

## What do we know about the effectiveness of Registered Apprenticeship and Work-Based Learning interventions?

Labor market shifts in recent decades have reduced employment in some fields in which workers without a four-year college degree used to be able to earn a household sustaining wage (Autor, 2019). At the same time, the skills that employers require have changed (Acemoglu & Restrepo, 2021; Deming, 2017) and many employers report difficulty finding workers with skills that they require (McKinsey 2020). Work-based learning approaches may help address these problems by engaging employers in training efforts and offering workers an opportunity to build skills that employers require through applied learning. Work-based learning approaches involve training that occurs in a work environment or in a job-like setting. Examples of work-based learning interventions include sectoral training and employment, subsidized employment, transitional employment, and Registered Apprenticeship (Table 1).

This synthesis highlights key findings from studies identified through a Clearinghouse for Labor Evaluation and Research (CLEAR) systematic evidence review that examined the impacts of interventions with a work-based learning component delivered in a workplace or job-like setting on employment, earnings, public benefit receipt, or education.<sup>1,2</sup> CLEAR found 54 studies of these interventions published from 2005 to 2017.<sup>3</sup> These include 17 studies that CLEAR gave a high or moderate causal evidence rating. This means that we have a good degree of confidence that the studied interventions caused the measured impacts on outcomes.<sup>4</sup>

**Table 1. Key features of interventions providing Registered Apprenticeship and Work-Based Learning that CLEAR examined**

Intervention	Key features
Sectoral training and employment	These interventions provide training in specific industry sectors or occupations, as well as services such as soft skills training and case management, to prepare disadvantaged workers and workers with low income to meet the needs of employers. They may involve training that occurs in a job-like setting or opportunities for internships. They also connect these workers with employers that have job vacancies through job placement assistance and supports.
Subsidized and transitional employment	Subsidized employment provides wage subsidies to employers who hire workers facing challenges to employment, usually with the expectation that the employer eventually hires the worker at a competitive wage. Transitional employment interventions often involve creating temporary jobs or work-like experiences, or providing job placements, for workers facing challenges to employment.
Registered Apprenticeship (RA)	RA, administered by the U.S. Department of Labor (DOL) or a state apprenticeship agency, is a career training program that offers individuals paid on-the-job learning, job-related technical instruction, and mentorship and supervision, culminating in a nationally recognized certification upon completion. Employers and other sponsors register with DOL or a state agency to deliver specific programs that meet quality standards and often last from one to six years.
Workforce Investment Act (WIA) training services <sup>5</sup>	WIA programs offered vouchers to individuals to apply to costs of training in locally in-demand occupations, which could include work-based training such as on-the-job training, as well as classroom training that in some cases may have been in a job-like setting. Programs also provided some supportive services to help individuals complete training. The Adult Program served people aged 18 years and older, often giving priority access to recipients of public assistance and other low-income customers, particularly if funds are limited. The Dislocated Worker Program served people who had been laid off from employment.
Other	Other work-based learning interventions that CLEAR reviewed included mentoring at work, training provided through the Trade Adjustment Assistance program, and an accelerated schedule for a Registered Apprenticeship program.

*Mathematica prepared this synthesis in April 2021. Abt Global revised it in October 2023. The U.S. Department of Labor's Chief Evaluation Office funded this synthesis and the underlying systematic review. The contents do not represent the views or policies of the Department.*

<sup>1</sup> For more information on CLEAR, including how CLEAR conducts systematic reviews, see <https://clear.dol.gov/>.

<sup>2</sup> The review updated the older topic area of apprenticeship and on-the-job training that covered studies published from 2005 to 2014.

<sup>3</sup> See the CLEAR Employment and Training Review Protocol ([Employment and Training Review Protocol | CLEAR \(dol.gov\)](#)) to learn more about the literature search parameters and the specific criteria used to determine which studies were eligible for inclusion in the systematic review. As of February 22, 2023, the Registered Apprenticeship and Work-Based Learning topic area included a total of 58 studies. We do not include reviews of two low-rated studies of Per Scholas and Jewish Vocational Service-Boston in Maguire (2010) because they were reviewed in collaboration with the Employment Strategies for Low-Income Adults Evidence Review (ESER) and findings were not reported by CLEAR. Four studies that did not measure the effectiveness of an intervention compared to a non-treatment condition or tested a treatment condition that overlapped with another study were excluded. For two studies that reported findings in two states, we separated the findings by state in the synthesis. This resulted in a total of 54 studies included in this research synthesis.

<sup>4</sup> See the CLEAR Causal Evidence Guidelines, Version 2.2 (<https://clear.dol.gov/reference-documents/causal-evidence-guidelines>) for information on the evidence guidelines used to determine the causal evidence ratings.

<sup>5</sup> WIA was replaced by the Workforce Innovation and Opportunity Act (WIOA) in 2015. No completed causal studies of WIOA training services exist yet.

