the key components were judged to have been implemented with fidelity. “Implementation with fidelity” for the ACE rubric does not necessarily mean that an ideal implementation or impactful implementation; it simply means that implementation was a “fair test” of the model. For example, to determine if job readiness support services, such as resume support, were implemented or offered, we looked at the percentage of participants who indicated on the survey that they received that service. The prescribed threshold for that indicator was 50%. Therefore, if 55% of participants at a particular site indicated that “Yes,” they received that service, then that indicates that part of that

[59] Coleman, M.R., & Shah-Coltrane, S. (2010). U-STARS~PLUS Professional Development Kit. Reston, VA: Council for Exceptional Children.

job readiness component was implemented with fidelity (the percentage of 55% surpassed the assigned threshold of 50%) and "Met Requirement." Each indicator had an assigned threshold and associated score.

The primary data source identified for scoring the indicators was survey data on participants. Other data sources included program documentation, data from the ETO data system and qualitative data from site visits. Data for scoring on services received is estimated from participant data from the follow-up surveys. All ACE study participants received the Year 1 Follow-up Survey one year after randomization into the treatment or control group. Due to the time restrictions of the study, the Year 2 Follow-up survey was sent to two years after the program to cohorts enrolled from August 2013 to July 2014.

5.4.1 Limitations of the Fidelity Rubric

The fidelity rubric was applied retrospectively after the end of the ACE program; it, therefore, had to rely on previously reported data to assess implementation fidelity. For example, instead of measuring the frequency and intensity of support services as it occurred, the rubric based the fidelity measurement of implementing support services on students' perception of the support services received. For example, instead of asking staff to document the intensity and duration of job search activities, scoring was based on the percentage of students that said they received job search supports. Assessing fidelity after the program end date rather than during program implementation excludes the active participation and awareness of site staff and other dynamic indicators that may have further strengthened the assessment power and usefulness of the rubric.

An important component that was added to the more "mature" model during the latter periods of the program was the role of the job developer. This late modification to the model meant that two sites that exited the study earlier—Atlanta and Upper Shore—did not have the added benefit of the job developer in the areas of job readiness training and job placement.

5.4.2 Results from the Fidelity Rubric

After scoring each site using the standardized rubric, we found that the majority of ACE sites implemented the ACE model as intended with fidelity. Most sites, on average met the implementation requirements for the major and ancillary components of ACE (see Appendix 2.1). For a full summary of the fidelity criteria and the number of sites meeting each criteria, see Appendix 5.4.

> **Collectively, during the planning phase, ACE sites implemented the ACE model with fidelity.**

During the planning phase, all ACE sites used labor market analysis to determine training programs to be offered and also identified career pathways at that time. A review of documentation, including ACE's initial grant application shows that industries were targeted using information gleaned from labor market assessment. Site visit data, also shows that some sites continued to utilize labor market assessments throughout the program to determine which

in-demand training programs to offer. During the planning phase, sites also reached out to program partners and external partners to lay down the framework for strong partnerships.

ACE sites implemented standardized processes during intake.

During intake, 78% (seven out of nine) of sites met or exceeded the recruitment target of 100%. All sites assessed all incoming study participants on literacy and numeracy using TABE, CASAS, or another assessment tool. Orientation processes differed by sites; however, all sites had a standard process in place to orient potential study participants. One site, Baltimore County, exceeded fidelity requirements by implementing additional processes such as the vestibule to enhance the orientation experience for the study participants and to make sure the participants who consented to the study had a firm understanding of the requirements (see Appendix 5.2: Documenting the Treatment Contrast – ACE Business as Usual for more information about the pre- and post-randomization orientation process).

The academic components of the model were consistently implemented with fidelity at all sites.

Student perception of the integrated curriculum was extremely favorable, supporting the notion that the ancillary component—integrated curriculum—was implemented with fidelity. In addition, students also had high praise for both their basic and vocational skill instructors. A majority of students at all sites (nine out of nine) felt they received academic support services directly from ACE staff. Over 50% of students at 67% of sites (six out of nine) felt that they also received academic support from their career navigator.

Implementation of job-related components and other support services were varied.

There was some variation in job readiness training implementation, as would be expected when programs implement with flexibility according to their context and circumstances. For a majority of the sites, the introduction of the job developer, which was staggered by site, allowed staff the resources and bandwidth to offer these trainings. Over 50% of students at a majority of sites felt that they had help with the job placement components such as help with job searches (eight out of nine), finding and obtaining job opportunities (seven out of nine). Employment supports either offered directly or in a group setting was implemented as intended (eight out of nine and nine out of nine, respectively). Participants did not feel their career navigators provided enough support to deal with their personal problems (three of nine met the requirement). Some sites, such as Baltimore City recognized this gap in services and hired a student coach to connect and help students on that personal level.

Sites did not often meet the requirement to place participants in internships and other on-the-job opportunities.

Although participants felt supported in their job search, students at only five of nine sites felt that that the program met requirements or helped them when it came time to place participants in

internships, an important stepping stone to job placement. According to participants, the career navigator at some sites seldom connected them with either internships or job opportunities, with only three of nine sites meeting that fidelity requirement.

The majority of ACE sites met or were very close to meeting all program performance targets.

The majority of ACE sites met or were very close to meeting all program performance targets for enrollment, completion, employment, and wages. Five of nine sites met or exceeded target completion rates, a reflection of academic and wraparound support services that helped retain ACE students. Seven of nine sites met or exceeded the 75% employment rate target, and all nine met or exceeded the average hourly wage goal of $9/hour.

5.4.3 Program Staff Perceptions on Fidelity and Critical Components of the ACE Model

> *"It's hard to pull just one. I think all the pieces fit together to make a successful network initiative."*
> *– Baltimore City Community College Staff*

In general, program staff felt that all the components of ACE fit very well together to make a positive impact on the lives of those they served. Staff in Anne Arundel felt that implementing the model contributed to successful participant outcomes that they "took a lot of elements from ACE to put into that Ready-to-Work and make sure we have the wraparound services and things like that." The fact that sites were transferring elements of the model to other programs is an indication of the perceived success of the model.

During interviews, ICF asked ACE site staff members: "In your opinion, what elements of the ACE model are the most important?" Staff members offered a variety of perspectives and highlighted several elements of the ACE model as important. Although staff at ACE sites offered different perspectives (and often staff members at the same site highlighted different elements of ACE as the "most critical"), three common elements were mentioned most often:

1. Wraparound support services.
2. Active employer engagement.
3. Integrated curriculum blending vocational and essential skills.

Combined, these major components of the model provided the needed support for the target population to succeed.

Comprehensive support services were often mentioned as one of the most important components of ACE because they address significant barriers common to the population targeted by ACE.

Staff at New Haven, Austin, Baltimore County, Prince George's, and Montgomery County readily responded to the question about the "most important component" of ACE by discussing these wraparound support services. Staff members at all sites also highlighted transportation assistance as critical because many students would not be able to attend regularly without transportation help. At Prince George's County, help with transportation and childcare were

highlighted by staff as most important because these support services directly address barriers to program completion. Academic support services were also noted as critical elements of ACE. For example, site staff at Montgomery County noted that some participants attended college but failed out because they did not receive academic support. ACE site staff are finding that academic support in particular helps with program completion, particularly among low-skilled populations who normally have difficulty succeeding in an academic setting. Staff at Anne Arundel felt the combination of academic support services and the support offered by the career navigator in terms of problem solving with personal barriers, was a strong contributor to program retention.

