



The Economic Impacts of Workforce Development: ECWTP as a Case Study

Dr. Ben Artz
Professor of Economics
University of Wisconsin Oshkosh
National Institute of Environmental Health Sciences

Presentation Outline

- Summary of results
- Study process outline
- What is different this time?
- Study methodology and data
- The eight economic impacts
- Comparison studies
- Regional centers of economic research
- Conclusion

Summary of Results

ECWTP Benefits Summary	2014 – 2022 Program Years
Effect on earnings (present value) ^{\$}	\$995.980609 million
Safety and related cost savings ^{\$}	\$8.676 million
Hiring cost savings ^{\$}	\$2.896 million
Crime cost savings ^{\$}	\$50.76 million
Effects on taxes and transfers	\$527.868 million
Matching funds and community involvement	\$5.483 million
2020 COVID-related unemployment savings	\$8.211 million
\$: Total direct benefits of ECWTP	\$1,058.3126 million

- **Annual present value of total direct benefits: \$117.59 million**
- **Annual present value ROI: 33X**

Outline of Study Process

- Planning phase (11/22 – 12/22)
 - WTP and MDB/Clearinghouse staff met with Ben Artz, PIs, and ECWTP contacts to discuss methodology, data needs, and a timeline.
- Data collection / outreach phase (1/23 – 8/23)
 - Collected from ECWTP contacts:
 - Grantee progress reports, evaluation reports, databases, etc.
 - Trainee survey responses (questions about job placement, type of work, work hours, injury reports)
 - Leveraged fund / community involvement information
- Data cleaning and organization (2/23 – 5/23)
 - MDB/Clearinghouse staff input data into spreadsheets.
 - All data and reports stored on a limited access MS Teams site
- Additional data collection (1/23 – 8/23)
 - MDB/Clearinghouse staff pulled data from the NIEHS WTP Data Management System from program years 2014 – 2022.

What is different this time?

Characteristics	Original Study	Current Study
Study years	1995 – 2013	2014 – 2022
Trainees	~9,600	~4,500
Economic shocks	Great Recession	COVID
Inflation / price levels (29% ↑)	CPI in 2014: 237	CPI in 2023: 305
Qualitative content	Individual anecdotes and stories	Full qualitative evaluation
Methodologies	2-stage Markov process	Simplified probability updating
Sample differences:		
Women	12.5%	17.3%
Non-minority race/ethnicity	7.5%	20%
Age	27	32
HS degree or GED	83%	93%
Pre-ECWTP unemployment	82%	62%

Study methodology and data

- Compare the career outcomes of ECWTP trainees against the outcomes of people with similar characteristics but who are not ECWTP trained
- I estimate how much the ECWTP improves the careers/lives of approximately 4,500 people between 2014 – 2022.
- These personal improvements also benefit society in at least 8 different ways

Direct Benefits	Indirect or Unquantifiable Benefits
Lifetime earnings	Effects on taxes and transfers
Safety and related cost savings	Matching funds and community involvement
Hiring cost savings	2020 COVID-related unemployment savings
Crime cost savings	Environmental and social benefits

Study methodology and data cont.

- WTP database information on 3,656 trainees from 2014 – 2022
 - ECWTP program completion
 - Sex
 - Race/ethnicity
 - Age
 - Education
 - Pre- & post-program employment measures
- BLS Current Population Survey
 - 2017 – 2019
 - Estimates the career outcomes of untrained workers

	All data (n = 3,656)	Completed program (n = 3,338)	Did not complete program (n = 318)
Demographic characteristics			
Female	17.26%	17.47%	15.09%
African American	62.14%	62.07%	62.89%
Hispanic	17.89%	18.03%	16.35%
Average age in years (std. dev.)	32.17 (10.36)	32.39 (10.42)	29.88 (9.37)
Education levels			
High School diploma	71.55%	71.84%	68.55%
GED	21.36%	21.00%	25.16%
Neither	7.08%	7.16%	6.29%
Employment measures			
Employed after program	76.37%	82.47%	12.26%
Unemployed before program	61.95%	61.17%	70.13%
Underemployed before program	34.49%	35.41%	24.84%

Study methodology and data cont.