## Key takeaways

► **Sectoral training and employment programs that offered specific pathways for occupational training and other career supports improved education and training outcomes, and some improved employment or earnings.**

- All of the five moderate- or high-rated causal studies of sectoral training and employment programs that reported on **education and training outcomes** found that these programs improved education and training outcomes. All of those programs offered specific pathways of occupational training to obtain industry certification or postsecondary credentials, informed and supported by deep, ongoing collaboration with employers. Four of those studies examined different organizations' implementations of the same program model (the WorkAdvance sectoral training model), which focused on career readiness, occupational training, career coaching, job placement supports, and post-employment job retention services.
- Evidence that sectoral training and employment programs improved **employment or earnings outcomes** is mixed. Of the six studies that looked at employment or earnings outcomes, three found favorable impacts on either employment or earnings in the short or long term (two of these studies examined WorkAdvance, and the third study examined the Wisconsin Regional Training Partnership, which provided short-term training in construction, manufacturing, and health care sectors, as well as case management and job placement assistance).

► **Subsidized and transitional employment improved employment and earnings in the short term.** All three studies of subsidized employment that received a high causal evidence rating found increases in **short-term employment and earnings**. See the box below for more information about the Los Angeles Subsidized and Transitional Employment Demonstration.

► **Registered Apprenticeship (RA) improved employment and earnings, but the evidence base is small.** The one study of RA that received a moderate causal rating found increases in **long-term employment and earnings**. The non-experimental study examined the outcomes of a sample of 57,924 individuals, comparing outcomes for participants who completed a RA to those who did not complete the program because of ineligibility or because they chose not to enroll. The study involved over 1,000 occupations. The length of the apprenticeships varied from one to six years.

► **WIA training services had more favorable impacts on employment and earnings outcomes in the long term than in the short term, though these outcomes were mixed overall.** The favorable long-term outcomes were for the WIA Adult Program; three studies of it found favorable impacts on **employment and earnings** after roughly three to four years after program entry. For the WIA Dislocated Worker (DW) program, **long-term employment and earnings** impacts varied across studies, ranging from unfavorable, to mixed, to favorable. Short-term impacts (in less than 18 months after program entry) on these outcomes were found to be mixed or unfavorable for both the Adult and Dislocated Worker programs. WIA training services are similar for the Adult program and the DW program. The two differed primarily in the population served, not in services offered. The Adult program served people 18 and older, often prioritizing access for those with low incomes, while the DW program specifically served workers who had been laid off. WIA training services consisted of three tiers of successive services: core, intensive, and training. The training estimates compare outcomes for individuals who were offered all three to individuals offered only core and intensive services. Not everyone who was offered training entered training. And it is not clear how much of that training would be considered "work-based." D'Amico et al. (2015) report that only 5 percent of the WIA-funded training received by participants in their study was on-the-job training. As such, the study's impact estimates of training impacts may not necessarily or primarily reflect impacts of work-based training.

### Potentially promising features of the Los Angeles Subsidized and Transitional Employment Demonstration

This intervention comprised two programs delivered by American Job Centers: a **paid work experience program** that placed individuals in a subsidized public or nonprofit sector job for six months, and an **on-the-job training program** that placed individuals in subsidized private sector jobs for six months. Randomized controlled trial studies found that both improved short-term employment and earnings, though only the paid work experience program also reduced public benefit receipt.

## Overview

**What we know based on existing research, as summarized in Table 2, includes the following:**

- Almost three-quarters of the studies in this topic area received a low causal evidence rating (37 out of 54 studies; see column 1).
- Most of the high- and moderate-rated research is on sectoral training and employment programs or subsidized and transitional employment (column 1).
- Most studies on WIA training services, RA, and other apprenticeship received a low causal evidence rating (column 1). This means that results should be interpreted with caution.
- Some moderate- or high-rated studies on each type of intervention (except "other") found evidence of improvements in both employment (green boxes labeled with "a" in columns 2 and 3) and earnings (green "a" boxes in columns 4 and 5). Employment and earnings impacts were favorable for subsidized and transitional employment programs in the short term and for registered and other apprenticeship programs in the long term. Studies of sectoral training and employment programs found both

favorable, and null employment and earnings impacts, while studies of WIA training services found favorable (in the long term only), null, mixed, and unfavorable employment and earnings impacts.

- Few studies assessed interventions' impact on public benefit receipt. Moderate- and high-rated studies of impacts on benefit receipt exist only for subsidized and transitional employment interventions. They found mixed results (green "a" and yellow "c" boxes in column 6).
- All five moderate- and high-rated studies examining education and training impacts of sectoral training and employment interventions found favorable impacts (green "a" box in column 7). Two moderate- and high-rated studies of subsidized and transitional employment found null impacts while one found unfavorable impacts. No moderate- or high-rated studies of WIA training services, registered and other apprenticeship, or other interventions examined education and training outcomes.
- Differences in the intervention features, implementation experiences, and context could drive the variation in results. Further details about these interventions are available in individual study summary profiles, available on the CLEAR Registered Apprenticeship and Work-Based Learning topic area page (<https://clear.dol.gov/topic-area/registered-apprenticeship-and-work-based-learning>).