When discussing the most important components of ACE, staff at Austin and New Haven readily brought up the job developer and the importance of developing and maintaining employer partnerships. The job developer is essential because this individual creates and maintains engagement with employers. Staff at Baltimore County, Montgomery County, and New Haven for example, specifically mentioned that they felt that the employment program makes ACE unique among training programs. They noted that employer engagement is successful because it helps make ACE graduates more marketable to employers.

Job developers were seen as an essential position, particularly during planning and placement. Dependent on funding, site staff are optimistic that the job developer position will persist beyond the ACE funding period.

Staff members at several sites noted that job developers would have been helpful during the planning stages, because the job developer can help assess labor market demand and pick training programs during the planning stages. For example, Anne Arundel faced some challenges with establishing training programs that met both the needs of the target population and employers – a job developer who is communicating with employers would have been able to help during the planning stages. At the Baltimore City site, some staff members felt that the college is beginning to recognize how important it is to have employer engagement and offer placement assistance in addition to training. Staff at Baltimore City also specifically mentioned job readiness as a critical piece of the model.

> *The whole job readiness - preparing for a job. That's critical because there's an end in sight.*
> *– Baltimore City Community College*

Many site staff involved in transition, tracking, and job placement noted that active employer engagement is critical to student success.

ACE has shown relevant stakeholders in New Haven that employer involvement is key. Respondents at New Haven noted that similar programs such as the CT Works Jobs First Employment Services, which develops partnerships with employers and pays for eligible job seekers to work with the employer for a trial period of 16 weeks, have received more attention and support as a result of ACE.

The co-teaching model was viewed as a crucial part of ACE for many sites.

Site staff also highlighted the integrated curriculum, blending essential skills and vocation skills, as an essential element of ACE because it helps ensure that ACE graduates will be well-rounded, marketable job candidates. Montgomery County, Anne Arundel County, and Prince George's County staff specifically noted that the combination of occupational and basic skills is the most unique and impactful element of ACE. Staff at Prince George's Community College brought up co-teaching as the most important element of ACE because co-teaching means that students do not have to wait to develop basic skills until they learn vocational content.

> "*Finding two instructors that mesh really well and that get the model; it could work, but we haven't proven that because we just haven't had time to do it.*"
>
> *– Community College Administrator*

Staff cited co-teaching as one of the most expensive elements of ACE because it requires two instructors who are able to work well together. Respondents were split regarding the importance of co-teaching and whether co-teaching would be adapted in the community college setting outside of ACE.

Community college staff offered mixed reviews of co-teaching. Staff at Austin Community College were highly optimistic about continuing co-teaching in the future, and some staff members felt that the college was beginning to recognize the importance of the co-teaching model. Staff at Baltimore City also felt that co-teaching allowed then to "leap that fence" and help individuals that struggled academically and may not have finished their programs in a traditional classroom, complete their training.

Other community colleges were less optimistic. In some circumstances, administrators have had a difficult time finding teachers who mesh well and to train them to work together. As one community college administrator put it:

> "*It really does take a good marriage of co-teachers*]. *We've seen it definitely. From that standpoint, it's very, very difficult to implement, and requires a whole other level of commitment to making it really work and be effective, and it's very expensive as I understand.*"
>
> *– WIB and Community College Leadership*

One WIB staff agreed, adding that co-teaching required a high level of commitment, almost akin to marriage and thus it was difficult to implement.

Staff at other community colleges, including Baltimore County and New Haven, were generally supportive of co-teaching on principle, but were concerned that the community college would not be able to financially support hiring co-teachers in the future. Staff at Baltimore County noted that with the plethora of support services offered by ACE, the low literacy adult may still do well in the program without the co-teaching components. Staff at New Haven noted that Gateway Community College would likely be concerned about the cost of funding two instructors in the future. However, they also noted that ACE has resulted in a wealth of materials that can be used in the future, including recruiting materials, curriculum, and lesson plans that were developed for ACE. New Haven will be able to draw from these materials when planning new training programs.

Adjustments and Adaptation to the ACE Model

Although program staff lauded the major components of the model and implemented with fidelity, some felt that they did not need to implement all components or implement with the same dosage and intensity to achieve similar outcomes.

Many sites used a 100% co-teaching model (in which both a vocational and a basic skills instructor were present 100% of the time), but in future efforts some felt it could be scaled back and adapted to achieve similar results.

> "*Basic skills, not all students need the basic skills running concurrently with the career training. That's something that can be abbreviated. There are ways you can make it so that it is a lot more sustainable.*"
>
> *– Community College Staff*

The Anne Arundel site had the content instructor and the basic skills instructor co-teach 100% of the time, but in retrospect felt that 50% would suffice. One Anne Arundel staff member suggested a future change to the model where one instructor is able to teach both basic and occupational skills, and this one individual would teach the technical side for three days a week and reinforce that training with basic skills on the other two days. Staff felt that scaling back what they thought was the most expensive component of ACE would also make it more sustainable.

Baltimore City also used a 100% co-teaching model, but suggested that reducing the amount of time to 75% or 50% would likely work. Baltimore City had 40-60 hours of basic skills and a separate 21 hours of job readiness, but thought that the same instructor could cover both those areas and the hours could be scaled back. The site received some negative feedback on the basic skills class from students who did not feel they needed it, and program staff agreed that some students did not need it.

In one New Haven program, the basic skills instructor was in the classroom almost 100% of the time during the first cohort to learn the technical content and decipher where there were potential issues for students. Then, the basic skills instructor was able to contribute to curriculum adaptation to integrate basic skills. In the end, if the program were to run again, the basic skills instructor would only need to be in the classroom 50% of the time or less, because the "pitfalls" for students in the curriculum have already been identified.

All sites strongly felt that the job developer should have been hired in the earlier stages of program implementation.

The addition of the job developer, as discussed in prior sections, was a wel-received adjustment to the program model. Many program staff felt that onboarding the job developer earlier, as an essential key staff person from day one, would have made a significant impact in terms of job placement and job readiness services, and lessened the workload of an overworked career navigator.

To program staff, bringing on the job developer earlier would have had multiple benefits, including stronger relationship building with employers and students, job placement, and identifying and removing student barriers that hinder employment. For example, staff in

Montgomery County felt that if the job developers had been hired earlier, they could have taken part in recruiting and, during that process, get to know the potential pool of students they would be placing and start strategizing and matching them to types of employers.

5.4.4 Sustainability of the ACE Model

Despite the tasking implementation activities, ACE staff seemed to have "hit their stride" in during the second year of implementation and toward the end of the program were looking for ways to leverage other funding sources to sustain and retain critical aspects of ACE.

While staff touted the ACE model, they were not confident in receiving continued funding for more expensive model elements such as co-teaching.

During the interviews, site staff were asked for their opinion about the sustainability of ACE past the funding period and the extent to which elements of ACE will be adapted into how the college and WIB operate. When asked about sustainability, staff members highlighted the positive impacts of co-teaching and integrated curricula, support and job placement services, and employer engagement. However, many staff were pessimistic about the possibility of continuing to receive funding for the more expensive elements of ACE (such as the addition of the co-teacher), noting that it can be difficult to convince college administrators and state legislators to understand their value.

Co-teaching, one of the most critical elements, was often cited by ACE staff as one of the most expensive elements of ACE because it requires two instructors who are able to work well together. Respondents were split regarding the importance of co-teaching and whether co-teaching would be adapted in the community college setting outside of ACE.