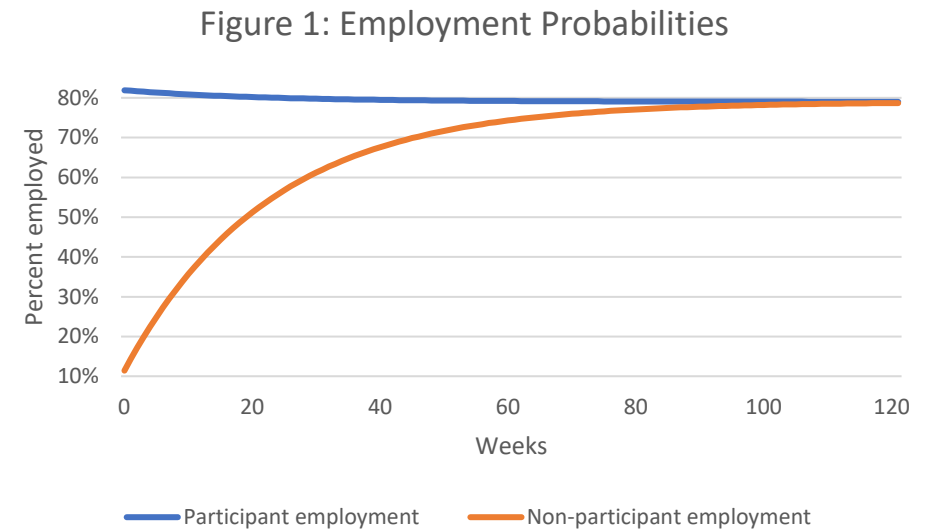
- Trainee survey response data
 - 243 ECWTP graduates
 - Union membership
 - Worked last week for pay
 - Usual weekly hours worked
 - Hourly rate of pay
 - Injured at work

Short trainee survey	All data (n = 243)
Union member	31.28%
Worked last week for pay	77.41%
Usual weekly hours worked (standard deviation)	40.36 (9.61)
Hourly rate of pay (standard deviation)	\$21.66 (\$6.26)
Injured at work	2.07%

The 8 Economic Impacts (1. Effect on Earnings)

- The earnings effect contains 3 components
 - Employment probability, weekly hours worked, & hourly rate of pay
- Employment effects
 - 9% of trainees did not complete the ECWTP

Employment rates of...	
ECWTP graduates	ECWTP drop-outs
82.5%	12.3%



- Increased employment probability due to ECWTP = 70.2 percentage points

The 8 Economic Impacts (1. Effect on Earnings)

- Hours worked effects
 - Higher productivity and better job skills lead employers to offer more hours to ECWTP graduates
- Comparison
 - ECWTP graduates would have worked **37.52** hours per week on average if they had not graduated.
 - The short trainee/graduate survey average hours worked is **40.36** hours per week.
- Effect: ECWTP graduates work **2.84** more hours per week on average (~8%)

The 8 Economic Impacts (1. Effect on Earnings)

- Wage effects
 - Employers likely pay higher wages to reflect the increased value of ECWTP training
- Comparison
 - ECWTP graduates would have earned \$13.39 per hour on average in 2018 dollars.
 - Adjusting for inflation, the wage is \$16.11.
 - Plus fringe benefits → total hourly earnings = **\$23.69**.
 - The short trainee/graduate survey average hourly wage is \$21.66 in 2023 dollars.
 - Plus fringe benefits → total hourly earnings = **\$31.39**.
- Effect: ECWTP graduates earn **\$7.70** more per hour on average (~32.5%)

The 8 Economic Impacts (1. Effect on Earnings)

- Cumulative effect on earnings
 - Trainees are 70.2 percentage points more likely to be employed
 - Trainees work 2.84 more hours per week, on average
 - Trainees earn \$7.70 more per hour in total compensation
- Individual trainee lifetime earnings benefit = **\$221,329**
 - Multiply individual lifetime benefit by 4,500 trainees in the study period
- ECWTP lifetime earnings benefit = ~ **\$996 million**

The 8 Economic Impacts (2. Effect on Safety and Related Costs)

- Employer-reported injury rate is 2.8% per year.
- Training programs like ECWTP on average reduce this by 0.4 percentage points.
 - ECWTP trainee injury rate estimate is 2.4% per year.
- Average inflation-adjusted cost of a workplace injury in the US: \$29,000.
- Effect: \$1,928 injury cost savings per worker x 4,500 trainees = **\$8.676 million**

The 8 Economic Impacts (3. Effect on Hiring Costs)