**Table 2. Overview of the evidence base**

Intervention Category	1	2		3		4		5		6		7	
	Number of studies by rating*	Short-term employment (<18 months)		Long-term employment (>18 months)		Short-term earnings (<18 months)		Long-term earnings (>18 months)		Public benefit receipt		Education and training	
Sectoral training and employment	6 Moderate/High	1 <sup>a</sup>	3 <sup>b</sup>	1 <sup>a</sup>	4 <sup>b</sup>		4 <sup>b</sup>	2 <sup>a</sup>	3 <sup>b</sup>			5 <sup>a</sup>	
	3 Low	2 <sup>a</sup>		1 <sup>d</sup>	3 <sup>a</sup>		3 <sup>a</sup>	1 <sup>b</sup>	3 <sup>a</sup>	1 <sup>b</sup>	1 <sup>a</sup>	2 <sup>c</sup>	
Subsidized and transitional employment	3 High	3 <sup>a</sup>					3 <sup>a</sup>				1 <sup>a</sup>	1 <sup>c</sup>	2 <sup>b</sup>
	0 Low												1 <sup>d</sup>
Registered Apprenticeship	1 Moderate			1 <sup>a</sup>					1 <sup>a</sup>				
	1 Low	1 <sup>a</sup>		1 <sup>a</sup>			1 <sup>a</sup>		1 <sup>a</sup>			1 <sup>d</sup>	
WIA training services	6 Moderate		2 <sup>c</sup>	4 <sup>d</sup>	4 <sup>a</sup>	1 <sup>b</sup>	1 <sup>c</sup>		1 <sup>c</sup>	5 <sup>d</sup>	3 <sup>a</sup>	1 <sup>b</sup>	1 <sup>c</sup>
	10 Low	8 <sup>a</sup>		2 <sup>d</sup>	6 <sup>a</sup>			8 <sup>a</sup>	1 <sup>b</sup>	1 <sup>d</sup>	6 <sup>a</sup>		4 <sup>a</sup>
Other	1 Moderate		1 <sup>c</sup>										
	23 Low	12 <sup>a</sup>	4 <sup>b</sup>	2 <sup>c</sup>	6 <sup>a</sup>		1 <sup>d</sup>	8 <sup>a</sup>	4 <sup>b</sup>		6 <sup>a</sup>		2 <sup>a</sup>

\* The number of studies listed in Column 1 may not equal the count of studies in a given domain in the same column. Most commonly, the sum in a domain can be lower than the study count in Column 1 if not all studies examined outcomes in that domain. Another possible cause of mismatch is if the domain-specific rating differed from the overall study rating. Within a study, ratings can vary across outcome domains, and the study rating reflects the highest rating from any of the outcome domains. That can lead the domain sum to be higher than the study count in Column 1.

- Key:**
- <sup>a</sup> **Favorable impact:** Indicates the number of studies that found at least one statistically significant favorable impact in the outcome domain and no statistically significant unfavorable impacts.
  - <sup>b</sup> **Null:** Indicates the number of studies that found no statistically significant impacts in the outcome domain.
  - <sup>c</sup> **Mixed impact:** Indicates the number of studies that had some statistically significant favorable and some statistically significant unfavorable impacts in the outcome domain.
  - <sup>d</sup> **Unfavorable impact:** Indicates the number of studies that found at least one statistically significant unfavorable impact in the outcome domain and no statistically significant favorable impacts.

### Where are the gaps in the research on registered apprenticeship and work-based learning interventions?

- Future research on sectoral training and employment programs could seek to better understand the favorable findings on employment, earnings, and education and training, by exploring the conditions under which such programs work best. For example, studies could investigate how program components were implemented in successful programs and characteristics of people who participated in the programs.
- Future studies could examine longer-term outcomes of subsidized and transitional employment to see if the positive short-term impacts found in the studies reviewed here persist.
- More rigorous research is needed to understand how participating in RA affects individuals' earnings and employment outcomes, including how impacts vary among programs of different lengths and in different sectors. CLEAR identified only one eligible study of RA with moderate-rated causal evidence.
- WIA was superseded by the Workforce Innovation and Opportunity Act (WIOA) in 2014. Like WIA, WIOA aims to help job

seekers find training and ultimately employment.<sup>6</sup> Future work on WIOA training services could build on the WIA research discussed here by examining education and public benefit receipt outcomes in addition to employment and earnings outcomes to uncover a more complete picture of their effects on participants. Because WIOA funds a variety of different kinds of training, it would be helpful to understand better how much of that training is work-based and have evidence specifically on the impacts of WIOA-funded on-the-job training or training that occurs in job-like settings.

CLEAR's systematic evidence review for the registered apprenticeship and work-based learning topic area identifies studies that use a causal design—that is, studies that can credibly estimate program impacts. These types of studies, when they are of sufficient quality, can answer questions about how well an intervention worked.

## Publications included in the review

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<sup>6</sup> See “WIOA 101 – An Introduction,” created by the State of Wisconsin’s WIOA Integrated Service Delivery Communications Team at: <https://wioa.wisconsin.gov/roundtable/presentations/2023/9-WIOA-101.pdf>.

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