Community college staff offered mixed reviews of co-teaching. Staff at Austin Community College were highly optimistic about continuing co-teaching in the future, and some staff members felt that the college was beginning to recognize the importance of the co-teaching model.

Other community colleges were less optimistic. In some circumstances, administrators have had a difficult time finding teachers who engage well and to train them to work together. As one community college administrator put it: "Finding two instructors that mesh really well and that get the model; it could work, but we haven't proven that because we just haven't had time to do it."

"You get to the end and then you go aha! So I feel like that's what's happening here. And here we are in the 11th hour and then we were at the last convening, a lot of the Career Navigators are saying okay now I know what I'm doing but now we're running out of time. So now we all feel like we're under the gun and we're trying to capture all this information and we're trying to continue moving forward but it feels like a rush."

– Career Navigator

In order to take full advantage of a more expensive endeavor, such as ACE, to "get more bang for the buck," sites felt that they should have invested their time during the earlier implementation phases to better align the training programs to the needs of the business. Baltimore County is now looking into offering a warehouse logistics course, a deviation from their usual CNC class, because there are business needs in that sector now. New Haven is effectively utilizing funds by offering new courses in small engine repair, IT help desk, and forklift certification as a direct response to growing employer needs and demand. Although these courses are new to ACE, they are not new to the college so there is no additional cost in curriculum development.

Some sites think ACE could be sustainable with modifications, especially the addition of new funding sources.

There was general consensus that ACE is expensive to run, but some sites were optimistic that it could be sustained via new funding streams. One site said the ACE program could run with a "pot-of-gold" funding model, where the program uses whatever funds each student brings to the class (e.g., nonprofit-funded scholarships or benefits for homeless students) instead of being funded in one piece by something like a grant.

Another program was able to run with county funding and refugee funding, though it wants to expand that because of restricted eligibility for the refugees. The site was looking into other funding sources and also considering minor student contributions, with the acknowledgment that some students were unable to do this. The site wanted to maintain free programs for these underserved populations but admited there was a possibility that student contributions may have become part of the funding model.

Anne Arundel's WIB stated that it could not afford to run ACE alone, but with another grant or the addition of adult basic education funding, it might be possible. Austin's WIB, however, thought the model could be sustained if its board were to see the expense in a different light. Noting that it would be challenging to convince the board to spend that much on a program, the WIB staffer added, "I think if our board were to buy into it and with the understanding again that we're going to serve less [individuals], but the outcomes are going to be better, I think it could be done because it's just a change of philosophy."

Some sites thought that the model could be sustained if its scale was reduced. One program noted that "lots of adjustments" could have been made to it, including shortening their bridge program and not offering the basic skills training to all students (since some did not need it). Another site thought that its board could have been convinced to run the model if it was limited to one or two classes.

Staff reported that the ACE model required more time and resources than originally envisioned, yet noted that sites have "hit their stride" and have begun to look for alternative funding sources to retain critical elements of ACE.

- Sites reported leveraging staff resources outside the ACE budget.
- Sites described ACE as a resource intensive model compared with BAU. They reported hidden costs that were not originally budgeted for and that sites absorbed.
- While staff touted the ACE model, they were not confident in receiving continued funding for more expensive model elements such as co-teaching.
- Sites plan to use lessons learned from ACE as part of WIOA implementation.
- Some sites are exploring alternative funding mechanisms such as charging tuition, braided funding models, and additional grants.

5.5 Establishing the Treatment Contrast: "Business as Usual"

ACE control group members were offered BAU services from both of the participating WIBs and community colleges. This included access to alternative services such as integrated basic skills and vocational training, job placement help, and support services at the WIB or community colleges. Control group members had to navigate through these options on their own; in contrast, the ACE treatment group was offered wraparound services provided by a career navigator and job developer, and integrated vocational and essential skills training provided by co-teachers.

Understanding the differences in experiences between ACE treatment and control group BAU will provide a better understanding and interpretation of the impacts of the ACE program and will tell a more compelling story of ACE. It will also give policy makers and practitioners more useful information and better prepare them for future program rollout by demonstrating the successes and challenges encountered in implementing complex programs of this type.

ICF conducted a case study September through November 2014, to explore ways in which ACE sites established the difference or "treatment contrast" between treatment and control groups. Specifically, the case study was conducted to:

- Understand the services other ACE sites provided as part of their control BAU;
- Gather insight into how site staff interacted with the control group; and
- Learn how those assigned to the control group perceived the randomization process.

Site visits and email surveys were conducted with all seven WIBs and community colleges and phone conferences were subsequently conducted with four sites chosen for in-depth interviews. A total of 290 emails were sent to control group participants from all nine sites and at the end of the online survey period, the response rate was 36% (n=106) (see Appendix 5.2 for more information on the ACE BAU study). The analyzed data created a preliminary inventory of what constitutes BAU to compare that inventory to services received by the ACE treatment group, and to gain information about the nature of the interaction between site staff and the ACE control group. Results of the analysis are summarized in Exhibit 5.8.

Exhibit 5.8: Documenting ACE Business as Usual

Documenting ACE Business as Usual
▪ ACE sites fared well in terms of implementing standardized messaging following the randomization process. ▪ Services offered to the ACE control group as part of BAU varied by site and matched closely with services offered to typical WIB customers.

- Control group had negative feelings toward the randomization process after they were assigned to the control, these feelings often subsided with time.
- Elements of the ACE model have been gradually integrated into BAU offerings at a few sites with others planning on adopting ACE program elements in future programming.

5.6 Implementation Study Conclusion

As program implementation progressed and the ACE model matured, program staff proved to be adaptive in assessing the needs of the participants and employers in an effort to get participants trained and, more importantly, employed. Site were able to implement the ACE model components with fidelity and hit their targets in terms of recruitment, completion, and employments. The evaluation findings presented covered the challenges, lessons learned, and implementation stories over the course of the evaluation period and are summarized below:

As with any collaboration, success often depended upon the unique mix of personal relationships, personalities, and communication styles and levels.

Although the level of collaboration on ACE was new to both the WIB and community college, as with any partnership, the mix of personalities and communication and leadership styles influenced the collaboration's success. Working through role definitions and resource constraints, partners variably described their relationships as workable, tolerating each other, or as very strong. Ultimately, the partners united behind the common goal – the success of ACE participants.

Engaging employers in planning processes helped sites assess labor market demand and tailor curricula design, vocational, and essential skills instruction to employer needs.

Staff noted that early employer engagement helped with both determining what training programs to offer as well as how many students to enroll in each program. Employers' feedback was also an important component of curriculum planning, recruitment requirements, helping sites customize their programs to employer needs. The level of employer engagement varied by site and engagement took a variety of forms, including classroom presentations where employer offered participants "a realistic pathway" and internship placements. Employer involvement in all aspects of program implementation was important in enhancing program design and career pathways and critical in job placement.

Staff employed a variety of creative strategies during intake.

ACE sites utilized community partners like housing authorities, churches, and retailers during recruitment. Many relied on referrals by past graduates to promote ACE. Once they got applicants through the door, orientation activities varied by site and often included lengthy information sessions, as well as one-on-one meetings and interviews. Modifications on orientations processes such as the "vestibule" in Baltimore County ensured that prospective students were a good fit for the program.

The integrated curriculum and approach to co-teaching evolved as instructors and staff learn more about student needs.