- Some grantees help trainees find apprenticeships and job placements.
- This effort reduces employers' cost of searching for workers.
- Assumed cost of hiring = \$3,000 per worker
- Approximately 26% accrues pre-placement: \$780 savings per worker
- 82.5% find jobs post-training (cannot know how many avoided search costs)
- Effect: $\$780 \times 82.5\% \times 4,500 = \2.896 million in employer job search savings

The 8 Economic Impacts (4. Effect on Crime-related Costs)

- Significant proportions of trainees have criminal records, as high as 78%
- Ex-offenders are roughly 50% less likely to be considered for jobs
- Despite this challenge, 82.5% of ECWTP trainees are hired
- Training programs like the ECWTP reduce criminal activity by 4 percentage points
- ECWTP-reduced criminal activity: $0.04 \times 4,500$ trainees = 180 fewer criminals
- Estimated cost savings to victims = $180 \times \$240,000$
- Estimates cost savings to justice system = $180 \times \$42,000$
- Total reduction in victim and justice system cost: **\$50.76 million**

The 8 Economic Impacts (5. Effect on Taxes and Transfer Payments)

- ECWTP graduates' higher incomes increase tax revenues and reduce government program transfer payments (SNAP, Medicaid, etc.)
- Over a career, a graduate's \$221,329 higher earnings...
 - Increases tax payments by \$55,332
 - Reduces government transfer payments by \$61,972
- Effect: 4,500 trainees x (\$55,332 + \$61,972) = **\$527.868 million**

The 8 Economic Impacts (6. Effect on Community Involvement)

- Grantees receive community support in the form of dollar and in-kind donations
- In-kind donation examples:
 - Food
 - Transportation assistance
 - Guest instructors
 - Career counseling
 - Outreach/recruitment
 - Support staff
- Annual dollar donations: **\$5.483 million**

The 8 Economic Impacts (7. Effect on COVID-related unemployment)

- COVID had a large impact on ECWTP
 - In-person services and training temporarily shut down
 - Transitioned to remote learning formats
 - Trainee numbers may have declined in 2020
- COVID also had a large impact on the labor market
 - ECWTP placement rate in 2020 was 59% compared to the typical 82.5%
 - Overall, 15.7% of all workers in 2020 experienced job loss
- ECWTP workers likely fared better than untrained workers in the downturn
 - Less likely to lose their job and fewer weeks spent unemployed after job loss
- Effect: prevention of earnings loss = **\$8.211 million**

The 8 Economic Impacts (8. Effect on Env. & Social-Related Benefits)

- ECWTP allocates workers into careers that benefit the environment and society
- Minimum proportions of graduates placed into valuable careers:
 - Lead abatement: 2%
 - Hazardous waste removal: 1%
 - Asbestos abatement: 6%
 - Other green/environmental jobs: 10%
 - Beneficial jobs, largely in the public sector: 2%

Other Workforce Development Impact Studies

- Studies with similar workforce training and sectors, and their effect on earnings
 - WorkAdvance Towards Employment: +14.0%
 - WorkAdvance Madison Strategies: +12.4%
 - WorkAdvance St. Nick's: +1.3%
 - Sectoral Employment Impact Study Wisconsin Regional Training Partnership: +27.4%
- ECWTP: +34.5%

Regional economic impact study services

- Many regional universities house centers of economic research that can do these types of studies, often at a reasonable price
- Texas – Stephen F. Austin State University Center for Business and Economic Research
- California – Chapman University Anderson Center for Economic Research
- Oregon – Portland State University Northwest Economic Research Center
- Louisiana – University of New Orleans Institute for Economic Development and Real Estate Research
- Florida – University of West Florida Haas Center
- Illinois – University of Illinois Chicago Center for Urban Economic Development

Conclusion

- The ECWTP's economic impacts are substantial
- Individually:
 - \$221,329 estimated increase in lifetime earnings
 - \$996 million in total across all trainees from 2014 – 2022
- Socially:
 - \$62.332 million in safety, hiring and crime related cost savings
 - \$527.868 million towards the federal government budget
 - Improvement in 21 communities across the US
 - More people working to improve the environment and society
- Estimated lifetime return on the Federal Government's \$3.5 million annual investment: **33X**
- Annual return of earnings increases alone (no career accumulation):
 - $(\$1,266.90 - \$888.85) \times 52 \text{ weeks} \times 500 \text{ graduates per year} = \text{\$9.8293 million or } 2.8X$