Implementing co-teaching was timely and costly, and many sites likened it to a “marriage” that meshed different teaching styles and contents into one integrated delivery model. Co-teachers learned to work together to address student needs by building in adequate planning time and dedicating more time to collaboration outside the class. However, some classes lent themselves more readily to co-teaching than others.

Staff and students cite employment and job placement services as essential.

ACE was not just a training program, it was also an employment program. Participants were placed into training programs that would eventually lead to employment. Hiring a job developer to support this program goal required additional resources but to program staff, it was a common best practice they wish they had implemented earlier. The job developer supported job placement and readiness activities as the role of the career navigator shifted. Program staff cite strong employment and wage outcomes as an indication of the success in job development efforts.

The major components of the ACE model were implemented with fidelity.

In the planning stages, despite challenges to match the target population to in-demand jobs, sites successfully used labor market informaion analyses to guide the identification of career pathways. Although a majority of the WIB-community college partnerships were wrought with challenges regarding roles, rules, and constrained budgets, the success of the collaboration often depended upon the unique mix of personal relationships, personalities, and communication styles and levels. Intake strategies varied by site, yet each site had a standardized procedure to recruit and orient potential study applicants. Recruitment across the sites involved creative recruitment strategies, such as an enhanced referral system, market and branding to attract a potential pool of ACE applicants. Orientation activities varied by site and often included lengthy information sessions as well as one-on-one meetings and interviews. Once training began, the co-teaching model was implemented as intended at a majority of sites. Effective co-teaching occurred when there was mutual respect among teachers and adequate planning time to implement teaching strategies.

A few ancillary components, namely internships and on-the-job opportunities were not fully implemented with fidelity at all sites.

The job developer was an ancillary component of the model’s transition and tracking component that was implemented as the model matured. The job developer and career navigators’ efforts, coupled with support services offered, supported the achievement of most of ACE employment outcomes. Participants felt they were not connected to internship or on-the-job-training and this is reflected in the 49% of participants who were employed in training-related jobs.

Implementing ACE was costly and needed additional resources, however, sites planned to sustain critical components by modifying the model to minimize cost.

ACE was an expensive model to implement and though sites planned to sustain model components, they described ways in which they would adjust or modify the model. Most of the modifications to the model were adjustments to the co-teaching model which sites considered the most expensive. Instead of using the co-teaching model 100% of the time, sites felt that implementing the integrated curriculum at 50%-75% of the time would achieve similar results.

The next section of the report delves deeper into the program costs and describes the "ingredients" that go into implementing the ACE model.

6. Cost Study

The final component of the ACE evaluation is a cost study. The cost study identifies and provides a description of the cost components of ACE and examines the actual ACE expenditures for each site. The cost study provides important information for the ACE sites as it breaks down the ingredients required to implement the program. This is critical information when scaling this program beyond the grant period. The cost study also provides other workforce development entities with the cost components that are necessary to implement programs similar to ACE and examples of actual expenditures per participant. To complete the cost study ICF used a combination of the "ingredients approach" (to identify the components, or "ingredients" of the ACE program that required a cost) and the actual grant expenditures.

Educational and vocational training programs, such as ACE, can be complex, containing various components implemented by multiple entities. The costs of an intervention, defined as the value of the resources that are given up by society to implement the intervention, can be referred to as the ingredients of the intervention, and it is the social value of those ingredients that constitute its overall cost.[60] Typically, where grants are used to fund these programs, the true costs are higher than the grant amount, because in-kind costs are often not accounted for and fixed costs, such as office space or equipment, may also not be charged to a grant. In this study, we use the ingredients approach to identify all the program's cost components that go into the implementation of ACE that can be used to estimate the true cost of the ACE program and examine the actual grant expenditures for each site.

6.1 Cost Study Research Questions

The cost study research questions are shown in Exhibit 6.1. The ingredients approach was used to identify the program components that contributed to the overall program cost and then expenditures by site and per participant were examined.

[60] Levin, H.M. (1995). *International Encyclopedia of Economics of Education, 2nd ed*. (M. Carnoy (ed.). Pergamon Press: Tarrytown, NY.

Exhibit 6.1: Cost Study Research Questions

Question 1	What are the components/ingredients of the program, including those that fall outside the resources of the grant?
Question 2	What are the expenditures of the program for each site and per participant?

6.2 Data Sources, Collection and Analysis

There were two sources of data for the cost study, a sample of ACE sites and Baltimore County, the grant administrator. To collect cost ingredient information, ICF distributed a cost template to ACE community colleges and WIB staff at three sites: Austin, Anne Arundel, and Baltimore City. The Anne Arundel Workforce Development Corporation was invited to contribute but was unable to participate, therefore, data from that site are from the community college only. These sites were chosen by the grant administrator, to represent a good cross-section of the nine total sites implementing ACE. ICF worked with these sites to ensure the template was completed correctly and asked that the community college and the WIB work together to come up with a single sheet for their ACE site that does not include overlapping or duplicated costs.

ICF designed the template to provide a holistic picture of the personnel and non-personnel resources required to plan, develop, and implement an ACE program, incorporating expenses from both the community college and WIB. The information collected from the template provided a breakdown of all the ingredients and resources required during the planning and full implementation phases – incorporating both WIB and community college costs.

The template included two worksheets: (1) a personnel costs worksheet, designed to provide information on the role and time commitment of each ACE staff member, and (2) a non-personnel costs worksheet, designed to capture the additional material costs necessary to provide training and services through an ACE program.

In addition to the cost template, information was collected on actual grant expenditures for each site. This information was provided to ICF by Baltimore County, the grant administrator.

6.2.1 Description of Ingredients Approach

The ingredients approach to cost analysis was developed to provide a systematic way for evaluators to estimate the cost of social interventions.[61] The ingredients approach was chosen for this study for a number of reasons. This approach dissected the program components, all the detailed elements of the program, and attempted to apply the elements of cost, time, context, and resources to estimate ultimately each components' costs. It is, therefore, ideal for assessing ACE, a complex, multi-site program where the various components' costs are site-specific and often cannot be easily monetized.

[61] Levin, H.M. (1983). *Cost-Effectiveness: A Primer.* New Perspectives in Education, Vol. 4. Norwest Regional Educational Laboratory and Sage Publications: Newbury Park, CA.

Findings from previous implementation studies on ACE indicated that grantees expended a lot of in-kind resources to support the implementation of ACE. Similar to other cost analysis methods, the ingredients approach estimates resources used and not money spent to capture the true costs, whether in-kind or actual.

The ingredients approach is made up of five main steps:[62]

- Describing the program comprehensively.
- Listing all program resources or ingredients (develop an ingredients model).
- Matching ingredients to their market prices.
- Calculating total and average costs.
- Matching costs and effects to calculate cost-effectiveness ratio.

This cost study focuses on the resources that require a cost, consisting of the first two steps of the ingredients approach (since dollar values are not attached to the ingredients) followed by an average expenditure report. Alternatively, market prices can be recovered for the ingredients in order to calculate an estimated cost. According to Levin and McEwan (2001), most program costs can be grouped into five broad categories,[63] shown in Exhibit 6.2.

Exhibit 6.2: Cost Categories for the Ingredients Approach

Cost Category	Sample Ingredients
Personnel costs	Instructors, support staff, career navigators, job developers, curriculum developers, student support service providers, administrators, program managers, WIB staff
Facility costs	Classrooms, computer labs, shared spaces, maintenance, etc.
Equipment and materials costs	Desks, chairs, books, training materials, computers, assessment costs
Other program inputs	Consultants, financial analysts, data analysts
Required client inputs	In-kind time from instructors, program staff, students

Levin and McEwan also advise that the group of ingredients that contribute the most to the total cost of a program should be closely examined. For ACE's cost study, we take a closer look at the specifics of personnel costs, the backbone of the wraparound services that are unique to the ACE model.

Personnel Cost Ingredients

ICF designed the personnel costs worksheet component of the template to capture the following key components based on its experience with ACE:

- **Staff roles:** ICF requested information about the specific roles played by each staff member, and whether these roles were fulfilled by a single staff member or spread across a team of multiple staff members.
- **Time commitment:** ICF gathered information on the amount of time required from each team member during the Planning and Development and Full Implementation phases,

[62] Levin, H.M. & McEwan, P.J. (2001). *Cost-Effectiveness Analysis: Methods and Applications*, 2nd ed. Sage Publications: Thousand Oaks, CA., pp. 43-57
[63] Id., 49-53.

including total number of staff for each role and the full-time equivalent (FTE). One FTE is assumed to be 2,000 hours of work in a year (including paid time off).

- **Planning and development and full implementation:** Site staff were asked to provide personnel information separately for the planning and full implementation phases. The length of the planning and development phase differed by site; therefore, ICF asked each site to provide an estimate of the length of the planning and development phase (i.e., the time before the major components of ACE were in place) at their site.
- **Instructors**: Each ACE community college hired at least two instructors—one that taught basic skills and one that taught vocation skills—per class cohort. Certain classes also required additional instructors to teach specific skills and provide training for job-related certifications (e.g., a CPR instructor). Recognizing that class instructors have a different contractual relationship with the community college and are paid differently from salaried full- or part-time employees, ICF asked each site to identify (1) the number of instructors required for each ACE class offered through their site, and (2) verify how instructors were paid (e.g., per hour for instruction and planning time). This information provided an estimate of the number of instructors necessary to run ACE at each site throughout the period of full implementation and the level of commitment from the instructors. Each site indicated that instructor pay was determined by the number of instructional hours required for the certification, plus an average of five hours per week of planning and meetings. ICF collected class schedules and instructional hours required for each certification to provide an estimate of the total number of instructional and planning hours during full implementation for each site.
- **In-kind costs not charged to the grant:** On the personnel costs worksheet, ICF requested site staff to indicate whether the time commitment of each staff member included in-kind costs. In the context of personnel costs, we define in-kind costs as time that each staff member devoted to the ACE program that was not charged to the grant. in-kind personnel costs include unanticipated hours that were required to fully develop and implement ACE.

Each site implemented and funded ACE differently. To maintain commonality and comparability between the results from each site, ICF developed a set of key definitions that were distributed to sites with the cost template. Exhibit 6.3 provides an overview of the types of personnel cost ingredient information requested from each site and lists key definitions associated with each type of information requested.

Exhibit 6.3: Personnel Cost Information Requested and Key Definitions

Information Requested	Key Definitions
Roles performed by staff member	Roles are identified according to activities identified in the ACE logic model (Recruitment, Assessment, Orientation, Training, Job Development, and Support Services) and overall Management.
Number of staff assigned to each role	The total number of staff that performed the duties of each role.
Number of FTE's	Work Time: One FTE is assumed to be 2000 hours of work in a year (including any paid time off).

Planning and development	Beginning at the grant award, time spent planning and developing the major components of ACE.
Full implementation	Period during which the major program components were in place, lasting through the end of the grant.
In-kind costs	Goods/services provided by the community college or WIB through its own resources, not paid for with grant dollars.
Length of planning and development phase	ACE programs evolved at different rates. This field asked sites to provide an estimate of the length of the planning and development phase at their site.

Non-Personnel Cost Ingredients

The second component of the cost template requests cost ingredient information for non-personnel costs. Sites were asked to provide the following details of the non-personnel costs required to fully implement ACE:

- Non-personnel costs, or ingredients, necessary to implement ACE for the entire duration of the grant.
- Number of units or other metric that identified the amount of each ingredient used.
- In-kind goods and services provided by the community college or WIB through their own resources, not charged to the grant.

Exhibit 6.4 provides an overview of the non-personnel cost categories and key definitions that clarify the scope and meaning of each category. ICF staff walked each site through these categories, provided examples and key definitions, and responded to any clarifying questions regarding the meaning of the definition and the information requested.

Exhibit 6.4: Non-Personnel Cost Information Requested and Key Definitions

Information Requested	Key Definitions
Facilities	This includes office, classroom, and lab space used by ACE staff and students.
Equipment and materials	Includes any equipment and materials used for the ACE program, including those that are specific to the training classes offered at that site.
Office supplies	This category includes supplies such as paper, envelopes, and other office supplies required for ACE.
Supportive services	Supportive Services are an important component of the wraparound training approach provided by ACE. Examples of supportive services include travel expenses paid for through the community college or WIB (e.g., bus cards, gas cards); work-appropriate clothing; and/or stipends.
Other inputs	The other category captures costs not covered under the above categories.
Client (student) inputs	These are costs that are required by ACE student to take the training and/or gain certification, such as textbooks, uniforms, and test fees.

6.3 Cost Study Findings

Cost study findings were developed in two ways, (1) through identifying the cost components, or "ingredients" of the overall cost, categorized into personnel costs and non-personnel cost, and (2) by examining actual grant expenditures by site and by participant.

6.3.1 ACE Cost Ingredients

Personnel Costs

The personnel cost ingredients for Austin, Anne Arundel (community college only), and Baltimore City are shown in Exhibits 6.5 through 6.7. In addition to the information on the personnel ingredients, data on the number of classes, number of programs, and number of students served is provided to offer context and to allow for comparisons across sites. Concerning WIB staff, both sites that provided data reported having five different staff roles for ACE. Austin and Baltimore City WIBs both employed directors that managed the ACE program, a career navigator, and a job developer (Baltimore City called their job developer a Business Services Rep). The career navigator and job developer role is critical to the ACE model and were employed at all ACE sites. In addition to these roles, the Austin WIB also employed a contracts manager and accounting personnel for ACE, and the Baltimore City WIB employed an assistant director and a senior analyst.

The amount of FTEs that the WIB personnel represented varied from 1.0 per year for career navigators at both sites (these were full-time employees dedicated to ACE), to a 0.05 FTE for the Director in Austin. A 0.05 FTE translates to 5% of a full-time employee's time in a year.

Personnel ingredients information for the community colleges was provided by all three sites and varies considerably more than that for the WIBs. Austin Community College employed staff at four different roles for ACE, while Anne Arundel and Baltimore City employed staff in 10 and seven different roles, respectively. The ACE program management and accounting in Austin was concentrated at the WIB, while in Anne Arundel and Baltimore City those roles were more shared between the WIB and community college, explaining some of the differences in the number of roles. Austin also offered fewer programs, fewer classes, and served the fewest number of students among the three sites, which could also contribute to the need for fewer staff in the community college. This is particularly true for the number of programs; Austin offered three different programs while Anne Arundel and Baltimore City each offered seven different programs.

Exhibit 6.5: Austin – Personnel Ingredients

Workforce Investment Board	Career Navigator	Recruitment, Assessment, Orientation, Job Development, Support Services	1	1	3.0
	Job Developer	Job Development	1	1	2.0
	Deputy Executive Director	Management	1	0.05	3.5
	Manager Workforce Contracts	Management	1	0.1	3.5
	Accounting Team	Management	NA	0.05	3.5
Community College	Continuing Ed Program Manager	Management	1	0.05	2.0
	Continuing Ed Program Coordinator	Management, Training	1	0.05	2.0
	Adult Ed Program Coordinator	Management, Training	1	1	2.0
	Instructor	Training	20	1.2	1.8
Total FTE per Year					**4.5**
Total FTE Years (Yearly FTE Multiplied by the Number of Years Employed on ACE)					**10.06**
Estimated Instructional and Planning Hours					**2,392**
Number of Classes					**10**
Number of Programs					**3**
Number of Students Served					**120**

Exhibit 6.6: Anne Arundel County – Personnel Ingredients

	Anne Arundel County Personnel Ingredients				
	Staff	Brief Description of Function	Total Number of Personnel	Total FTEs per Year	Number of Years Employed on ACE
Workforce Investment Board					
Community College	Director	Management	1	0.1	3.5
	Project Manager	Management, Recruitment, Assessment, Orientation, Support Services	1	0.6	3.5
	Intake and Support Service Staff	Recruitment, Assessment, Orientation, Job Development, Support Services	2	1.6	2.3
	Invoicing and Procurement	Management	1	0.05	3.5
	Instructional Specialist	Recruitment, Assessment, Orientation, Training, Support Services	1	1	2.3
	Grant management	Management	1	0.1	3.5
	Student Services and Advising	Support Services	1	0.1	2.3
	Marketing	Recruitment	1	0.05	2.3
	Registration	Training	1	0.05	2
	Instructor	Training	24	1.645	2.2
Total FTE					**5.295**
Total FTE Years (Yearly FTE Multiplied by the Number of Years Employed on ACE)					**13.0**
Estimated Instructional and Planning Hours					**3,290**
Number of Classes					**12**
Number of Programs					**7**
Number of Students Served					**159**

Exhibit 6.7: Baltimore City – Personnel Ingredients

	Staff	Brief Description of Function	Total Number of Personnel	Total FTEs per Year	Number of Years Employed on ACE
Workforce Investment Board	Director	Management, System Development, Data Review, Performance Reporting, Data Monitoring, Case Monitoring	1	0.35	3.5
	Assistant Director	Management	1	0.1	3.5
	Career Navigator	Recruitment, Assessment, Orientation, Job Development, Support Services	1	1	3.0
	Business Service Rep	Job Development	1	0.55	2.0
	Sr. Fiscal Analyst	In-Kind Financial Administration	1	0.1	3.5
Community College	Director	Management	1	0.3	3.5
	Manager of ELI	Management	1	0.3	3.5
	Coordinator	Recruitment, Orientation, Job Development, Support Services	1	1	3.0
	Data Entry	Support Services	1	0.25	3.0
	Student Coach	Recruitment, Orientation, Job Development, Training, Support Services	1	1	2.25
	Administrative Assistant	Support Services	1	0.5	2.25
	Instructors	Training	NA	2.834	2.25
Total FTE					**8.284**
Total FTE Years (Yearly FTE Multiplied by the Number of Years Employed on ACE)					**14.125**
Estimated Instructional and Planning Hours					**5,668**
Number of Classes					**13**
Number of Programs					**7**
Number of Students Served					**192**

Non-Personnel Costs

The non-personnel ingredients for ACE are divided into fixed and variable ingredients. The fixed ingredients include facilities, such as office and classroom space; equipment and materials, such as computers and other office machines; and office supplies. The fixed ingredients are those necessities that all sites must utilize to implement ACE. For example, all ACE staff utilized office space and shared space in buildings and used computers while working on ACE. All the community colleges utilized classroom, lab space, and desks for ACE. These fixed ingredients, although often not accounted for in costs because they are shared with other non-ACE functions and uses, are necessary for program implementation and should be included when determining costs.

The non-personnel ingredients that vary across ACE sites, and are not fixed, are the variable ingredients. Although these variable ingredients can be just as important to the success of individual ACE programs as the fixed ingredients, they generally vary across sites and not all sites will utilize the same types. The variable ingredients for ACE include the equipment and

material that is specific to the training being offered, such as essential specific tools or softwares, the support services offered to ACE students, and a number of other inputs such as advertising for recruitment and staff training, among others. Exhibit 6.8 shows the non-personnel ingredients that each site utilized for the ACE program. Austin Community College did not provide non-personnel ingredients.

Exhibit 6.8: Non-Personnel Ingredients WIB and Community College

	Anne Arundel		Austin		Baltimore City	
Non Personnel Ingredients	WIB	CC	WIB	CC	WIB	CC
Fixed Ingredients						
Facilities						
Office space	✓	✓	✓	✓	✓	✓
Classroom space		✓		✓		✓
Lab space		✓		✓		✓
Shared space	✓	✓	✓	✓	✓	✓
Equipment and Materials						
Office supplies	✓	✓	✓	✓	✓	✓
Computers /other office equipment	✓	✓	✓	✓	✓	✓
Furniture	✓	✓	✓	✓	✓	✓
Variable Ingredients						
Equipment and Materials Specific to ACE Training						
Lab coats						✓
Uniforms						✓
Support Services						
Student parking costs						✓
Support stipend			✓			
Sign language services			✓			
Job search boot camp			✓			
Other Inputs						
Travel		✓	✓			
Advertising for recruitment		✓				
Staff training			✓		✓	✓
GED testing			✓			
Background checks			✓			✓
Immunizations			✓			
Curriculum development		✓	✓			
Employment verification services			✓			
On-the-job training experiences		✓				
Administrative services					✓	
Client (Students) Inputs (Possibly exclude)						
Testing fees		✓				✓
Text books		✓				✓

6.3.2 Actual Program Expenditures

In addition to the identification of the cost ingredients required to implement the ACE program, ICF also collected information on the actual grant expenditures for each ACE site and used that to calculate cost per participant. Exhibit 6.9 shows the ACE grant expenditures for each site and the cost per participant.

Anne Arundel, Austin, and New Haven had among the highest costs per student – all above $7,000 when measured by the grant expenditures. This could be a reflection of class size and number of classes held. Anne Arundel and Austin had relatively smaller class sizes than the other sites. The resources (and thus the cost) to hold a class may not change proportionately with the number of students in the class, a reflection of economies of scale. The average class size for Anne Arundel, Austin, and New Haven combined was 12.5 students per class, while it was 14.4 students per class (15.5 when Upper Shore is removed) for the remaining sites. Upper Shore provides another example of how economies of scale can influence cost per student. Upper Shore has, by far, the greatest cost per student, and also had the smallest class sizes, an average of eight students.

The number of classes held could also influence cost per student, as more curriculum development and instructor time is needed as the number of different classes increase. Anne Arundel, Austin, Baltimore County, and New Haven held an average of 13 classes, over roughly two years, while the other sites held an average of eight classes, over a two- to three-year period.

To minimize the cost per student and thus maximize the number of student trained with a given amount of funding, sites could implement larger class sizes and provide a smaller number of individual curricula.

Exhibit 6.9: ACE Grant Expenditures by Site

	Number of Students Served	Number of Classes	Average Class Length (Weeks)	Average Class Size	Total Grant Expenditures*	Grant Expenditures per Student
Anne Arundel	159	12	14	13	$1,115,000	$7,013
Atlanta	128	6	16	21	$618,000	$4,828
Austin	120	10	8	12	$897,000	$7,475
Baltimore City	192	13	26	15	$1,078,000	$5,615
Baltimore County	238	17	16	14	$1,510,000	$6,345
Montgomery County	96	6	13	16	$645,000	$6,719
New Haven	190	12	18	16	$1,371,000	$7,216
Prince George's County	105	10	18	11	$603,000	$5,743
Upper Shore	30	4	22	8	$391,000	$13,033

Source: Baltimore County Department of Economic and Workforce Development.
Notes: *Expenditures are the estimated final expenditures based on April 30, 2016 expenditures and are rounded to the nearest whole number.

6.4 Cost Study Conclusion

ACE utilizes a complex program model, requiring numerous components implemented by multiple entities. Because of this complexity, it is difficult to estimate the true cost of the program as it was implemented, particularly when only grant funding is examined. This study utilizes the ingredients approach to identify the cost components that are required to implement ACE and examines the actual grant expenditures by site. The main findings of the ACE cost study include the following:

To minimize the cost per student and thus maximize the number of students trained with a given amount of funding, sites could implement larger class sizes and provide a smaller number of individual curricula. The information on ACE expenditures by site indicates that the resources required to implement a class do not change proportionately with the number of students in the class, thus offering larger class sizes can be economically more efficient (reflecting economies of scale). Additionally the number of different types of programs offered may also influence cost per student, as curriculum development, additional instructors, and additional materials and equipment are needed as new classes are added.

Facility and equipment expenditures were not often accounted for in estimating costs. Since facilities (such as classrooms) and equipment (such as computers) are typically shared with other non-program functions, they are often not included when estimating program cost. Since these expenditures are necessary for program implementation, they should be included in determining costs. Costs for these items, if they are shared, can be estimated based on the proportion of time they are used for the individual program.

7. Discussion and Implications

Low-skilled workers face steep challenges completing training, gaining employment, and progressing along a career path. Government agencies, educational institutions, and non-profit organizations are testing innovative approaches to help these workers meet these challenges. Training models such as I-BEST provide contextual and vocational skills to workers who need them to succeed; support services address the barriers that often prevent training completion; and employer engagement and job development can help training programs succeed through industry partnerships. ACE adopted components of each of these approaches, and forged unique partnerships between WIBs and community colleges to deliver training and services. The ACE evaluation findings show that the ACE model can be an effective approach to improve the employment outcomes of low-skilled workers.

The section below summarizes the findings of the ACE evaluation. Exhibits 7.1, 7.2, 7.3, and 7.4 summarize the results of the impact findings, followed by a discussion of implications that should be of interest to policymakers, educational institutions, and employers.

Exhibit 7.1: Summary of Employment and Earnings Impacts

Outcome	Control	Treatment	Difference (Impact)
Employment [a]			
Earned a wage in first year after program end – all sites (n=2,168)	51.9%	62.6%	10.6^
Earned a wage in second year after program end – all sites (n=783)	52.6%	61.1%	8.5^
Earned a wage in first year after program end – MD and TX (n=1,513)	69.2%	82.1%	12.9***
Earned a wage in second year after program end – MD and TX (n=619)	65.5%	79%	13.5***
Earnings [a]			
Total earnings, four quarters after program end date – MD and TX (n=1,513)	$11,601.80	$12,897.00	$1,295.20***
Total earnings, eight quarters after program end date – MD and TX (n=619)	$21,790.30	$27,053.00	$5,262.70***
Total earnings, four quarters after program end date – CT (n=348)	$12,578.79	$14,125.19	$1,546.40
Total earnings, eight quarters after program end date – CT (n=136)	$23,523.25	$34,810.03	$11,286.78***
Total earnings, four quarters after program end date – GA (n=203)	$7,154.60	$5,783.50	-$1,371.10
Time to Employment [b]			
Average number of months to employment (n=616)	5.56	7.00	-1.45

Source: [a]UI administrative records. [b]ACE Year 1 Follow-up Survey. [c]ACE Year 2 Follow-up Survey.
Notes: ^Significance tests for employment rates across all sites using UI were not calculated due to data use restrictions, and also excludes observations with missing data. *Difference is statistically significant at the p<0.10 level. The sample sizes (n) for each outcome are listed for each row (sample sizes vary depending on the outcome indicator due to item nonresponse to the follow-up surveys). **Difference is statistically significant at the p<0.05 level. ***Difference is statistically significant at the p<0.01 level.

Exhibit 7.2 summarizes the impacts related to quality of jobs held by ACE program participants in comparison to control group participants.

Exhibit 7.2: Summary of Job Quality Impacts

Outcome	Control	Treatment	Difference (Impact)
Benefits Earned from an Employer (Year 1) [a]			
Dental insurance (n=906)	15.8%	20%	4.2
Life insurance (n=906)	12.1%	16.5%	4.4
Vision insurance (n=906)	14.2%	15.3%	1.1
Short-term disability (n=906)	9.8%	13.3%	3.5*
Long-term disability (n=906)	7.4%	10.7%	3.3*
Retirement plan (n=906)	13.7%	17.6%	3.9
Benefits Earned from an Employer (Year 2) [b]			
Dental insurance (n=444)	19.5%	23.2%	3.7
Life insurance (n=444)	13.7%	18.1%	4.4
Vision insurance (n=444)	15.8%	18.1%	2.3
Short-term disability (n=444)	9.5%	16.5%	7**
Long-term disability (n=444)	9.5%	11.4%	1.9
Retirement plan (n=444)	17.9%	16.9%	-1

Outcome	Control	Treatment	Difference (Impact)
Quality Jobs (Year 1) [a]			
Works a full (35 hours or more) week at primary job (n=729)	37.3%	19.3%	-18***
Earns at least $13 an hour (n=688)	22.9%	30%	7.1***
Health insurance through employer (n=775)	18.9%	19.3%	0.4
Quality Jobs (Year 2) [b]			
Works a full (35 hours or more) week at primary job (n=330)	35.3%	45%	9.7*
Earns at least $13 an hour (n=318)	24.7%	26.4%	1.7
Health insurance through employer (n=322)	23.8%	27.6%	3.8

Source: [a]ACE Year 1 Follow-up Survey. [b]ACE Year 2 Follow-up Survey.
Notes: ***Difference is statistically significant at the p<0.01 level. **Difference is statistically significant at the p<0.05 level. *Difference is statistically significant at the p<0.10 level. The sample sizes (n) for each outcome are listed for each row (sample sizes vary depending on the outcome indicator due to item nonresponse to the follow-up surveys).

Exhibit 7.3 summarizes the results of ACE impacts related to job credentials and career pathways.

Exhibit 7.3: Summary of Credentials and Career Pathways Impacts

Outcome	Control	Treatment	Difference (Impact)
Credentials (Year 1) [a]			
Holds a vocational, technical, or professional certificate or license (n=1,049)	35.4%	53.5%	18.1***
GED, high school diploma (n=999)	88.4%	90.6%	2.2
Enrolled in other training or education program (n=1,023)	22.1%	11.5%	-10.6***
Credentials (Year 2) [b]			
Holds a vocational, technical, or professional certificate or license (n=391)	38.4%	60.2%	21.8***
GED, high school diploma (n=392)	86.2%	91.1%	4.9
Enrolled in other training or education program (n=423)	12.2%	13.7%	1.5
Career Pathways (Year 1) [a]			
Received promotion or raise (n=722)	24.5%	27.3%	2.8
Career Pathways (Year 2) [b]			
Received promotion or raise (n=234)	33.6%	44.1%	10.5*

Source: [a]ACE Year 1 Follow-up Survey. [b]ACE Year 2 Follow-up Survey.
Notes: ***Difference is statistically significant at the p<0.01 level. **Difference is statistically significant at the p<0.05 level. *Difference is statistically significant at the p<0.10 level. The sample sizes (n) for each outcome are listed for each row (sample sizes vary depending on the outcome indicator due to item nonresponse to the follow-up surveys).

Exhibit 7.4 summarizes the ACE impacts related to receipt of public assistance.

Exhibit 7.4: Summary of Public Assistance Impacts

Outcome	Control	Treatment	Difference (Impact)
Public Assistance (Year 1) [a]			
Receives public assistance (n=833)	33.7%	30.2%	-3.5**
Public Assistance (Year 2) [b]			
Receives public assistance (n=326)	28.6%	22.4%	-6.2

Source: [a]ACE Year 1 Follow-up Survey. [b]ACE Year 2 Follow-up Survey.
Notes: ***Difference is statistically significant at the p<0.01 level. **Difference is statistically significant at the p<0.05 level. *Difference is statistically significant at the p<0.10 level. The sample sizes (n) for each outcome are listed for each row (sample sizes vary depending on the outcome indicator due to item nonresponse to the follow-up surveys).

7.1 Implications

There are several implications of these findings:

Funding for training programs such as ACE can significantly improve employment rates and earnings for low-skilled workers. ACE provided a comprehensive set of supports and training tailored to the needs of low-skilled workers. The findings indicate that these supports can result in positive and significant gains in employment, earnings, and employment-related outcomes.

The ACE model has been shown to work at multiple sites, suggesting that programs similar to ACE can be effective in a variety of institutional, cultural, and economic settings. In many cases, programs operate well under a certain set of circumstances, but do not perform well in others. ACE resulted in positive employment and earnings at all but one training site. These findings show the robustness of the ACE model, and suggest that the model could be successfully implemented in other settings in the future.

Funding for training programs designed to improve career outcomes can have longer-term impacts on employment outcomes, resulting in positive benefits years after the training ends. ACE was designed as a career pathways program intended to start low-skilled workers on a career path with the potential to lead to additional credentials, raises and promotions. Many of the findings suggest that ACE was successful in not only moving participants into entry-level jobs, but also moving them up a career ladder. Measures of employment-related outcomes at two years after the training often showed larger gains than those at one year, suggesting that participating in ACE and ACE-like training programs pays longer-term dividends after the participant leaves the program.

Wraparound services designed to address barriers can improve credential attainment and employment outcomes for low-skilled workers. ACE staff noted that support services designed to address the barriers that often prevent low-skilled workers from completing training programs were an essential component of ACE. These staff impressions were reinforced by impact findings. ACE has a significant and positive impact on the likelihood of receiving a credential, indicating that a large portion of the participants

completed the training and were much more likely to have marketable skills than the control group.

Ongoing employment and job placement support after the end of the training program can be essential to achieving positive employment outcomes among low-skilled workers. ACE staff noted the importance of transition and tracking support for ACE participants. Recognizing the importance of these supports, program leadership added job developers to the staff to fulfill the role of employer engagement, job placement, and tracking support more adequately. The importance of this role is borne out by the evidence from the impact study. Sites that ended their program early and did not develop as robust of a job development support system as other sites—such as Atlanta—did not see significant employment and earnings gains from ACE. Other sites that did devote significant resources to transition, tracking and job development, on the other hand, saw significant improvement in employment-related outcomes among the ACE treatment group in comparison to the control group.

Attention should be given to selecting training programs and credentials that match employer needs. LMI factored in to the selection of each of the ACE training programs. However, some ACE training programs were more successful than others. Interviews with ACE program leadership indicated that whether a training program succeeds or fails can often depend on unforeseen changes to the labor market and information from employers that could be used to better tailor the training to employer needs.

Frequent communication and clear delineation of responsibilities can foster a stronger WIB-community college partnership. The ACE model called for collaboration between the WIBs and community colleges, but it did not stipulate what the partnership should look like. The lack of clarity and program evolution created challenges for ACE partners that came into the partnership with different operational experiences and cultural norms. Successful partnerships at ACE sites were created when partners established well-defined roles and responsibilities; assembled the right mix of staff; and co-located staff from partnering organizations while maintaining frequent communication. Lessons from what works in ACE partnerships will be especially important with the passage of WIOA, and as states develop plans to better align programs that provide occupational and adult education services, and engage community colleges and career and technical schools as active partners in this process.

Integrating job placement and employer engagement in the initial stages of implementation can improve job placement. Program staff that engaged employers during the planning phases were able to get buy-in for the program and therefore establish trust with these employer partners. These partners were therefore familiar with the program and training content and were more likely to agree to formal internship/job placement agreements and to hire ACE graduates. Hiring a job developer was an essential and much needed addition to the ACE staff. Staff implementing workforce development training programs should aim to hire both a career navigator to guide and coach participants along their chosen career pathway, and a job developer to work on getting participants placed in employment.

A more thorough and intensive recruitment process can yield quality participants and improve retention. ACE sites faced challenges in recruitment and intake with participants' inability to pass eligibility requirements, hidden costs of the requirements for certain industries

and participants dropping out before randomization. Sites that were able to retain well-prepared, quality participants developed lengthier, more thorough orientation processes that involved two- to three-day sections of interviews/speed dating and program information sessions. Staff felt that participants that emerged from these multi-day sessions were more likely to succeed in the program and complete the training. If adopted by other programs, orientation processes such as the vestibule in Baltimore County may help in ensuring that programs enroll participants who are ready to embark on a career pathway.

To minimize the cost per student and thus, maximize the number of students trained with a given amount of funding, sites could implement larger class sizes and provide a smaller number of individual curricula. The information on ACE expenditures by site indicates that the resources required to implement a class do not change proportionately with the number of students in the class, thus offering larger class sizes can be economically more efficient (reflecting economies of scale). Additionally, the number of different types of programs offered may also influence the cost per student, as curriculum development, additional instructors, and additional materials and equipment are needed as new classes are added.

Facility and equipment expenditures were not often accounted for in estimating costs. Since facilities (classrooms) and equipment (computers) are typically shared with other non-program functions, they are often not included when estimating program cost. Since these expenditures are necessary for program implementation, they should be included in determining costs. Costs for these items, if they are shared, can be estimated based on the proportion of time they are used for the individual program.

7.2 Further Research

The ACE evaluation study findings suggest potential subjects for further research. Below, we provide a set of research questions that the ACE evaluation results indicate would yield valuable information, but were beyond the scope of the ACE evaluation.

How much co-teaching/contextualized learning is needed to achieve positive employment-related outcomes among and low-skilled workers? Sites point to the fact that ACE is expensive to implement, especially the co-teaching component. Staff hypothesize that the program would achieve similar participant outcomes if co-teaching were offered 50% to 75% of the time rather than all the time. Further research could examine the degree to which varying the amount of co-teaching effects student outcomes. Results of this research would allow training programs to more efficiently allocate resources for co-teaching and ensure that students are receiving adequate contextualized learning components.

Do employment and earnings benefits from programs such as ACE persist over longer periods of time (such as three, four, or five years after training completion)? ACE findings suggest that ACE and similar programs may result in employment-related benefits that persist for years after the training program ends. Further research could examine whether ACE participants continue to receive benefits from their participation in ACE. Outcomes to examine over a longer time period could include earnings, promotions, benefits from an employer and additional training and credentials.

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